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

May 2017



Air Force

Justification Book Volume 2 of 3

***Research, Development, Test & Evaluation, Air Force
Vol-II***

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

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

04 May 2017

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

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

04 May 2017

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

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

04 May 2017

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

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

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

04 May 2017

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

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

04 May 2017

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

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 (Dollars in Thousands)

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Basic Research	510,673	500,024	500,024				
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Undistributed		-2,965,689	-2,965,689	-15,805	-15,805		-15,805
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Basic Research	500,024	500,024		500,024	505,259		505,259
Applied Research	1,260,152	1,260,152		1,260,152	1,284,114		1,284,114
Advanced Technology Development	725,805	725,805		725,805	794,017		794,017
Advanced Component Development & Prototypes	2,847,833	3,052,533		3,052,533	4,605,030	13,200	4,618,230
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Summary Recap of Budget Activities							

Summary Recap of FYDP Programs							

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General Purpose Forces	2,203,903	2,382,603		2,382,603	2,962,365	9,750	2,972,115
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Central Supply and Maintenance	105,997	105,997		105,997	109,419		109,419
Training Medical and Other	3,114	3,114		3,114	3,615		3,615
Administration and Associated Activities	-2,951,053	-2,951,053		-2,951,053	121,899		121,899
Support of Other Nations	4,784	4,784		4,784	4,569		4,569
Space					3,165,909		3,165,909
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Total Research, Development, Test & Evaluation	25,163,662	26,078,544		26,078,544	34,914,359	135,358	35,049,717

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

04 May 2017

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

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

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04 May 2017

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

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1	0601102F	Defense Research Sciences	01	340,812	340,812		340,812	342,919		342,919	U
2	0601103F	University Research Initiatives	01	145,044	145,044		145,044	147,923		147,923	U
3	0601108F	High Energy Laser Research Initiatives	01	14,168	14,168		14,168	14,417		14,417	U
		Basic Research		500,024	500,024		500,024	505,259		505,259	
4	0602102F	Materials	02	126,152	126,152		126,152	124,264		124,264	U
5	0602201F	Aerospace Vehicle Technologies	02	122,831	122,831		122,831	124,678		124,678	U
6	0602202F	Human Effectiveness Applied Research	02	111,647	111,647		111,647	108,784		108,784	U
7	0602203F	Aerospace Propulsion	02	185,671	185,671		185,671	192,695		192,695	U
8	0602204F	Aerospace Sensors	02	155,174	155,174		155,174	152,782		152,782	U
9	0602298F	Science and Technology Management - Major Headquarters Activities	02					8,353		8,353	U
10	0602601F	Space Technology	02	117,915	117,915		117,915	116,503		116,503	U
11	0602602F	Conventional Munitions	02	109,649	109,649		109,649	112,195		112,195	U
12	0602605F	Directed Energy Technology	02	127,163	127,163		127,163	132,993		132,993	U
13	0602788F	Dominant Information Sciences and Methods	02	161,650	161,650		161,650	167,818		167,818	U
14	0602890F	High Energy Laser Research	02	42,300	42,300		42,300	43,049		43,049	U
		Applied Research		1,260,152	1,260,152		1,260,152	1,284,114		1,284,114	
15	0603112F	Advanced Materials for Weapon Systems	03	35,137	35,137		35,137	37,856		37,856	U
16	0603199F	Sustainment Science and Technology (S&T)	03	20,636	20,636		20,636	22,811		22,811	U

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

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

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

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

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(Dollars in Thousands)

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

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

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Line	Program Element No Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	S e c
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34	0603859F	Pollution Prevention - Dem/Val	04					2		2	U
35	0604015F	Long Range Strike - Bomber	04	1,358,309	1,358,309		1,358,309	2,003,580		2,003,580	U
36	0604201F	Integrated Avionics Planning and Development	04					65,458		65,458	U
37	0604257F	Advanced Technology and Sensors	04	34,818	34,818		34,818	68,719		68,719	U
38	0604288F	National Airborne Ops Center (NAOC) Recap	04					7,850		7,850	U
39	0604317F	Technology Transfer	04	3,368	3,368		3,368	3,295		3,295	U
40	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program	04	74,308	74,308		74,308	17,365		17,365	U
41	0604414F	Cyber Resiliency of Weapon Systems-ACS	04		40,000		40,000	32,253		32,253	U
42	0604422F	Weather System Follow-on	04	118,953	118,953		118,953				U
43	0604425F	Space Situation Awareness Systems	04	9,901	10,901		10,901				U
44	0604776F	Deployment & Distribution Enterprise R&D	04	25,890	25,890		25,890	26,222		26,222	U
45	0604857F	Operationally Responsive Space	04	7,921	17,921		17,921				U
46	0604858F	Tech Transition Program	04	347,304	349,304		349,304	840,650		840,650	U
47	0605230F	Ground Based Strategic Deterrent	04	113,919	113,919		113,919	215,721		215,721	U
48	0201184F	Counter Narco-Terrorism Program Office	04								U
49	0207110F	Next Generation Air Dominance	04	20,595	167,595		167,595	294,746		294,746	U
50	0207455F	Three Dimensional Long-Range Radar (3DELRR)	04	49,491	49,491		49,491	10,645		10,645	U

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Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	S e c
51	0305164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04	143,118	278,147	278,147					U
52	0305236F	Common Data Link Executive Agent (CDL EA)	04		42,338	42,338					U
53	0306250F	Cyber Operations Technology Development	04	91,845	158,002	158,002		4,700		4,700	U
54	0306415F	Enabled Cyber Activities	04		15,842	15,842					U
55	0408011F	Special Tactics / Combat Control	04								U
56	0901410F	Contracting Information Technology System	04		5,782	5,782					U
57	1203164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04								U
58	1203710F	EO/IR Weather Systems	04								U
59	1206422F	Weather System Follow-on	04								U
60	1206425F	Space Situation Awareness Systems	04								U
61	1206434F	Midterm Polar MILSATCOM System	04								U
62	1206438F	Space Control Technology	04								U
63	1206730F	Space Security and Defense Program	04								U
64	1206760F	Protected Tactical Enterprise Service (PTES)	04								U
65	1206761F	Protected Tactical Service (PTS)	04								U
66	1206855F	Protected SATCOM Services (PSCS) - Aggregated	04								U

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Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	S e c
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51	0305164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04	278,147	278,147		278,147				U
52	0305236F	Common Data Link Executive Agent (CDL EA)	04	42,338	42,338		42,338	41,509		41,509	U
53	0306250F	Cyber Operations Technology Development	04	158,002	162,702		162,702	226,287	5,400	231,687	U
54	0306415F	Enabled Cyber Activities	04	15,842	15,842		15,842	16,687		16,687	U
55	0408011F	Special Tactics / Combat Control	04					4,500		4,500	U
56	0901410F	Contracting Information Technology System	04	5,782	5,782		5,782	15,867		15,867	U
57	1203164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04					253,939		253,939	U
58	1203710F	EO/IR Weather Systems	04					10,000		10,000	U
59	1206422F	Weather System Follow-on	04					112,088		112,088	U
60	1206425F	Space Situation Awareness Systems	04					34,764		34,764	U
61	1206434F	Midterm Polar MILSATCOM System	04					63,092		63,092	U
62	1206438F	Space Control Technology	04					7,842		7,842	U
63	1206730F	Space Security and Defense Program	04					41,385		41,385	U
64	1206760F	Protected Tactical Enterprise Service (PTES)	04					18,150		18,150	U
65	1206761F	Protected Tactical Service (PTS)	04					24,201		24,201	U
66	1206855F	Protected SATCOM Services (PSCS) - Aggregated	04					16,000		16,000	U

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

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Line	Program Element No Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	S e c
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67	1206857F	Operationally Responsive Space	04					87,577		87,577	U
		Advanced Component Development & Prototypes		2,847,833	3,052,533		3,052,533	4,605,030	13,200	4,618,230	
68	0604200F	Future Advanced Weapon Analysis & Programs	05					5,100		5,100	U
69	0604201F	Integrated Avionics Planning and Development	05					101,203		101,203	U
70	0604222F	Nuclear Weapons Support	05					3,009		3,009	U
71	0604270F	Electronic Warfare Development	05	12,476	12,476		12,476	2,241		2,241	U
72	0604281F	Tactical Data Networks Enterprise	05	82,380	82,380		82,380	38,250		38,250	U
73	0604287F	Physical Security Equipment	05	8,458	35,458		35,458	19,739		19,739	U
74	0604329F	Small Diameter Bomb (SDB) - EMD	05	54,838	54,838		54,838	38,979		38,979	U
75	0604421F	Counterspace Systems	05	34,819	41,919		41,919				U
76	0604425F	Space Situation Awareness Systems	05	23,945	23,945		23,945				U
77	0604426F	Space Fence	05	168,364	168,364		168,364				U
78	0604429F	Airborne Electronic Attack	05	9,187	9,187		9,187	7,091		7,091	U
79	0604441F	Space Based Infrared System (SBIRS) High EMD	05	181,966	218,766		218,766				U
80	0604602F	Armament/Ordnance Development	05	20,312	20,312		20,312	46,540		46,540	U
81	0604604F	Submunitions	05	2,503	2,503		2,503	2,705		2,705	U
82	0604617F	Agile Combat Support	05	53,680	53,680		53,680	31,240		31,240	U
83	0604618F	Joint Direct Attack Munition	05	9,901	9,901		9,901				U
84	0604706F	Life Support Systems	05	7,520	7,520		7,520	9,060		9,060	U

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

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

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104	0207328F	Stand In Attack Weapon	05								U
105	0207701F	Full Combat Mission Training	05	17,290	12,051	12,051					U
106	0303267F	Auctioned Spectrum Relocation Fund	05	40,571							U
107	0303367F	Spectrum Access Research and Development	05	383							U
108	0305176F	Combat Survivor Evader Locator	05	958	29,253	29,253					U
109	0307581F	JSTARS Recap	05	51,306	128,019	128,019					U
110	0401310F	C-32 Executive Transport Recapitalization	05								U
111	0401319F	Presidential Aircraft Recapitalization (PAR)	05	82,420	351,220	351,220					U
112	0701212F	Automated Test Systems	05	14,422	19,062	19,062					U
113	1203176F	Combat Survivor Evader Locator	05								U
114	1203940F	Space Situation Awareness Operations	05								U
115	1206421F	Counterspace Systems	05								U
116	1206425F	Space Situation Awareness Systems	05								U
117	1206426F	Space Fence	05								U
118	1206431F	Advanced EHF MILSATCOM (SPACE)	05								U
119	1206432F	Polar MILSATCOM (SPACE)	05								U
120	1206433F	Wideband Global SATCOM (SPACE)	05								U
121	1206441F	Space Based Infrared System (SBIRS) High EMD	05								U

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104	0207328F	Stand In Attack Weapon	05					3,400		3,400	U
105	0207701F	Full Combat Mission Training	05	12,051	12,051		12,051	16,727		16,727	U
106	0303267F	Auctioned Spectrum Relocation Fund	05								U
107	0303367F	Spectrum Access Research and Development	05								U
108	0305176F	Combat Survivor Evader Locator	05	29,253	29,253		29,253				U
109	0307581F	JSTARS Recap	05	128,019	128,019		128,019	417,201		417,201	U
110	0401310F	C-32 Executive Transport Recapitalization	05					6,017		6,017	U
111	0401319F	Presidential Aircraft Recapitalization (PAR)	05	351,220	351,220		351,220	434,069		434,069	U
112	0701212F	Automated Test Systems	05	19,062	19,062		19,062	18,528		18,528	U
113	1203176F	Combat Survivor Evader Locator	05					24,967		24,967	U
114	1203940F	Space Situation Awareness Operations	05					10,029		10,029	U
115	1206421F	Counterspace Systems	05					66,370		66,370	U
116	1206425F	Space Situation Awareness Systems	05					48,448		48,448	U
117	1206426F	Space Fence	05					35,937		35,937	U
118	1206431F	Advanced EHF MILSATCOM (SPACE)	05					145,610		145,610	U
119	1206432F	Polar MILSATCOM (SPACE)	05					33,644		33,644	U
120	1206433F	Wideband Global SATCOM (SPACE)	05					14,263		14,263	U
121	1206441F	Space Based Infrared System (SBIRS) High EMD	05					311,844		311,844	U

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

04 May 2017

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

Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	Req S e c -
122	1206442F	Evolved SBIRS	05								U
123	1206853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05								U
		System Development & Demonstration		3,832,399	4,075,804	4,135,704	425	11,425		11,425	
124	0604256F	Threat Simulator Development	06	23,558	21,630	21,630					U
125	0604759F	Major T&E Investment	06	70,894	66,385	71,385					U
126	0605101F	RAND Project Air Force	06	33,943	34,641	34,641					U
127	0605502F	Small Business Innovation Research	06	337,762							U
128	0605712F	Initial Operational Test & Evaluation	06	11,172	11,529	11,529					U
129	0605807F	Test and Evaluation Support	06	683,307	661,417	680,217					U
130	0605826F	Acq Workforce- Global Power	06								U
131	0605827F	Acq Workforce- Global Vig & Combat Sys	06								U
132	0605828F	Acq Workforce- Global Reach	06								U
133	0605829F	Acq Workforce- Cyber, Network, & Bus Sys	06								U
134	0605830F	Acq Workforce- Global Battle Mgmt	06								U
135	0605831F	Acq Workforce- Capability Integration	06								U
136	0605832F	Acq Workforce- Advanced Prgm Technology	06								U
137	0605833F	Acq Workforce- Nuclear Systems	06								U

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122	1206442F	Evolved SBIRS	05					71,018		71,018	U
123	1206853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05					297,572		297,572	U
		System Development & Demonstration		4,076,229	4,147,129		4,147,129	4,476,762		4,476,762	
124	0604256F	Threat Simulator Development	06	21,630	21,630		21,630	35,405		35,405	U
125	0604759F	Major T&E Investment	06	66,385	71,385		71,385	82,874		82,874	U
126	0605101F	RAND Project Air Force	06	34,641	34,641		34,641	34,346		34,346	U
127	0605502F	Small Business Innovation Research	06								U
128	0605712F	Initial Operational Test & Evaluation	06	11,529	11,529		11,529	15,523		15,523	U
129	0605807F	Test and Evaluation Support	06	661,417	680,217		680,217	678,289		678,289	U
130	0605826F	Acq Workforce- Global Power	06					219,809		219,809	U
131	0605827F	Acq Workforce- Global Vig & Combat Sys	06					223,179		223,179	U
132	0605828F	Acq Workforce- Global Reach	06					138,556		138,556	U
133	0605829F	Acq Workforce- Cyber, Network, & Bus Sys	06					221,393		221,393	U
134	0605830F	Acq Workforce- Global Battle Mgmt	06					152,577		152,577	U
135	0605831F	Acq Workforce- Capability Integration	06					196,561		196,561	U
136	0605832F	Acq Workforce- Advanced Prgm Technology	06					28,322		28,322	U
137	0605833F	Acq Workforce- Nuclear Systems	06					126,611		126,611	U

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

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

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

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

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

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

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188	0207161F	Tactical AIM Missiles	07	33,615	52,898	52,898					U
189	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	44,335	62,470	62,470					U
190	0207224F	Combat Rescue and Recovery	07	398							U
191	0207227F	Combat Rescue - Pararescue	07	636	362	362					U
192	0207247F	AF TENCAP	07	37,489	28,413	28,413					U
193	0207249F	Precision Attack Systems Procurement	07	1,064	649	649					U
194	0207253F	Compass Call	07	32,024	13,723	23,923					U
195	0207268F	Aircraft Engine Component Improvement Program	07	104,092	109,859	109,859					U
196	0207277F	ISR Innovations	07								U
197	0207325F	Joint Air-to-Surface Standoff Missile (JASSM)	07	9,221	30,002	30,002					U
198	0207410F	Air & Space Operations Center (AOC)	07	20,588	37,621	37,621					U
199	0207412F	Control and Reporting Center (CRC)	07	557	13,292	13,292					U
200	0207417F	Airborne Warning and Control System (AWACS)	07	124,457	86,644	86,644					U
201	0207418F	Tactical Airborne Control Systems	07	5,786	2,442	2,442					U
203	0207431F	Combat Air Intelligence System Activities	07	6,793	10,911	10,911					U
204	0207444F	Tactical Air Control Party-Mod	07	10,747	11,843	11,843					U
205	0207448F	C2ISR Tactical Data Link	07	1,629	1,515	1,515					U
206	0207452F	DCAPES	07	12,909	14,979	14,979					U

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188	0207161F	Tactical AIM Missiles	07	52,898	52,898		52,898	34,952		34,952	U
189	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	62,470	62,470		62,470	61,322		61,322	U
190	0207224F	Combat Rescue and Recovery	07								U
191	0207227F	Combat Rescue - Pararescue	07	362	362		362	693		693	U
192	0207247F	AF TENCAP	07	28,413	28,413		28,413				U
193	0207249F	Precision Attack Systems Procurement	07	649	649		649	1,714		1,714	U
194	0207253F	Compass Call	07	13,723	23,923		23,923	14,040		14,040	U
195	0207268F	Aircraft Engine Component Improvement Program	07	109,859	109,859		109,859	109,243		109,243	U
196	0207277F	ISR Innovations	07						5,750	5,750	U
197	0207325F	Joint Air-to-Surface Standoff Missile (JASSM)	07	30,002	30,002		30,002	29,932		29,932	U
198	0207410F	Air & Space Operations Center (AOC)	07	37,621	37,621		37,621	26,956		26,956	U
199	0207412F	Control and Reporting Center (CRC)	07	13,292	13,292		13,292	2,450		2,450	U
200	0207417F	Airborne Warning and Control System (AWACS)	07	86,644	86,644		86,644	151,726		151,726	U
201	0207418F	Tactical Airborne Control Systems	07	2,442	2,442		2,442	3,656		3,656	U
203	0207431F	Combat Air Intelligence System Activities	07	10,911	10,911		10,911	13,420		13,420	U
204	0207444F	Tactical Air Control Party-Mod	07	11,843	11,843		11,843	10,623		10,623	U
205	0207448F	C2ISR Tactical Data Link	07	1,515	1,515		1,515	1,754		1,754	U
206	0207452F	DCAPES	07	14,979	14,979		14,979	17,382		17,382	U

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

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

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Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	S e c
232	0303141F	Global Combat Support System	07		52	52					U
233	0303142F	Global Force Management - Data Initiative	07	2,470	2,099	2,099					U
234	0303601F	MILSATCOM Terminals	07	9,000							U
236	0304260F	Airborne SIGINT Enterprise	07	111,142	90,762	90,762					U
237	0304310F	Commercial Economic Analysis	07								U
240	0305020F	CCMD Intelligence Information Technology	07								U
241	0305099F	Global Air Traffic Management (GATM)	07	4,089	4,354	4,354					U
242	0305110F	Satellite Control Network (SPACE)	07	7,327	15,624	15,624					U
243	0305111F	Weather Service	07	28,812	19,974	19,974					U
244	0305114F	Air Traffic Control, Approach, and Landing System (ATCALS)	07	18,830	9,770	9,770					U
245	0305116F	Aerial Targets	07	2,578	3,051	3,051					U
248	0305128F	Security and Investigative Activities	07	455	405	405					U
249	0305145F	Arms Control Implementation	07	9,116	4,844	4,844					U
250	0305146F	Defense Joint Counterintelligence Activities	07	361	339	339					U
253	0305173F	Space and Missile Test and Evaluation Center	07	3,490	3,989	3,989					U
254	0305174F	Space Innovation, Integration and Rapid Technology Development	07	1,543	3,070	3,070	4,715	4,715		4,715	U
255	0305179F	Integrated Broadcast Service (IBS)	07	9,760	8,833	8,833					U

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Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	S e c
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232	0303141F	Global Combat Support System	07	52	52		52	105		105	U
233	0303142F	Global Force Management - Data Initiative	07	2,099	2,099		2,099	2,147		2,147	U
234	0303601F	MILSATCOM Terminals	07								U
236	0304260F	Airborne SIGINT Enterprise	07	90,762	90,762		90,762	121,948		121,948	U
237	0304310F	Commercial Economic Analysis	07					3,544		3,544	U
240	0305020F	CCMD Intelligence Information Technology	07					1,542		1,542	U
241	0305099F	Global Air Traffic Management (GATM)	07	4,354	4,354		4,354	4,453		4,453	U
242	0305110F	Satellite Control Network (SPACE)	07	15,624	15,624		15,624				U
243	0305111F	Weather Service	07	19,974	19,974		19,974	26,654		26,654	U
244	0305114F	Air Traffic Control, Approach, and Landing System (ATCALS)	07	9,770	9,770		9,770	6,306		6,306	U
245	0305116F	Aerial Targets	07	3,051	3,051		3,051	21,295		21,295	U
248	0305128F	Security and Investigative Activities	07	405	405		405	415		415	U
249	0305145F	Arms Control Implementation	07	4,844	4,844		4,844				U
250	0305146F	Defense Joint Counterintelligence Activities	07	339	339		339	3,867		3,867	U
253	0305173F	Space and Missile Test and Evaluation Center	07	3,989	3,989		3,989				U
254	0305174F	Space Innovation, Integration and Rapid Technology Development	07	7,785	7,785		7,785				U
255	0305179F	Integrated Broadcast Service (IBS)	07	8,833	8,833		8,833				U

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

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Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Se
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256	0305182F	Spacelift Range System (SPACE)	07	11,867	11,867		11,867				U
257	0305202F	Dragon U-2	07	37,217	37,217		37,217	34,486		34,486	U
258	0305205F	Endurance Unmanned Aerial Vehicles	07								U
259	0305206F	Airborne Reconnaissance Systems	07	3,841	3,841		3,841	4,450		4,450	U
260	0305207F	Manned Reconnaissance Systems	07	20,975	20,975		20,975	14,269		14,269	U
261	0305208F	Distributed Common Ground/Surface Systems	07	18,902	30,448		30,448	27,501		27,501	U
262	0305220F	RQ-4 UAV	07	256,307	256,307		256,307	214,849		214,849	U
263	0305221F	Network-Centric Collaborative Targeting	07	22,610	22,610		22,610	18,842		18,842	U
264	0305236F	Common Data Link Executive Agent (CDL EA)	07								U
265	0305238F	NATO AGS	07	38,904	38,904		38,904	44,729		44,729	U
266	0305240F	Support to DCGS Enterprise	07	23,084	23,084		23,084	26,349		26,349	U
267	0305258F	Advanced Evaluation Program	07	116,143	116,143		116,143				U
268	0305265F	GPS III Space Segment	07	141,888	179,188		179,188				U
269	0305600F	International Intelligence Technology and Architectures	07	2,360	2,360		2,360	3,491		3,491	U
270	0305614F	JSPOC Mission System	07	72,889	87,889		87,889				U
271	0305881F	Rapid Cyber Acquisition	07	4,280	4,280		4,280	4,899		4,899	U
272	0305906F	NCMC - TW/AA System	07	4,951	4,951		4,951				U
273	0305913F	NUDET Detection System (SPACE)	07	21,093	21,093		21,093				U

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274	0305940F	Space Situation Awareness Operations	07	23,416	35,002	93,802					U
275	0305984F	Personnel Recovery Command & Ctrl (PRC2)	07								U
276	0307577F	Intelligence Mission Data (IMD)	07								U
277	0308699F	Shared Early Warning (SEW)	07	845	6,366	6,366					U
278	0401115F	C-130 Airlift Squadron	07	33,962	15,599	15,599					U
279	0401119F	C-5 Airlift Squadrons (IF)	07	22,766	66,146	66,146					U
280	0401130F	C-17 Aircraft (IF)	07	36,082	12,430	12,430					U
281	0401132F	C-130J Program	07	31,410	16,776	16,776					U
282	0401134F	Large Aircraft IR Countermeasures (LAIRCM)	07	5,802	5,166	5,166					U
283	0401218F	KC-135s	07								U
284	0401219F	KC-10s	07	1,597							U
285	0401314F	Operational Support Airlift	07	46,453	13,817	13,817					U
286	0401318F	CV-22	07	26,821	16,702	28,702					U
287	0401840F	AMC Command and Control System	07								U
288	0408011F	Special Tactics / Combat Control	07	7,665	7,164	7,164					U
289	0702207F	Depot Maintenance (Non-IF)	07	1,514	1,518	1,518					U
290	0708055F	Maintenance, Repair & Overhaul System	07								U
291	0708610F	Logistics Information Technology (LOGIT)	07	52,482	61,676	61,676					U

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274	0305940F	Space Situation Awareness Operations	07	35,002	93,802		93,802				U
275	0305984F	Personnel Recovery Command & Ctrl (PRC2)	07					2,445		2,445	U
276	0307577F	Intelligence Mission Data (IMD)	07					8,684		8,684	U
277	0308699F	Shared Early Warning (SEW)	07	6,366	6,366		6,366				U
278	0401115F	C-130 Airlift Squadron	07	15,599	15,599		15,599	10,219		10,219	U
279	0401119F	C-5 Airlift Squadrons (IF)	07	66,146	66,146		66,146	22,758		22,758	U
280	0401130F	C-17 Aircraft (IF)	07	12,430	12,430		12,430	34,287		34,287	U
281	0401132F	C-130J Program	07	16,776	16,776		16,776	26,821		26,821	U
282	0401134F	Large Aircraft IR Countermeasures (LAIRCM)	07	5,166	5,166		5,166	5,283		5,283	U
283	0401218F	KC-135s	07					9,942		9,942	U
284	0401219F	KC-10s	07					7,933		7,933	U
285	0401314F	Operational Support Airlift	07	13,817	13,817		13,817	6,681		6,681	U
286	0401318F	CV-22	07	16,702	28,702		28,702	22,519		22,519	U
287	0401840F	AMC Command and Control System	07					3,510		3,510	U
288	0408011F	Special Tactics / Combat Control	07	7,164	7,164		7,164	8,090		8,090	U
289	0702207F	Depot Maintenance (Non-IF)	07	1,518	1,518		1,518	1,528		1,528	U
290	0708055F	Maintenance, Repair & Overhaul System	07					31,677		31,677	U
291	0708610F	Logistics Information Technology (LOGIT)	07	61,676	61,676		61,676	33,344		33,344	U

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

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

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Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	S e c
310	1203265F	GPS III Space Segment	07								U
311	1203400F	Space Superiority Intelligence	07								U
312	1203614F	JSpOC Mission System	07								U
313	1203620F	National Space Defense Center	07								U
314	1203699F	Shared Early Warning (SEW)	07								U
315	1203906F	NCMC - TW/AA System	07								U
316	1203913F	NUDET Detection System (SPACE)	07								U
317	1203940F	Space Situation Awareness Operations	07								U
318	1206423F	Global Positioning System III - Operational Control Segment	07								U
9999	9999999999	Classified Programs		12,052,624	13,091,557	13,243,393	27,765	84,865		84,865	U
		Operational Systems Development		15,915,939	17,457,056	17,915,438	32,480	89,580		89,580	
319	0901560F	Continuing Resolution Programs	20		-2,965,689	-2,965,689	-15,805	-15,805		-15,805	U
		Undistributed			-2,965,689	-2,965,689	-15,805	-15,805		-15,805	
Total	Research, Development, Test & Eval, AF			25,243,981	25,146,562	25,988,644	17,100	89,900		89,900	

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

04 May 2017

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

Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Se
310	1203265F	GPS III Space Segment	07					243,435		243,435	U
311	1203400F	Space Superiority Intelligence	07					12,691		12,691	U
312	1203614F	JSpOC Mission System	07					99,455		99,455	U
313	1203620F	National Space Defense Center	07					18,052		18,052	U
314	1203699F	Shared Early Warning (SEW)	07					1,373		1,373	U
315	1203906F	NCMC - TW/AA System	07					5,000		5,000	U
316	1203913F	NUDET Detection System (SPACE)	07					31,508		31,508	U
317	1203940F	Space Situation Awareness Operations	07					99,984		99,984	U
318	1206423F	Global Positioning System III - Operational Control Segment	07					510,938		510,938	U
9999	9999999999	Classified Programs		13,119,322	13,328,258		13,328,258	14,938,002	112,408	15,050,410	U
		Operational Systems Development		17,489,536	18,005,018		18,005,018	20,585,302	122,158	20,707,460	
319	0901560F	Continuing Resolution Programs	20	-2,981,494	-2,981,494		-2,981,494				U
		Undistributed		-2,981,494	-2,981,494		-2,981,494				
		Total Research, Development, Test & Eval, AF		25,163,662	26,078,544		26,078,544	34,914,359	135,358	35,049,717	

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6	02	0602202F	Human Effectiveness Applied Research.....	Volume 1 - 59
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8	02	0602204F	Aerospace Sensors.....	Volume 1 - 101
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13	02	0602788F	Dominant Information Sciences and Methods.....	Volume 1 - 163
14	02	0602890F	High Energy Laser Research.....	Volume 1 - 189

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**Fiscal Year (FY) 2018 Budget Estimates
RDT&E Descriptive Summaries
Budget Activities
May 2017**

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 2018 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 2018 RDT&E program with the exception of classified program elements. The format and contents of this document are in accordance to the guidelines and requirements of the Congressional committees in so far as possible.
 - b) The "Other Program Funding Summary portion of the R-2 includes, in addition to RDT&E funds, Procurement funds and quantities, Military Construction appropriation funds on specific development programs, Operations and Maintenance appropriation funds where they are essential to the development effort described, and where appropriate, Department of Energy (DOE) costs.

2. (U) CLASSIFICATION

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

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Master Exhibit R-1

(Listing by Budget Activity, then Program Element Number)

BA# 01: Basic Research

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

BA# 02: Applied Research

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

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(Listing by Budget Activity, then Program Element Number)

BA# 02: Applied Research

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

BA# 03: Advanced Technology Development (ATD)

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

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BA# 03: Advanced Technology Development (ATD)

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

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

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

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

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

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

Cost (\$ in Millions)

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

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

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

BA# 05: System Development & Demonstration (SDD)

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

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BA# 05: System Development & Demonstration (SDD)

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

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(Listing by Budget Activity, then Program Element Number)

BA# 05: System Development & Demonstration (SDD)

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

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(Listing by Budget Activity, then Program Element Number)

BA# 05: System Development & Demonstration (SDD)

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

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BA# 06: RDT&E Management Support

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

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BA# 06: RDT&E Management Support**Cost (\$ in Millions)**

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

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BA# 06: RDT&E Management Support**Cost (\$ in Millions)**

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

BA# 07: Operational Systems Development**Cost (\$ in Millions)**

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

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BA# 07: Operational Systems Development

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

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

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

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BA# 07: Operational Systems Development

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

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BA# 07: Operational Systems Development

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

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

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BA# 07: Operational Systems Development

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

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(Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development**Cost (\$ in Millions)**

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

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(Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

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

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

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

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

Appropriation/Budget Activity 3600: <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>I Intelligence Advanced Development</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	5.032	5.598	5.652	0.000	5.652	5.611	5.715	5.814	5.934	Continuing	Continuing
64536A: <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>	-	3.991	4.442	4.488	0.000	4.488	4.455	4.537	4.615	4.710	Continuing	Continuing
64537A: <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>	-	1.041	1.156	1.164	0.000	1.164	1.156	1.178	1.199	1.224	Continuing	Continuing

A. Mission Description and Budget Item Justification

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
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 0603260F I Intelligence Advanced Development			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	5.032	5.598	5.636	0.000	5.636
Current President's Budget	5.032	5.598	5.652	0.000	5.652
Total Adjustments	0.000	0.000	0.016	0.000	0.016
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.016	0.000	0.016
Change Summary Explanation					
FY18: \$16K inflation rate increase					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603260F / Intelligence Advanced Development				Project (Number/Name) 64536A / INTELLIGENCE EXPLOITATION TOOLS (IET)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
64536A: INTELLIGENCE EXPLOITATION TOOLS (IET)	-	3.991	4.442	4.488	0.000	4.488	4.455	4.537	4.615	4.710	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

	FY 2016	FY 2017	FY 2018
Title: Intelligence Exploitation Tools (IET)	3.991	4.442	4.488
Description: IET addresses the accurate and timely interpretation of various Intelligence data sources (such as digital imagery, video, documents, and signals) by developing and evaluating methods to manipulate and overlay the disparate products using various imagery, visualization and timeline techniques. This provides the analyst with the ability to fuse multiple intelligence sources for improved situational awareness and to better detect anomalies. Cross domain tools are explored as a means to view and provide data at multiple classification levels. In addition, methods to improve analysis of current and future foreign weapon systems are developed. IET provides enhanced warning and accuracy to allow national and military authorities a greater range of options to avert, diminish or control a crisis.			
FY 2016 Accomplishments: <ul style="list-style-type: none"> - Continued development of software focused on improving the way computers and application services supports intelligence analysts through the use of cognitive systems - Continued development of capability to enable the detection, geo-location, and tracking of complex wideband and low probability of intercept emitters; improved reporting timeliness and accuracy of worldwide ELINT intercept data - Continued development of capability to enable the intelligence analyst to conduct search and discovery either by visual pattern recognition/feature extraction or text-based using queries; this effort created structured content from the recognition of objects, features and patterns contained within images/video 			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
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 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Continued development of software currently deployed on RIVET JOINT processor to enable collecting current and future SIGINT metadata - Continued development of a framework designed to expose media tools, data, products, workflow and analytical services to the DoD and Intelligence Community (IC) - Continued development of a capability for quantitative mission assessment and integrating future ISR and combat mission capabilities - Continued development of automated methods that aid in the systematic, continuous, and comprehensive assessment of technical topic, concepts and emergence using information found in the published scientific, technical, and patent literature, message traffic, gray literature, conference papers, etc. - Continued enabling Distributed Common Ground Station (DCGS) enterprise support of high-altitude SIGINT missions and execution on NSANet - Completed FY16 user evaluations and prototype releases <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continuing development of software focused on improving the way computers and application services supports intelligence analysts through the use of cognitive systems - Continuing development of capability to enable the detection, geo-location, and tracking of complex wideband and low probability of intercept emitters; improve reporting timeliness and accuracy of worldwide ELINT intercept data - Continuing development of capability to enable the intelligence analyst to conduct search and discovery either by visual pattern recognition/feature extraction or text-based using queries <ul style="list-style-type: none"> -- This effort creates structured content from the recognition of objects, features and patterns contained within images/video - Completing development of software currently deployed on RIVET JOINT processor to enable collecting current and future SIGINT metadata - Continuing development of a framework designed to expose media tools, data, products, workflow and analytical services to the DoD and IC 					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
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 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Completing development of a capability for qualitative mission assessment and lays a framework for integrating future ISR and combat mission capabilities into the assessment framework - Continuing development of automated methods that aid in the systematic, continuous, and comprehensive assessment of technical topic, concepts and emergence using information found in the published scientific, technical, and patent literature, message traffic, gray literature, conference papers, etc. - Continuing to enable DCGS enterprise support of high-altitude SIGINT missions and execution on NSANet - Initiating development of a software capability to exploit and fuse open source information with DCGS related sources - Initiating development of a Feature Extractor to assist automation of Tech ELINT screening - Initiating development and integration of space based modeling capabilities into the Integrated Many on Many mission planning tool - Initiating implementation of operational metadata capability for DCGS SIGINT - Continuing user evaluations and prototype releases <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will complete development of software focused on improving the way computers and application services supports intelligence analysts through the use of cognitive systems - Will complete development of capability to enable the detection, geo-location, and tracking of complex wideband and low probability of intercept emitters; improve reporting timeliness and accuracy of worldwide ELINT intercept data - Will complete development of capability to enable the intelligence analyst to conduct search and discovery either by visual pattern recognition/feature extraction or text-based using queries. -- This effort will create structured content from the recognition of objects, features and patterns contained within images/video - Will complete development of a framework designed to expose media tools, data, products, workflow and analytical services to the DoD and IC 					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force								Date: May 2017	
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 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Will complete development of automated methods that aid in the systematic, continuous, and comprehensive assessment of technical topic, concepts and emergence using information found in the published scientific, technical, and patent literature, message traffic, gray literature, conference papers, etc. - Will continue enabling DCGS enterprise support of high-altitude SIGINT missions and execution on NSANet - Will continue development of a software capability to exploit and fuse open source information with DCGS related sources - Will continue development of a Feature Extractor to assist automation of Tech ELINT screening - Will continue development and integration of space based modeling capabilities into the Integrated Many on Many mission planning tool - Will continue implementation of operational metadata capability for DCGS SIGINT collection systems - Will continue user evaluations and prototype releases 			
Accomplishments/Planned Programs Subtotals	3.991	4.442	4.488

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
D. Acquisition Strategy											
<p>Requirements for new/improved techniques for operational employment of simulation models are identified and prioritized by ACC. Development of the new/improved capabilities to meet these requirements is managed by Air Force Research Laboratory (AFRL) Rome Research Site. Prototype products (usually software), once evaluated by the users, are transitioned from the laboratory to the operational community in spirals. All major contracts within this project are awarded after full and open competition.</p>											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603260F / Intelligence Advanced Development				Project (Number/Name) 64537A / INTELLIGENCE ANALYSIS CAPABILITIES (IAC)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
64537A: INTELLIGENCE ANALYSIS CAPABILITIES (IAC)	-	1.041	1.156	1.164	0.000	1.164	1.156	1.178	1.199	1.224	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The mission is to provide continuing development and upgrades of threat analysis capabilities to produce integrated, predictive air and space intelligence to enable military operations, force modernization decisions, and policy making. Products from IAC allow the Intelligence Analyst to accelerate and increase the accuracy of threat estimates and system descriptions to deployed operational forces. Each of the development projects within the IAC program portfolio transition technologies to the operational communities through the incremental release of upgraded versions over a period of years as development projects progress towards the final configuration. IAC may reallocate existing resources to support out-of-cycle new/ updated warfighter requirements.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Title: Intelligence Intelligence Analysis Capabilities (IAC) Development										1.041	1.156	1.164
Description: IAC develops tools and algorithms for Intelligence Analysts with the ability to produce accurate, predictive, relevant, and timely intelligence that supports client processes, operational planning, and mission execution. IAC develops new and upgraded analysis, modeling and simulation tools focused on intelligence production supporting AF operational and developmental all source analysis functions.												
FY 2016 Accomplishments:												
- Released first prototype and initiated development of second prototype of an enterprise level solution (tools and procedures) that will allow the intelligence analyst to perform predictive intelligence analysis on new areas of interest												
- Released second prototype and initiated development of third prototype of capability to add a space communications modeling capability to the previously fielded terrestrial communications focused TEL-SCOPE tool												
- Completed user evaluations and prototype releases												
FY 2017 Plans:												
- Continuing development of an enterprise level solution (tools and procedures) that will allow the intelligence analyst to perform predictive intelligence analysis on new areas of interest												
- Continuing development of capability to add a space communications modeling capability to the previously fielded terrestrial communications focused TEL-SCOPE tool												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force								Date: May 2017	
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 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Continuing user evaluations and prototype releases <i>FY 2018 Plans:</i> <ul style="list-style-type: none"> - Will continue development of an enterprise level solution (tools and procedures) that will allow the intelligence analyst to perform predictive intelligence analysis on new areas of interest - Will continue development to add a space communications modeling capability to the previously fielded terrestrial communications focused TEL-SCOPE tool - Will initiate development of query adaption tools for multimodal (i.e. text, images, video, audio, etc.) and multilingual searches - Will initiate development of tools for integrated air defense systems to perform passive detection and tracking - Will continue user evaluations and prototype releases 			
Accomplishments/Planned Programs Subtotals	1.041	1.156	1.164

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
D. Acquisition Strategy											
Requirements of new/upgraded intelligence analysis tools are identified and prioritized by the ACC. Development of capabilities to meet these requirements is managed by AFRL Rome Research Site. Prototype products (usually software), once evaluated by the users, are fielded in incremental capability spirals. All major contracts within this project are awarded after full and open competition.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0603438F I Space Control Technology							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	3.955	7.534	0.000	7.800	7.800	0.000	0.000	0.000	0.000	Continuing	Continuing
642611: Technology Insertion Planning and Analysis	-	3.955	7.534	0.000	7.800	7.800	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0603438F, Space Control Technology efforts were transferred to PE 1206438F, Space Control Technology, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206438F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	3.955	7.534	0.000	7.800	7.800
Total Adjustments	3.955	7.534	0.000	7.800	7.800
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	3.955	7.534	0.000	7.800	7.800

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity	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>											
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	21.025	24.418	24.397	0.000	24.397	23.655	24.095	24.513	25.014	Continuing	Continuing
642597: <i>Noncooperative Identification Subsystems</i>	-	19.194	22.506	22.442	0.000	22.442	21.669	22.072	22.455	22.914	Continuing	Continuing
642599: <i>Cooperative Identification Techniques</i>	-	1.831	1.912	1.955	0.000	1.955	1.986	2.023	2.058	2.100	Continuing	Continuing

A. Mission Description and Budget Item Justification

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

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

Non-cooperative CID employs a number of sensing technologies and signal processing techniques. The observations may be compared to a database of known objects to identify surface or air threats from air platforms. These technologies include: (1) Laser Vision, an Electro-Optical/Infrared (EO/IR) imaging system that significantly increases ID ranges; (2) 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; (3) Compact AiTR (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; (4) Passive RF ID Environment (PRIDE), a program to develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities; (5) Radio ID (RID) will develop methods for utilizing advances in digital radio technologies such as software defined radios, to provide low cost ID solutions to enhance Combat ID, improve aircrew situational awareness and assist in fratricide prevention with military and civil air platforms, potentially fusing non-cooperative techniques and cooperative technologies; and (6) Enhanced Combat ID (ECID), a program under Studies to develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603742F I <i>Combat Identification Technology</i>
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program element ensures availability of Automatic Dependent Surveillance - Broadcast (ADS-B) as well as Mode 5 IFF (Identification Friend or Foe) upgrade path for implementing ground and air platforms across the Air Force fleet. Activities also include studies and analysis to support both current program planning and execution and future program planning.

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

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

B. Program Change Summary (\$ in Millions)	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	21.790	24.418	24.327	0.000	24.327
Current President's Budget	21.025	24.418	24.397	0.000	24.397
Total Adjustments	-0.765	0.000	0.070	0.000	0.070
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.765	0.000			
• Other Adjustments	0.000	0.000	0.070	0.000	0.070

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603742F / Combat Identification Technology				Project (Number/Name) 642597 / Noncooperative Identification Subsystems			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
642597: Noncooperative Identification Subsystems	-	19.194	22.506	22.442	0.000	22.442	21.669	22.072	22.455	22.914	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Non-cooperative CID employs a number of sensing technologies and signal processing techniques. The observations may be compared to a database of known objects to identify surface or air threats from air platforms. These technologies include: (1) Laser Vision, an Electro-Optical/Infrared (EO/IR) imaging system that significantly increases ID ranges; (2) 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; (3) Compact AiTR (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; (4) Passive RF ID Environment (PRIDE), a program to develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities; (5) Radio ID (RID) will develop methods for utilizing advances in digital radio technologies such as software defined radios, to provide low cost ID solutions to enhance Combat ID, improve aircrew situational awareness and assist in fratricide prevention with military and civil air platforms, potentially fusing non-cooperative techniques and cooperative technologies; and (6) Enhanced Combat ID (ECID), a program under Studies to develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.

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

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Laser Vision/SIREN	4.615	2.552	0.000	-	0.000
Description: Design, fabricate, and evaluate a tactical range laser vibrometry sensor in a targeting pod. Leverage ability of active electro-optic sensors to sense micro-displacements of operating machinery in order to measure the resulting frequency spectrum. Assess utility for air-to-ground combat identification. The Vibrometry Advanced Mode Processor (VAMP) program is research into advanced algorithms for processing data provided by vibrometry sensors in order to develop and demonstrate prototype pilot Aided Target Recognition software.					
FY 2016 Accomplishments: - Targeting pod testing was conducted at the Northrop Grumman facility in 3rd quarter of 2016 - Targeting pod system tower testing was conducted at Wright Patterson AFB in 4th quarter 2016.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017			
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0603742F / Combat Identification Technology		Project (Number/Name) 642597 / Noncooperative Identification Subsystems			
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<div>- SIREN sensor flight test demonstrated the vibrometry sensing technology in a surrogate targeting Pod in 4th quarter 2016.</div> <div>- Laser vibrometry will provide a valuable target recognition capability for determining ground targets engine type, with potential to counter enemy Camouflage, Concealment and Deception (CC&D) techniques as well as a valuable battle damage assessment tool.</div> <div>- SIREN will provide the warfighter with a critical complement to image based ID tools and has the potential for air target ID as well as ground target ID.</div> <div>FY 2017 Plans:<div>- A demonstration will be accomplished on a modified LITENING Pod flying on an test F-16</div></div> <div>N/A</div> <div>FY 2018 Base Plans:<div>N/A</div></div>							
<div>Title: Laser Vision/VAMP</div> <div>Description: Design, fabricate, and evaluate a tactical range laser vibrometry sensor in a targeting pod. Leverage ability of active electro-optic sensors to sense micro-displacements of operating machinery in order to measure the resulting frequency spectrum. Assess utility for air-to-ground combat identification. The VAMP program exploits research into advanced algorithms for processing data provided by vibrometry sensors in order to develop and demonstrate prototype pilot Aided Target Recognition (AiTR) software.</div> <div>FY 2016 Accomplishments:<div>- Explored surrogate target measurement capabilities for ground testing and affordable sustainment</div></div> <div>FY 2017 Plans:<div>- Kickoff a new VAMP algorithm development contract</div><div>- Initiate ID algorithm development with relevant data from SIREN sensor</div></div> <div>FY 2018 Base Plans:<div>- ID algorithm development will continue with relevant data from SIREN sensor</div><div>- Surrogate target measurement capabilities will be developed for ground testing and affordable sustainment</div><div>- An AiTR software algorithm will be integrated into the SIREN surrogate targeting pod</div></div>			0.611	1.811	3.000	0.000	3.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / Combat Identification Technology	Project (Number/Name) 642597 / Noncooperative Identification Subsystems				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- An AiTR lab demo will be accomplished with the SIREN sensor						
FY 2018 OCO Plans: N/A						
Title: Laser Vision/3-D Ladar		1.711	2.311	2.000	0.000	2.000
Description: Laser Vision, a family of electro-optical (EO) systems that significantly increase ID ranges. Provide the demonstration and evaluation data necessary to support decisions on future EO technologies supporting CID, including 3-D (3-dimensional) imaging laser radar (Ladar) and exploration of advanced concepts. The 3-D ladar technology provides a display of a 3-D EO image to the pilot for high confidence combat identification and is a potential for the next generation targeting pods for the USAF.						
FY 2016 Accomplishments: -3-Dimensional Targeting Operations (3DTO) Performance Model Completed detailing expected performance of sensor package. -Successful Diagnostic/Retrieval Systems, Inc (DRS) Phase II Focal Plane Array (FPA) field test collection completed. -Initial Signal Correction Algorithms designed and developed. -Image Registration Algorithms Designed and Implemented (2D Enhancement). -Collaboration with Human Performance Wing (HPW) re-established, (Commander's Research and Development Fund) CRDF planned for future. -Pod Integration Contract Awarded to Northrop Grumman Engineering Systems (NGES) with DRS as a subcontractor (Defense Microelectronics Agency (DMEA) contract vehicle). -DRS determined that Read-out Integrated Circuit (ROIC) requires a re-spin to solve impedance issues.						
FY 2017 Plans: -DRS will complete ROIC re-spin and accomplish testing and analysis of Phase IIIB ROICs and FPAs. -Additional field testing at NGES, DRS, and/or Wright-Patterson Air Force Base (WPAFB) will be accomplished to further characterize DRS FPAs. -Additional field testing lab system acquired with integrated Phase III FPA for lab characterization and short range (1-3km) field test analysis. -Ladar Performance Model will add 3DTO specific metrics (Range Uncertainty, etc.) -3DTO Performance Model Trade study will be completed. -'FINAL' versions of Signal Correction Algorithms will be designed and developed.						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / Combat Identification Technology	Project (Number/Name) 642597 / Noncooperative Identification Subsystems				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>-Physics-based 3DTO Simulation model will be completed enabling generation of simulated imagery with full atmospheric and FPA physics included.</p> <p>-3DTO Simulation model can/will be used to analyze air-to-air engagements, occluded target analysis, targets-in-hide, and other scenarios.</p> <p>-3DTO Signal Analysis Toolkit Version 1.0 will be delivered enabling quick-look analysis capabilities for 3DTO sensor data.</p> <p>-Collaboration with HPW (CRDF) will complete human performance experiment as well as data analysis capabilities</p> <p>FY 2018 Base Plans:</p> <p>-DRS will deliver Flight Receiver Package (Integrated Dewar-Cooler Assembly) with re-spun ROICs and final FPAs.</p> <p>-Pod Integration contract will conclude with Field/Tower test at NGES or WPAFB with fully integrated 3DTO Flight Receiver package.</p> <p>-Pod Integration Flight Test contract will be awarded (DMEA Phase II).</p> <p>-Possible Pod-Integration ground test will be accomplished for pre-flight check out.</p> <p>FY 2018 OCO Plans:</p> <p>N/A</p>						
<p>Title: Hydra Vision/Air to Air</p> <p>Description: Hydra Vision (Multi-Sensor Enhanced ID) is a balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets. There are two main thrusts occurring simultaneously, Air-to-Air and Air-to-Ground.</p> <p>FY 2016 Accomplishments:</p> <p>- Operational sized database was developed utilizing new modeling methods which are significantly easier to update and maintain</p> <p>- Performed data collection events to gather all three primary features simultaneously</p> <p>- Continued to refine fusion algorithms to maximize performance</p> <p>FY 2017 Plans:</p> <p>- Will perform a Technology Readiness Level (TRL) 5 Demonstration of newly developed algorithms showing feasibility and expected performance</p>		4.218	5.067	2.000	0.000	2.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0603742F / Combat Identification Technology		Project (Number/Name) 642597 / Noncooperative Identification Subsystems		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<div>- Integrate next generation air target identification algorithms onto 5th generation fighter radar and upgraded 4th generation fighter radars in preparation for TRL 6 Demonstrations</div> <div>- Maintain and refine target database as new information becomes available</div> <div>FY 2018 Base Plans: -Will investigate other phenomenology (such as laser radar and Infra-Red Search and Track (IRST))as feature fusion to enhance target identification confidence and accuracy.</div> <div>FY 2018 OCO Plans: N/A</div>						
<div>Title: Hydra Vision/Air to Ground</div> <div>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.</div> <div>FY 2016 Accomplishments: - Finalized plans for an operationally realistic capability demonstration on an MQ-9 (Reaper) which entailed integrating the Air to Ground system into the Multi-Intelligence Smart Processor (MISP) system. - Conducted plans for the operational demo.</div> <div>FY 2017 Plans: - Complete integration and fielding to an Air National Guard (ANG) or Air Force Special Operations Command (AFSOC) site for testing and demonstration. - Conduct an evaluation of system and algorithm performance. This will benefit both Air Combat Command (ACC) and AFSOC MQ-9's assuring more effective close in ID capabilities.</div> <div>FY 2018 Base Plans: - Current Air to Ground efforts will be completed in 2017.</div> <div>FY 2018 OCO Plans: N/A</div>		3.211	0.667	0.000	0.000	0.000
<div>Title: Compact AiTR (Aided Target Recognition) and Sustainable Environment (CASE)</div> <div>Description: CASE is a family of efforts to address efficiency and sustainability issues associated with the development, operation and maintenance of non-cooperative AiTR technology. Develop sustainable multiphenomenology AiTR based on low fidelity, compact, and inexpensive database technology.</div>		3.148	4.287	4.000	0.000	4.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017				
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0603742F / Combat Identification Technology		Project (Number/Name) 642597 / Noncooperative Identification Subsystems				
B. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: - Finalized development of a rapid target computer aided design (CAD) model build process and collected metrics on build time, accuracy, cost and AiTR performance impact. - Developed a rapid Synthetic Aperture Radar (SAR) signature predictor for use with SAR AiTRs. - Established a lab testbed architecture for full scene SAR processing and ability to evaluate multiple AiTR metrics. Utilized the testbed to demonstrate one metric on two 6-target sets using three model fidelity levels to evaluate identification, cost and sustainability metrics. - Adapted the Laser Radar (LiDAR) AiTR algorithm to the selected 3-D ladar sensor and enhanced the simulation to provide synthetic signatures for testing and analysis. Developed signal processing techniques to improve signature quality. - Completed a 6-target LiDAR AiTR lab demonstrations at a variety of slant ranges and noise levels. Assessed cost and performance metrics. - Finalized the approach for follow-on flight test demonstrations of CASE technologies.								
FY 2017 Plans: - Complete implementation of the SAR AiTR testbed incorporating multiple compact AiTR algorithms. - Conduct a SAR and LiDAR AiTR 24-target set Lab Demonstration. (~Jan 2017) - Complete preparation of the compact SAR and Ladar AiTR for real time flight testing. - Initiate flight testing planning and conduct risk reduction tests.								
FY 2018 Base Plans: - Will complete a real time flight demonstration of a compact SAR AiTR algorithm and evaluate performance, cost and sustainability metrics. - Will investigate feasibility of addressing High Resolution Radar (HRR) AiTR sustainment issues.								
FY 2018 OCO Plans: N/A								
Title: Passive RF ID Environment (PRIDE)				1.330	3.611	7.578	0.000	7.578
Description: Develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities.								
FY 2016 Accomplishments:								

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0603742F / Combat Identification Technology		Project (Number/Name) 642597 / Noncooperative Identification Subsystems		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<div>- Explored concepts for RF-based CID to include bi-static/multi-static, passive incorporation of electronic warfare techniques, and multi-mode applications</div> <div>- The proposal evaluations were accomplished and it was determined that three Contracts were to be awarded</div> <div>- Contracts were awarded in the 4th Quarter and work commenced</div> <div>FY 2017 Plans:</div> <div>- PRIDE will assess the feasibility of a passive radar based ID capability</div> <div>- This technology development and demonstration is critical for strike fighter fleet to operate in the Anti-Access/ Area Denial environment</div> <div>FY 2018 Base Plans:</div> <div>- PRIDE will develop a passive radar based ID capability and will assess integration for the strike fighter fleet</div> <div>- The designs will be finalized enabling integration onto platform relevant hardware</div> <div>FY 2018 OCO Plans:</div> <div>N/A</div>						
<div>Title: Radio ID (RID)</div> <div>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 start in FY17.</div> <div>FY 2016 Accomplishments:</div> <div>N/A</div> <div>FY 2017 Plans:</div> <div>- Execute Broad Area Announcement for Radio ID</div> <div>- Receive and review Requests For Proposal; select 2-3 initial vendors for RID Phase 1 development activities</div> <div>- Generate contract actions (for awardees) to execute RID Phase I activities</div> <div>- Plan and execute RID project kick-off meeting and periodic Technical Interchange Forums</div> <div>FY 2018 Base Plans:</div> <div>- Finalize RID Phase 1 development efforts</div> <div>- Plan and execute RID Critical Design Review and Technical Interchange Forums</div> <div>- Plan and execute RID Initial Lab Demonstration</div> <div>- Vendors will submit demonstration data and final report to AFRL</div>		0.000	1.200	2.664	0.000	2.664

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>		Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- AFRL will down-select to 1-2 vendors for RID Phase II development and demonstration activities					
FY 2018 OCO Plans: N/A					
Title: Studies Description: Conduct CID-related studies/demos.	0.350	1.000	1.200	0.000	1.200
FY 2016 Accomplishments: - Continue study projects leading to new concepts for non-cooperative and cooperative CID efforts. - ECIDS M&S tools were used to evaluate the effectiveness of results for tactical aircraft employing combined non-cooperative and cooperative CID systems against tactical aircraft employing with only non-cooperative CID systems.					
FY 2017 Plans: - Study projects will be continued leading to new concepts for non-cooperative and cooperative CID efforts. - Research and evaluate new ECID M&S tools to enable enhanced decision making capability to support CID investments. - Continue ECID study projects to evaluate feasibility of new concepts for non-cooperative and cooperative CID efforts.					
FY 2018 Base Plans: - Study projects will be continued leading to new concepts for non-cooperative and cooperative CID efforts. - Will initiate ECID tool set integration across CID organizations for effective decision making. - Will continue ECID study projects to evaluate feasibility of new concepts for non-cooperative and cooperative CID efforts.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	19.194	22.506	22.442	0.000	22.442
C. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>
D. Acquisition Strategy Combat Identification develops technologies for exploitation by the USAF and other services. Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relative combat environment.		
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>				Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hydra Vision (Air-to-Air) - L	C/CPFF	Leidos : Reston, VA	-	1.400	Feb 2016	0.750	Feb 2017	0.750	Oct 2017	0.000		0.750	Continuing	Continuing	-
Hydra Vision (Air-to-Air) - N	C/CPFF	Northrop Grumman : Linthicum Heights, MD	-	1.514	Oct 2015	1.500	Oct 2016	0.275	Oct 2017	0.000		0.275	Continuing	Continuing	-
Hydra Vision (Air-to-Air) - R	C/CPFF	Raytheon Company : El Segundo, CA	-	1.513	Oct 2015	2.000	Oct 2016	0.275	Oct 2017	0.000		0.275	Continuing	Continuing	-
SIREN	C/CPFF	Northrop Grumman : Rowling Meadows, IL	-	3.610	Oct 2015	1.000	Oct 2016	0.000		0.000		0.000	0.000	4.610	-
VAMP - EO X DWARVES	C/CPFF	Etegent : Cincinnati, OH	-	0.294	Oct 2015	1.587	Dec 2016	2.455	Nov 2017	0.000		2.455	Continuing	Continuing	-
3-D Ladar	C/CPFF	Northrop Grumman : Rolling Meadows, IL	-	2.100	Aug 2016	2.200	Nov 2016	1.550	Dec 2017	0.000		1.550	Continuing	Continuing	-
Hydra Vision, Target Recognition & Tracking Technology/CASE	MIPR	Sandia : Albuquerque, NM	-	0.600	Jan 2016	0.250	Dec 2016	0.250	Mar 2018	0.000		0.250	Continuing	Continuing	-
Studies - ECID	MIPR	Booz Allen Hamilton : McLean, VA	-	0.688	Oct 2015	0.800	Dec 2016	1.000	Dec 2017	0.000		1.000	Continuing	Continuing	-
Studies - Decision making for an Integrated CID Environment (DICE) - SBIR Phase III	C/CPFF	Frontier Technologies, Inc : Dayton, OH	-	0.200	Sep 2016	0.200	Oct 2016	0.200	Jan 2018	0.000		0.200	Continuing	Continuing	-
Hydra Vision - Air to Ground	C/CPFF	BAE Systems : Burlington, MA	-	0.600	Oct 2015	0.000		0.000		0.000		0.000	0.000	0.600	-
Hydra Vision- Ops Demo	C/CPFF	General Atomics : San Diego, CA	-	1.300	Oct 2015	0.500	Dec 2016	0.000		0.000		0.000	0.000	1.800	-
Hydra Vision - Compact AiTR and Sustainable Environment Reliable AiTR Features	C/CPFF	Matrix Research & Engineering : Dayton, OH	-	0.125	Dec 2015	0.250	Oct 2016	0.250	Oct 2017	0.000		0.250	Continuing	Continuing	-
Hydra Vision - Compact AiTR and Sustainable Environment Analysis - B	C/CPFF	BAE Systems : Burlington, MA	-	0.150	Nov 2015	0.250	Oct 2016	0.250	Oct 2017	0.000		0.250	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>						Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hydra Vision - Compact AiTR and Sustainable Environment Analysis - L	C/CPFF	Leidos : Mclean, VA	-	1.338	Oct 2015	1.870	Oct 2016	1.495	Nov 2017	0.000		1.495	Continuing	Continuing	-
Hydra Vision - Compact AiTR and Sustainable Environment Analysis - R	C/CPFF	Raytheon : El Segundo, CA	-	1.319	Dec 2015	1.870	Dec 2016	1.495	Nov 2017	0.000		1.495	Continuing	Continuing	-
Passive Radar Identification Environment (PRIDE) - L	C/CPFF	Leidos : Mclean, VA	-	0.506	Sep 2016	1.894	Dec 2016	2.891	Jan 2018	0.000		2.891	Continuing	Continuing	-
Passive Radar Identification Environment (PRIDE) -STR	C/CPFF	Systems and Technology Research : Woburn, MA	-	0.506	Sep 2016	1.639	Dec 2016	2.381	Jan 2018	0.000		2.381	Continuing	Continuing	-
Passive Radar Identification Environment (PRIDE) - IAI	C/CPFF	Integrated Applications Inc : Chantilly, VA	-	0.506	Sep 2016	1.621	Dec 2016	2.700	Jan 2018	0.000		2.700	Continuing	Continuing	-
Radio Identification (RID)	C/TBD	TBD : TBD	-	0.000		1.200	Aug 2017	2.200	Feb 2018	0.000		2.200	Continuing	Continuing	-
Air Target IR Discrimination (ATID)	C/CPFF	TBD : TBD	-	0.000		0.000		1.200	Aug 2018	0.000		1.200	Continuing	Continuing	-
Subtotal			-	18.269		21.381		21.617		0.000		21.617	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering Support	MIPR	MITRE : Rome, NY	-	0.025	Mar 2016	0.025	Mar 2017	0.025	Mar 2018	0.000		0.025	Continuing	Continuing	-
Subtotal			-	0.025		0.025		0.025		0.000		0.025	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>				Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>					

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Air-to-Air Hydra Vision Flight Test	MIPR	46th Test Wing : Eglin AFB, FL	-	0.350	Jan 2016	0.500	Feb 2016	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	0.350		0.500		0.000		0.000		0.000	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AFRL PMA	MIPR	GSA : Denver, CO	-	0.550	Oct 2015	0.600	Nov 2016	0.800	Mar 2018	0.000		0.800	Continuing	Continuing	-
Subtotal			-	0.550		0.600		0.800		0.000		0.800	-	-	-

			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	19.194		22.506		22.442		0.000		22.442	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity

3600 / 4

R-1 Program Element (Number/Name)

PE 0603742F / Combat Identification
Technology

Project (Number/Name)

642597 / Noncooperative Identification
Subsystems

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LASER VISION - Siren																												
LASER VISION - Siren Wright Patterson AFRL Tower Test (May 2017)																												
LASER VISION - Siren F-16 AATC POD Demo (Sep 2017)																												
LASER VISION - VAMP																												
LASER VISION - VAMP Lab Demo																												
LASER VISION - VAMP POD Demo																												
LASER VISION - 3D Ladar (3DTO)																												
LASER VISION - 3D Ladar (3DTO) Lab Demo																												
LASER VISION - 3D Ladar (3DTO) POD Demo																												
Hydra Vision - Air to Air (2 & 3 Features) (TRL-6 begins 3Qt FY18)																												
Hydra Vision - Air to Air 2 Feature RT Demo																												
Hydra Vision - Air to Air 3 Feature RT Demo																												
Hydra Vision - Increment 1 - Air-to-Ground																												
Hydra Vision - Increment 1 - Air-To-Ground OPS Demo (Jun 2017)																												
Compact AiTR - Compact Feature AiTR																												
Compact AiTR - Compact Feature SAR AiTR Lab Demo (Mar 2017)																												
Compact AiTR - Compact Feature LiDAR AiTR Lab Demo (May 2017)																												
Compact AiTR- Compact Feature AiTR - Flight Demo (Jul 2017)																												
Passive RF ID (PRIDE)																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force														Date: May 2017															
Appropriation/Budget Activity 3600 / 4										R-1 Program Element (Number/Name) PE 0603742F / Combat Identification Technology										Project (Number/Name) 642597 / Noncooperative Identification Subsystems									
	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Passive RF ID (PRIDE) - Lab Demo (Jun 20)																													
Radio ID (RID)																													
Radio ID - Lab Demo #1 (Jul 2019)																													
Radio ID - Lab Demo #2 (Jan 2021)																													
Radio ID - Flight Demo (Aug 2022)																													
Studies																													
Enhanced CID (ECID)																													

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
LASER VISION - Siren	1	2016	4	2018
LASER VISION - Siren Wright Patterson AFRL Tower Test (May 2017)	3	2017	3	2017
LASER VISION - Siren F-16 AATC POD Demo (Sep 2017)	4	2017	4	2017
LASER VISION - VAMP	1	2016	1	2022
LASER VISION - VAMP Lab Demo	4	2019	4	2019
LASER VISION - VAMP POD Demo	3	2021	3	2021
LASER VISION - 3D Ladar (3DTO)	1	2016	1	2019
LASER VISION - 3D Ladar (3DTO) Lab Demo	2	2018	2	2018
LASER VISION - 3D Ladar (3DTO) POD Demo	4	2018	4	2018
Hydra Vision - Air to Air (2 & 3 Features) (TRL-6 begins 3Qt FY18)	1	2016	2	2021
Hydra Vision - Air to Air 2 Feature RT Demo	4	2016	4	2016
Hydra Vision - Air to Air 3 Feature RT Demo	4	2020	4	2020
Hydra Vision - Increment 1 - Air-to-Ground	1	2016	2	2017
Hydra Vision - Increment 1 - Air-To-Ground OPS Demo (Jun 2017)	3	2017	3	2017
Compact AiTR - Compact Feature AiTR	1	2016	4	2020
Compact AiTR - Compact Feature SAR AiTR Lab Demo (Mar 2017)	2	2017	2	2017
Compact AiTR - Compact Feature LiDAR AiTR Lab Demo (May 2017)	3	2018	3	2018
Compact AiTR- Compact Feature AiTR - Flight Demo (Jul 2017)	4	2018	4	2018
Passive RF ID (PRIDE)	4	2016	2	2022
Passive RF ID (PRIDE) - Lab Demo (Jun 20)	3	2020	3	2020
Radio ID (RID)	2	2017	4	2022
Radio ID - Lab Demo #1 (Jul 2019)	4	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017	
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / Combat Identification Technology		Project (Number/Name) 642597 / Noncooperative Identification Subsystems	
	Start		End	
Events	Quarter	Year	Quarter	Year
Radio ID - Lab Demo #2 (Jan 2021)	2	2021	2	2021
Radio ID - Flight Demo (Aug 2022)	3	2022	3	2022
Studies	1	2016	4	2022
Enhanced CID (ECID)	1	2016	1	2020

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
642599: <i>Cooperative Identification Techniques</i>	-	1.831	1.912	1.955	0.000	1.955	1.986	2.023	2.058	2.100	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Air Traffic Control and Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS) Program Office	1.831	1.912	1.955	0.000	1.955
Description: Fund AIMS Program Office test engineers. The DoD International AIMS PO has system level interoperability testing and certification responsibilities for the present Mark XII system, development and integration of Mark XIIA (Mode 5) and transition to Mark XIIA Mode S (ADS-B) systems.					
FY 2016 Accomplishments: - Continued to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment.					
FY 2017 Plans: - Continue to fund AIMS for interoperability IFF testing (civil and military), FAA liaison, to support of Mode 4 / Mode 5 equipment, updating and developing IFF standards.					
FY 2018 Base Plans: - Will continue to fund AIMS for interoperability IFF testing (civil and military), FAA liaison, to support of Mode 4 / Mode 5 equipment, updating and developing IFF standards.					
FY 2018 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017	
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Accomplishments/Planned Programs Subtotals	1.831	1.912	1.955	0.000	1.955

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

Remarks

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

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0603790F I NATO Research and Development							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	4.566	4.333	3.851	0.000	3.851	3.934	4.025	4.092	4.177	Continuing	Continuing
64NATO: <i>Nato Coop R&D</i>	-	4.566	4.333	3.851	0.000	3.851	3.934	4.025	4.092	4.177	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

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

A. Mission Description and Budget Item Justification

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

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
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 0603790F I NATO Research and Development			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	4.736	4.333	3.840	0.000	3.840
Current President's Budget	4.566	4.333	3.851	0.000	3.851
Total Adjustments	-0.170	0.000	0.011	0.000	0.011
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.170	0.000			
• Other Adjustments	0.000	0.000	0.011	0.000	0.011
C. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2016	FY 2017	FY 2018		
Title: International Cooperative Research and Development	4.566	4.333	3.851		
Description: Supports bi- and multi-lateral international agreements that meet USAF RDT&E objectives and goals. Each of the cooperative projects that receive funding must meet one or more of the following requirements: enhance warfighter capabilities and coalition interoperability; accelerate the availability of defense systems; strengthen and reinforce strategic partnerships; gain access to the best defense technologies, capabilities and techniques; build relationships and influence with allies; and/or eliminate duplication of R&D efforts.					
FY 2016 Accomplishments: 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, Advanced Rotary Engine Design for Tactical Unmanned Aerial Vehicles, Time Critical Targeting in Urban Environments, Environmental Health and Safety of Advanced Nanomaterials, Panchromatic Materials for Optical Sensor Protection, Resolving High Temperature/Pressure and Unsteady Flow Measurements for Advanced Cycle Diagnostics, Flight Information Exchange Model for Air Force Mission Planning, Tessellated Nanosatellite-enhanced Communications Feasibility, Coalition Performance Evaluation Tracking System, Real-time Coalition Performance Assessment; and others					
FY 2017 Plans: FY17 cooperative projects involve RDT&E efforts in human performance, information systems, aerospace systems, munitions, materials and manufacturing, sensors, space situational awareness, missile warning, military satellite communications, global					

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
positioning systems, responsive space capabilities, cyber network defense and information assurance, and space vehicles. These projects include but are not limited to Pre-cooler Heat Exchanger for High Mach Air-Breathing Propulsion (HEX), Space-Based Surveillance by Hypertemporal Imaging (HTI) Sensors, Small Scalable Kinetic Weapon (SSKW) Phase 2, Life Management of Notch Locations in Aeroengine Components, Additive manufacturing and modeling of thermosetting polymer composites, Selective Amplification of Low Power mmW Signals (SALSA), Sensing and Integrated Navigation with GNSS and Augmentations (SINGA), Aircraft Damage Effects Assessment (ADEA), Protected Tactical Service Field Demo (PTSFD, Advanced Methods for Space Object Understanding, Mid-Latitude Plasma Density Irregularities, Biosignatures for Automated Human Detection and Characterization, Nano-Thermite Reactive Liner Composite, and others.				
FY 2018 Plans: FY18 cooperative projects involve RDT&E efforts in human performance, information systems, aerospace systems, munitions, materials and manufacturing, sensors, space situational awareness, missile warning, military satellite communications, global positioning systems, responsive space capabilities, cyber network defense and information assurance, and space vehicles. These projects include but are not limited to Monitoring For Advanced Geolocation Processing And Interference Exploitation (MAGPIE), Next Generation Case Technology, Machine Translation for Coalition Forces, Low Pressure Turbine (LPT) Performance Improvement, Performance in Extreme Loading and Impact Conditions for Affordable Next-generation Steels, Enabling Novel Human Assessment and Neurophysiological Characterization of Effectiveness (ENHANCE), Graphene on 3C-SiC on Si for low-loss nanophotonics, SATNAV Augmentation to Improve Navigation Technology (SAINT), Warfighter Benefits of UK Prototype Laser Eye Protection (LEP) Devices, Ceramic Matrix Composites (CMCs) for Hypersonic Hot Structures, Minimal Invasive Repair of Composite Structures, Computational Multi-Scale Modeling of Explosives, Space Environment Impacts, Medium Earth Orbit (MEO) Hosted Energetic Charged Particle (ECP) Constellation, and Mission Execution Tracking and Re-Planning Assistant				
Accomplishments/Planned Programs Subtotals		4.566	4.333	3.851
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				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603790F / <i>NATO Research and Development</i>	
<p>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.</p> <p><u>F. Performance Metrics</u></p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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 0603830F I Space Security and Defense Program							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	30.771	32.399	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
64A025: Space Protection Program	-	30.771	32.399	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0603830F, Space Security and Defense Program efforts were transferred to PE 1206730F, Space Security and Defense Program, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206730F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	30.771	32.399	31.481	0.000	31.481
Current President's Budget	30.771	32.399	0.000	0.000	0.000
Total Adjustments	0.000	0.000	-31.481	0.000	-31.481
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-31.481	0.000	-31.481

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603851F I Intercontinental Ballistic Missile - Dem/Val							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	34.765	108.663	10.736	0.000	10.736	42.173	44.442	66.077	67.431	Continuing	Continuing
641020: ICBM Guidance Applications	-	8.524	25.226	0.502	0.000	0.502	7.717	10.261	12.984	13.250	Continuing	Continuing
641021: ICBM Propulsion Applications	-	10.057	15.437	1.007	0.000	1.007	9.775	6.901	7.020	7.163	Continuing	Continuing
641022: ICBM Reentry Vehicle Applications	-	13.457	36.840	7.085	0.000	7.085	18.055	19.585	19.925	20.333	Continuing	Continuing
641024: ICBM Command & Control (C2) Applications	-	0.971	26.362	1.004	0.000	1.004	3.693	3.741	22.126	22.580	Continuing	Continuing
644209: Long Range Planning (LRP)	-	1.756	4.798	1.138	0.000	1.138	2.933	3.954	4.022	4.105	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/technology application on legacy Intercontinental Ballistic Missile (ICBM), future strategic systems/capability beyond the Ground Based Strategic Deterrent (GBSD) baseline, and other common strategic deterrent mission areas to develop enhanced multi-use capabilities. The ICBM Dem/Val program will provide technology maturation and risk reduction activities to support Minuteman (MM) III sustainment, MM III to GBSD transition, and future ICBM systems (non-GBSD) development. Efforts will identify methods to improve system performance, mitigate evolving threats, reduce life cycle costs, improve nuclear safety and surety, and ensure both viability and endurability of strategic missile systems. This program also includes any needed nuclear surety and certification and system vulnerability assessments.

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
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 0603851F I Intercontinental Ballistic Missile - Dem/Val			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	39.765	108.663	72.604	0.000	72.604
Current President's Budget	34.765	108.663	10.736	0.000	10.736
Total Adjustments	-5.000	0.000	-61.868	0.000	-61.868
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-5.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-61.868	0.000	-61.868
Change Summary Explanation					
FY 2016 funding reflects a decrease of \$5.000M to other Air Force priorities.					
FY 2018 funding reflects a realignment of \$61.868M to higher Air Force priorities.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / Intercontinental Ballistic Missile - Dem/Val				Project (Number/Name) 641020 / ICBM Guidance Applications			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
641020: ICBM Guidance Applications	-	8.524	25.226	0.502	0.000	0.502	7.717	10.261	12.984	13.250	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. The program studies and assesses both legacy and future (non-GBSD baseline) ICBM Guidance System technology applications. 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. This program also includes any needed surety and certification and system vulnerability assessments.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Guidance Applications Program	8.524	25.226	0.502	0.000	0.502
Description: Develop and mature, in coordination with the Navy, advanced technologies and concepts to support future requirements.					
FY 2016 Accomplishments: - Continued efforts to evaluate guidance technologies and assess technical/manufacturing capabilities for a future ICBM system -- This included progress testing for a non-destructive capability that augments flight test. - Continued to assess Strategic Resonating Beam Accelerometers (SRBAs) as a potential future ICBM system instrument. - Continued to assess various future ICBM System sensor candidates, such as, Hemispheric Resonating Gyroscopes, Strategic Fiber-Optic Gyroscopes, and Alternate-Pendulous Integrating Gyroscopic Accelerometer (Alt-PIGA).					
FY 2017 Plans: - Continue evaluation and testing of strategic guidance commodities for use in a future strategic guidance system, and leveraging from the Navy Trident Life Extension Program.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017							
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total					
<p>- Develop risk reduction initiatives associated with micro-electronic/electronic component technologies and commodities for future ICBM applications and/or obsolescence occurrences. Further progress testing for a non-destructive capability that augments flight test.</p> <p>- Independently validate and verify military parts suppliers (especially those with a single supplier) for their adherence to strategic radiation and other missile environments that are historically challenging.</p> <p>- Assess market for alternate vendors and electronic wafer technologies for fabrication of radiation hardened integrated circuits. Effort will include the military supplier base for products such as Metal-Oxide-semiconductor Field-effect Transistor (MOSFETs), Application Specific Integrated Circuits (ASICs), and memory.</p> <p>- Test analysis effort designed to augment flight test programs for performance assessment and anomaly investigation by conducting non-destructive, operationally dynamic testing, including a full range of critical missile environments. Establish a Strategic Guidance Hardware capability</p> <p>FY 2018 Base Plans:</p> <p>- Continue risk reduction, evaluation and testing of strategic and space guidance-related commodities within the market for potential use in a future strategic guidance system, and continue to leverage from the Navy Trident Life Extension Program.</p> <p>- Continue risk reduction initiatives involving component technologies and obsolescence for legacy and/or future ICBM applications.</p> <p>- Establish a Strategic Guidance Hardware independent validation & verification capability, perform guidance analysis, and Guidance technology studies.</p> <p>FY 2018 OCO Plans:</p> <p>N/A</p>											
Accomplishments/Planned Programs Subtotals		8.524	25.226	0.502	0.000	0.502					
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA04: PE 0605230F: GBSD	64.966	113.919	215.721	0.000	215.721	347.638	574.661	1,539.050	2,557.439	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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>
D. Acquisition Strategy Accomplish studies, analyses, concept development and engineering; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved.		
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / Intercontinental Ballistic Missile - Dem/Val				Project (Number/Name) 641021 / ICBM Propulsion Applications			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
641021: ICBM Propulsion Applications	-	10.057	15.437	1.007	0.000	1.007	9.775	6.901	7.020	7.163	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Propulsion Applications Program (PAP) develops and assesses strategic propulsion system technology applications for both legacy and future (non-GBSD baseline) systems 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, and 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, safety, certification and system vulnerability assessments.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Propulsion Applications Program	10.057	15.437	1.007	-	1.007
Description: Assess, develop, evaluate, and demonstrate common solid and liquid propulsion technology and manufacturing leading up to a static fire and test of strategic propulsion systems; develop capability and explore improvements to current and future propulsion systems; and support the research and development industrial base and critical infrastructure.					
FY 2016 Accomplishments: - Continued assessment and demonstration of Post Boost, Thrust Vector Control and other advanced propulsion technologies. - Performed Medium Class Stage III Sea-level Static Fire Test to provide valid technological candidates for future Solid Rocket Motor (SRM) requirements.					
FY 2017 Plans: - Initiate trade studies and risk reduction of components and subsystem propulsion technologies for future ICBM program insertion. - Continue assessment and demonstration of existing Post Boost, Thrust Vector Control, and other advanced propulsion technology programs.					
FY 2018 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force							Date: May 2017				
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Initiate Minuteman III mechanistic aging study, propulsion modeling & simulation development, and propulsion technology studies and analysis.											
Accomplishments/Planned Programs Subtotals							10.057	15.437	1.007	-	1.007
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA04: PE 0605230F: <i>GBSD</i>	64.966	113.919	215.721	0.000	215.721	347.638	574.661	1,539.050	2,557.439	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Studies, analyses, limited engineering, hardware development and/or testing will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / Intercontinental Ballistic Missile - Dem/Val				Project (Number/Name) 641022 / ICBM Reentry Vehicle Applications			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
641022: ICBM Reentry Vehicle Applications	-	13.457	36.840	7.085	0.000	7.085	18.055	19.585	19.925	20.333	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Reentry Vehicle Applications Program (RVAP) ensures the ICBM force is equipped with the safest, most reliable Reentry Systems, and explores options for common, multi-mission capabilities. The program enables a responsive engineering infrastructure to support Reentry Systems beyond their original design life by addressing system issues and ensuring the availability of long-lead components and materials while identifying life cycle cost reduction methods. In addition, the program develops and tests advanced Reentry System technologies to meet future requirements. This includes studying and assessing Mk12A, Mk21, Mk21A and future ICBM Reentry System technology applications. The program leverages investments by the Science & Technology community and Navy reentry systems applications program. Testing may occur on a space available basis on Air Force and Navy Force Development Evaluation (FDE) flights.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Reentry Vehicle Applications Program	13.457	36.840	7.085	-	7.085
Description: Mature, evaluate, and test reentry system materials and technologies for use in current and future strategic applications.					
FY 2016 Accomplishments: - Continued to mature and evaluate Countermeasure Studies, Multiple Independently Targetable Reentry Vehicle (MIRV)/Shroud and Thermal Protection System(TPS) Material Development. - Developed TPS material. - Initiated tradespace studies between all reentry system elements and their effects on a future integrated weapon system.					
FY 2017 Plans: - Complete Countermeasure Studies I & II, and MIRV/Shroud. - Initiate studies to mature and evaluate future countermeasures, heatshield development, carbon phenolic replacements, modeling and simulation programs, manufacturing capabilities, reentry system technologies, threat development analysis and countermeasure technology strategies, and inform future weapon development. - Conduct materials development, prototyping, and testing. - Continue to determine tradespace between all reentry system elements and their effects on the integrated weapon system.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>				Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>			

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue TPS testing and studies. <i>FY 2018 Base Plans:</i> - Continue risk reduction studies to mature and evaluate future heatshield development, carbon phenolic replacements, modeling and simulation programs, manufacturing capabilities, reentry system technologies, threat development analysis and countermeasure technologies/strategies, and inform future RV capabilities. - Continue TPS testing and studies. - Conduct materials development, prototyping, and testing.					
Accomplishments/Planned Programs Subtotals	13.457	36.840	7.085	-	7.085

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA04: PE 0605230F: <i>GBSD</i>	64.966	113.919	215.721	0.000	215.721	347.638	574.661	1,539.050	2,557.439	Continuing	Continuing

Remarks

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

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / Intercontinental Ballistic Missile - Dem/Val				Project (Number/Name) 641024 / ICBM Command & Control (C2) Applications			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
641024: ICBM Command & Control (C2) Applications	-	0.971	26.362	1.004	0.000	1.004	3.693	3.741	22.126	22.580	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 studies and assesses both legacy and future (non-GBSD baseline) C2 System technology applications. 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-heart 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Command and Control Application Program	0.971	26.362	1.004	-	1.004
Description: Examine and develop concepts for transforming ICBM WSC2 to meet current and future requirements.					
FY 2016 Accomplishments: - Continued studies to identify, assess, and preserve unique strategic command and control skills and technologies to meet current and future system requirements. - Continued development of WSC2 laboratory to facilitate development and testing of future WSC2 architectures.					
FY 2017 Plans: - Support ongoing development efforts for the WSC2 laboratory to facilitate development and testing of potential future WSC2 architectures, to include software development, cyber security testing, and preparation for Nuclear Surety Certification activities. - Continue studies to identify, assess, and preserve unique strategic command and control skills and technologies to meet current and future system requirements.					
FY 2018 Base Plans:					

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

B. Accomplishments/Planned Programs (\$ in Millions)					FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue risk reduction studies to identify, assess, and preserve unique strategic command and control skills and technologies to meet current and future system requirements.									
Accomplishments/Planned Programs Subtotals					0.971	26.362	1.004	-	1.004

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0605230F: <i>GBSD</i>	64.966	113.919	215.721	0.000	215.721	347.638	574.661	1,539.050	2,557.439	Continuing	Continuing

Remarks

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

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / Intercontinental Ballistic Missile - Dem/Val				Project (Number/Name) 644209 / Long Range Planning (LRP)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
644209: Long Range Planning (LRP)	-	1.756	4.798	1.138	0.000	1.138	2.933	3.954	4.022	4.105	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Long Range Planning (LRP) effort identifies and analyzes potential modifications to current and future Intercontinental Ballistic Missile (ICBM) Weapon Systems required to meet objectives relative to long-term sustainment, technology insertion, battle space awareness, employment, force structure and future systems. The studies will focus on system supportability, operability, reliability, innovation and maintainability. Options/concepts generated by these studies are evaluated for feasibility, system impacts, and cost. The LRP also lays the groundwork for analysis supporting future weapon systems development and deployment. Pre-milestone activities may be conducted for current or future ICBM weapon systems to include entry criteria for milestone activities.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Long Range Planning								1.756	4.798	1.138	-	1.138
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 2016 Accomplishments:												
- Completed Water Intrusion Study.												
- Initiated a LF deep dive analysis and assessment to inform future Launch Control Center (LCC) and Missile Alert Facility (MAF) requirements.												
- Initiated effort to examine and test potential Launch Systems (LS) security enhancements.												
FY 2017 Plans:												
- Continue LF deep dive analysis and assessment to inform future LCC and MAF requirements. Initiate analysis on LF/LC technical drawings and understand the MMIII and GBSD Technical Baseline.												
- Continue examining and testing potential for LS security.												
- Continue Long Range Planning studies to assess current and future ICBM support systems.												
FY 2018 Base Plans:												
- Continue analysis on LF/LC technical drawings and understand the MMIII and GBSD Technical Baseline.												
- Continue Long Range Planning studies to assess ongoing MMIII Sustainment and GBSD transition.												
Accomplishments/Planned Programs Subtotals								1.756	4.798	1.138	-	1.138

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
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)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0605230F: <i>GBSD</i>	64.966	113.919	215.721	0.000	215.721	347.638	574.661	1,539.050	2,557.439	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Analysis will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity					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 0603859F I <i>Pollution Prevention - Dem/Val</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	0.002	0.000	0.002	0.002	0.000	0.000	0.000	Continuing	Continuing
644852: <i>Pollution Prevention</i>	-	0.000	0.000	0.002	0.000	0.002	0.002	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	0.002	0.000	0.002
Total Adjustments	0.000	0.000	0.002	0.000	0.002
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.002	0.000	0.002

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: N/A	0.000	0.000	0.002	0.000	0.002
Description: N/A					

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 4: <i>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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: N/A						
FY 2017 Plans: N/A						
FY 2018 Base Plans: N/A						
FY 2018 OCO Plans: N/A						
Accomplishments/Planned Programs Subtotals		0.000	0.000	0.002	0.000	0.002
D. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
E. Acquisition Strategy N/A						
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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 0604015F I Long Range Strike - Bomber							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	710.390	1,358.309	2,003.580	0.000	2,003.580	2,662.022	2,981.507	3,028.906	2,859.752	Continuing	Continuing
643308: Long Range Strike Bomber	-	710.390	1,358.309	2,003.580	0.000	2,003.580	2,662.022	2,981.507	3,028.906	2,859.752	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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	736.228	1,358.309	2,167.522	0.000	2,167.522
Current President's Budget	710.390	1,358.309	2,003.580	0.000	2,003.580
Total Adjustments	-25.838	0.000	-163.942	0.000	-163.942
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-25.838	0.000			
• Other Adjustments	0.000	0.000	-163.942	0.000	-163.942

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 2016	FY 2017	FY 2018
Title: Long Range Strike Bomber	710.390	1,358.309	2,003.580
Description: Long Range Strike Bomber			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 0604015F / <i>Long Range Strike - Bomber</i>						

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p><i>FY 2016 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 2017 Plans:</i> This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.</p> <p><i>FY 2018 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	710.390	1,358.309	2,003.580

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• MILCON: PE 0604015: <i>Long Range Strike Bomber</i>	77.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000
Remarks											
E. Acquisition Strategy This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
3600 / 4						PE 0604015F / Long Range Strike - Bomber				643308 / Long Range Strike Bomber					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Actual breakout provided in Special Access Program Annual Report to Congress	Various	N/A : TBD	-	710.390		1,358.309		2,003.580		0.000		2,003.580	Continuing	Continuing	-
Subtotal			-	710.390		1,358.309		2,003.580		0.000		2,003.580	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	710.390		1,358.309		2,003.580		0.000		2,003.580	-	-	-
Remarks															
This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity
3600 / 4

R-1 Program Element (Number/Name)
PE 0604015F / Long Range Strike - Bomber

Project (Number/Name)
643308 / Long Range Strike Bomber

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Actual schedule provided in Special Access Program Annual Report to Congress																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604015F / Long Range Strike - Bomber	Project (Number/Name) 643308 / Long Range Strike Bomber

Schedule Details

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

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

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 0604201F / <i>Integrated Avionics Planning and Development</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	65.458	0.000	65.458	15.006	0.000	0.000	0.000	Continuing	Continuing
641029: <i>GPS Receiver Development</i>	-	0.000	0.000	5.014	0.000	5.014	0.000	0.000	0.000	0.000	Continuing	Continuing
641030: <i>GPS Receiver Development</i>	-	0.000	0.000	60.444	0.000	60.444	15.006	0.000	0.000	0.000	Continuing	Continuing

Note

In FY2018, specific efforts initiated under PE 0305164F, NAVSTAR Global Positioning System (User Equipment) (Space), Project 643833, Military Global Positioning System User Equipment, were transferred to PE 0604201F, Integrated Avionics Planning & Development, Project 641029, Aircraft-Store development, to realign resources with the execution responsibilities supporting aircraft weapon system platforms.

In FY2018, M-Code efforts initiated under PE 0207325F (Joint Air-Surface Standoff Missile-Extended Range), PE 0604329F (Small Diameter Bomb II), PE 0604270F (Advanced IR Counter Measures), 0604327F (Hard and Deeply Buried Targets System) and PE 0604618F (Joint Direct Attack Munition) were transferred to PE 0604201F, Integrated Avionics Planning & Development, Project 641030, Munitions Receiver Development for transparency to stakeholders and to realign resources with the organization executing the efforts.

A. Mission Description and Budget Item Justification

PE 0604201F, Project 641029 conducts navigation-aircraft interface standard development to include the Universal Navigation Interface (UNI). UNI develops, enhances, and implements standardized interfaces in current/future aircraft and mission planning to support integration of EGI receivers independent of Operational Flight Program (OFP) cycles. Standardization of navigation-aircraft interface enables a more affordable approach and faster upgrade capabilities to an ever changing threat to navigation accuracy.

PE 0604201F, Project 641030 covers the development, integration and testing of Enhanced Anti-Jam (EAJ) Military Code (M-Code) GPS receivers for AF and joint weapon systems. This includes updates to weapon mission planning software to support new M-Code and EAJ receiver development. These acquisitions will enable the Air Force to increase its operational PNT resiliency while satisfying the DoD and civil mandates. Fielding of EAJ M-Code weapons requires the development, integration and testing of M-Code receivers across the AFPEO Weapons Portfolio.

This program is in Budget Activity 4, Demonstration and Validation, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year. Production funding for modernized airborne receivers is the responsibility of the using platforms and is not covered in this PE.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604201F / <i>Integrated Avionics Planning and Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	65.458	0.000	65.458
Total Adjustments	0.000	0.000	65.458	0.000	65.458
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	65.458	0.000	65.458

Change Summary Explanation

FY2018 increase a result of transparency realignment to stand alone PE. \$14.856M ZBT from PE 0604618F, BPAC 653891, PEC JDAM M-Code Integration.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604201F / Integrated Avionics Planning and Development				Project (Number/Name) 641029 / GPS Receiver Development			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
641029: GPS Receiver Development	-	0.000	0.000	5.014	0.000	5.014	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
In FY18, efforts initiated under PE 0305164F, NAVSTAR Global Positioning System (User Equipment) (Space), Project 643833, Military Global Positioning System User Equipment were transferred to PE 0604201F, Integrated Avionics Planning & Development, Project 651029, Aircraft-Store Development for transparency and to realign resources with the execution responsibilities supporting aircraft weapon system platforms.												
A. Mission Description and Budget Item Justification												
PE 0604201, Project 641029 conducts navigation-aircraft interface standard development to include the Universal Navigation Interface (UNI). The Universal Navigation Interface project develops, enhances, and implements standardized interfaces in current/future aircraft and mission planning to support integration of EGI receivers independent of Operational Flight Program (OFP) cycles. Standardization of navigation-aircraft interface enables a more affordable approach and faster upgrade capabilities to an ever changing threat to navigation accuracy.												
This program is in Budget Activity 4, Demonstration and Validation, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Title: UNI										0.000	0.000	5.014
Description: Conducts navigation-aircraft interface standard development to include the Universal Navigation Interface (UNI). Develops standardized software interfaces in aircraft and mission planning to support integration of EGI receiver boxes capable of receiving Modernized GPS signals (M-code).												
FY 2016 Accomplishments: N/A												
FY 2017 Plans: N/A												
FY 2018 Plans: Conduct studies and risk reduction activities to define standard interfaces across multiple platforms. Award development contract.												
Accomplishments/Planned Programs Subtotals										0.000	0.000	5.014

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604201F / <i>Integrated Avionics Planning and Development</i>	Project (Number/Name) 641029 / <i>GPS Receiver Development</i>	

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA05: PE0305164F: <i>NAVSTAR Global Positioning System User Equipment</i>	0.000	36.912	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	36.912

Remarks

In FY2018, PE 0305164F, NAVSTAR Global Positioning System (User Equipment) (Space), Project 643833, Military Global Positioning System User Equipment partial efforts were transferred to PE 0604201F, Integrated Avionics Planning & Development, Project 641029, STORES – Aircraft Interface for transparency and to realign resources with execution responsibilities that support various aircraft weapon system platforms.

D. Acquisition Strategy

Award delivery order on existing contract with scope to accomplish risk reduction and complete initial Interface Control Document.

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604201F / Integrated Avionics Planning and Development				Project (Number/Name) 641030 / GPS Receiver Development			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
641030: GPS Receiver Development	-	0.000	0.000	60.444	0.000	60.444	15.006	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
In FY2018, M-Code efforts initiated under PE 0207325F (Joint Air-Surface Standoff Missile-Extended Range), PE 0604329F (Small Diameter Bomb II), PE 0604270F (Advanced IR Counter Measures), 0604327F (Hard and Deeply Buried Targets System) and PE 0604618F (Joint Direct Attack Munition) were transferred to PE 0604201F, Integrated Avionics Planning & Development, Project 641030, Munitions Receiver Development for transparency to stakeholders and to realign resources with the organization executing the efforts.												
A. Mission Description and Budget Item Justification												
This munitions receiver development project includes development of a GPS military code (M-code) receiver with enhanced anti-jam (EAJ) and analysis efforts. M-code and Enhanced Anti-Jam (EAJ) develops and integrates advanced precision, navigation, and timing (PNT) capabilities to provide the capability to operate in adversarial anti-access/area denial (A2/AD). M-Code and EAJ also provides increased accuracy, better signal acquisition, and advanced security.												
Current GPS guided weapons require M-code with enhanced anti-jam (EAJ) receivers in order to operate in an A2/AD jamming environments. M-code with EAJ assures continued weapon system precision and lethality.												
Fielding EAJ M-Code weapons requires the development, integration, testing and mission planning of M-Code receivers across the Weapons Portfolio. This will include all systems, subsystems, and software associated with implementation of M-code.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Title: M-Code EAJ										-	-	60.444
Description: M-Code/EAJ provides an enhanced anti-jam capability. M-Code and EAJ provides the capability to operate in increasing adversarial A2/AD jamming environment. M-Code/EAJ also provides increased accuracy, better signal acquisition, and advanced security.												
FY 2018 Plans: Develop M-code/EAJ receivers for implementation across the AFPEO weapons portfolio.												
Accomplishments/Planned Programs Subtotals										-	-	60.444

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017			
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0604201F / Integrated Avionics Planning and Development				Project (Number/Name) 641030 / GPS Receiver Development				
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA07: PE 0207325F: BPAC 67...: JASSAM-ER	0.000	12.200	1.600	0.000	1.600	32.600	1.400	14.000	12.000	0.00	73.800	
• RDTE: BA05: PE 0604329F : BPAC 6...: SDB Increment II	0.000	23.700	17.800	0.000	17.800	42.200	12.100	11.000	21.000	0.00	127.800	
• RDTE: BA05: PE 0604270F: BPAC 65...: Adv Infrared Counter Measures	0.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	10.000	
• RDTE: BA04: PE 0604327F: BPAC 64...: Direct Strike Penetrators	0.000	59.400	0.000	0.000	0.000	33.500	2.200	0.000	0.000	0.00	95.100	
• RDTE: BA05: PE 0604618F: BPAC 65...: JDAM Development	0.000	9.901	0.000	0.000	0.000	15.906	0.000	8.001	0.000	0.00	33.808	
Remarks												
D. Acquisition Strategy												
M-code/EAJ effort will be under multiple contract awards.												
E. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0604201F / <i>Integrated Avionics Planning and Development</i>						Project (Number/Name) 641030 / <i>GPS Receiver Development</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
M-code Receiver Development	Various	Various : TBD	-	0.000		0.000		40.000	Mar 2018	0.000		40.000	Continuing	Continuing	-
Subtotal			-	0.000		0.000		40.000		0.000		40.000	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
M-Code Receiver Development Support	Various	TBD : TBD	-	0.000		0.000		1.000	Mar 2018	0.000		1.000	Continuing	Continuing	-
Subtotal			-	0.000		0.000		1.000		0.000		1.000	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
M-Code Receiver Development Test and Evaluation	RO	Various : TBD	-	0.000		0.000		17.444	Oct 2017	0.000		17.444	Continuing	Continuing	-
Subtotal			-	0.000		0.000		17.444		0.000		17.444	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
M-Code Receiver Development PMA	Various	Various : TBD	-	0.000		0.000		2.000	Oct 2017	0.000		2.000	Continuing	Continuing	-
Subtotal			-	0.000		0.000		2.000		0.000		2.000	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force										Date: May 2017							
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604201F / Integrated Avionics Planning and Development					Project (Number/Name) 641030 / GPS Receiver Development							
					Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals					-	0.000		0.000		60.444		0.000		60.444	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																Date: May 2017			
Appropriation/Budget Activity 3600 / 4								R-1 Program Element (Number/Name) PE 0604201F / Integrated Avionics Planning and Development								Project (Number/Name) 641030 / GPS Receiver Development			

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604201F / Integrated Avionics Planning and Development	Project (Number/Name) 641030 / GPS Receiver Development

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
M-Code Receiver Development	1	2018	4	2021

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	34.818	68.719	0.000	68.719	68.155	105.347	115.565	118.408	Continuing	Continuing
644818: <i>Imaging and Targeting Support</i>	-	0.000	18.583	45.588	0.000	45.588	38.871	50.422	74.846	76.855	Continuing	Continuing
645148: <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>	-	0.000	14.784	21.647	0.000	21.647	27.776	53.385	39.152	39.954	Continuing	Continuing
646025: <i>Data Compression</i>	-	0.000	1.451	1.484	0.000	1.484	1.508	1.540	1.567	1.599	Continuing	Continuing

Note

In FY 2018, PE 0604257F, Advanced Technology and Sensors, Project 644818, Imaging and Targeting Support, Nuclear Forensics-Prompt Diagnostics efforts transferred to PE 0207573F, National Technical Nuclear Forensics, Project 674881, Prompt Diagnostics, in order to continue development of Prompt Diagnostics detection system.

A. Mission Description and Budget Item Justification

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
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 0604257F I Advanced Technology and Sensors			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	34.818	59.867	0.000	59.867
Current President's Budget	0.000	34.818	68.719	0.000	68.719
Total Adjustments	0.000	0.000	8.852	0.000	8.852
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	8.852	0.000	8.852
Change Summary Explanation					
- FY 2018 funding increased by \$8.852M to support increases in Advanced Synthetic Aperture Radar System development, demonstration, and transition efforts (Project 644818), combined with decreases in Common-Airborne Sense and Avoid (Project 645148) for higher Department of Defense Priorities.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>				Project (Number/Name) 644818 / <i>Imaging and Targeting Support</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
644818: <i>Imaging and Targeting Support</i>	-	0.000	18.583	45.588	0.000	45.588	38.871	50.422	74.846	76.855	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

Developmental efforts pursued include: improved sensor capabilities such as hyperspectral imagery (HSI), measurement and signature intelligence, polarimetric imaging, ground moving target indication (GMTI), maritime search/track, Inverse Synthetic Aperture Radar, foliage penetration and additional radar, electro-optical, nuclear event detection, and other modalities; increased geolocation accuracy; increased dismount detection capability; advanced sensor data correlation; automated target detection; network centric warfare; and other Intelligence, Surveillance, and Reconnaissance (ISR) and associated planning and direction; collection; processing and exploitation; analysis and production; and dissemination capabilities. These efforts are intended to reduce both target search and kill chain timelines as well as supporting traditional intelligence activities. This project will also increase interoperability by developing common standards and interfaces.

The funds in this project are distributed in priority order for the goal of building a comprehensive Geospatial Intelligence (GEOINT) capability for the USAF. On an annual basis, developmental technologies are reviewed against warfighter capabilities and requirements based on strategic roadmaps and on the results of the Airborne Sensors for ISR Analysis of Alternatives, as prefaced in the Challenging Targets Initial Capabilities Document. Efforts advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement in the coming year. The program office has the ability to initiate an I&TS project, within the GEOINT Capabilities Working Group (GCWG) construct but outside the normal annual GCWG vetting process, to expedite development and acquisition of urgently needed capabilities for the warfighter. Advanced Synthetic Aperture Radar System 2B efforts include, but are not limited to, development, design, fabrication, integration, demonstration, and transition of high altitude, deep look ISR radar.

Traditional focus areas include, but are not limited to: development, demonstration, and rapid transition of common radar and electro-optical sensors (Synthetic Aperture Radar (SAR), Low Frequency SAR, and antenna, Electro-Optical(EO), Infrared (IR), HSI, Low Light, Laser Radar (LADAR), Light Detection And Ranging (LIDAR) and their operational modes (high resolution imagery, Ground and Dismount Moving Target Indication (GMTI/DMTI), persistent surveillance, wide area motion imagery, Spectral Identification) for multiple airborne platforms, including medium and high altitude platforms; development and demonstration of advanced tactical sensor and associated tasking, processing, exploitation, and dissemination processing algorithms and tools (automatic registration, automatic and assisted target detection, network centric warfare). Development of integrated multi-sensor capabilities to detect and identify obscured targets; development and implementation of standards (Common GMTI/DMTI, National Imagery Transmission Format; and monitoring and enhancement of Imagery Intelligence product quality (radar and EO/IR imagery, GMTI data, and spectral information) and timeliness throughout the image chain (from sensor to user). Development and integration of airborne sensors to support an open systems

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604257F / Advanced Technology and Sensors		Project (Number/Name) 644818 / Imaging and Targeting Support		
architecture pod capability. These efforts focus on reducing the find, fix and track elements of the time critical targeting kill-chain timeline while improving operator and decision-maker efficiency and effectiveness.						
Activities also include studies and analysis to support both current program planning and execution and future program planning.						
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Imaging & Targeting Support (I&TS)		0.000	9.505	22.588	-	22.588
Description: Develop/demonstrate and advance technical maturity of promising sensors and processing capabilities (ex: radar improvement, next-generation Hyperspectral Imagery (HSI), laser detection and ranging/ laser identification detection and ranging, and data mitigation technologies).						
FY 2016 Accomplishments: - FY 2016 efforts were reported under PE 0305206F						
FY 2017 Plans: - Continue development, modernization, and demonstration of advanced sensors and detection and processing algorithms, hyperspectral imaging technologies, multiband Electro-Optical/Infra-Red (EO/IR) and Synthetic Aperture Radar (SAR) sensor systems, enhanced LIDAR capabilities, polarimetric imaging, and other Geospatial Intelligence (GEOINT) sensing modalities for anti-access area denial, permissive and non-permissive environments, foliage penetration, and littoral environments. These include but are not limited to MQ-9 Multi-Spectral Targeting System (MTS-B), DRACO, Full Spectrum HSI MQ-9 Pod, Airborne Light Optical Fiber Technology (ALOFT), Long-Wave Infrared Polarimetric Imaging(LWIR PI), and other GEOINT Capabilities Working Group (GCWG) approved projects.						
FY 2018 Base Plans: - Will continue development, modernization, and demonstration of advanced sensors and detection and processing algorithms, hyperspectral imaging technologies, multiband EO/IR and SAR sensor systems, enhanced lidar capabilities, polarimetric imaging, and other GEOINT sensing modalities for Anti-Access Area Denial, permissive and non-permissive environments, foliage penetration, and littoral environments. These include but are not limited to MTS-B, DRACO, Full Spectrum HSI MQ-9 Pod, ALOFT, LWIR PI, and other GCWG approved projects.						
Title: Advanced Synthetic Aperture Radar System (ASARS) 2B		0.000	6.078	23.000	-	23.000
Description: Develop/design/fabricate/integrate/demonstrate/rapidly transition deep look high altitude Intelligence, Surveillance, and Reconnaissance (ISR) radar capabilities.						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force								Date: May 2017				
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0604257F / Advanced Technology and Sensors				Project (Number/Name) 644818 / Imaging and Targeting Support				
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: - FY 2016 efforts were reported under PE 0305206F.												
FY 2017 Plans: - Continue to develop/design/fabricate/integrate/demonstrate/rapidly transition deep look high altitude ISR radar capabilities.												
FY 2018 Base Plans: - Will continue to develop/design/fabricate/integrate/demonstrate/rapidly transition deep look high altitude ISR radar capabilities.												
Title: Nuclear Forensics - Prompt Diagnostics								0.000	3.000	0.000	-	0.000
Description: Development of nuclear event detection and characterization capabilities.												
FY 2016 Accomplishments: - FY 2016 efforts were funded and reported under OSD program 0603161D8Z, Nuclear and Conventional Physical Security Equipment.												
FY 2017 Plans: - Continue development of Prompt Diagnostics detection system. Focused areas include but are not limited to prompt output signal detection and nuclear debris collection analysis and evaluation.												
FY 2018 Base Plans: - Effort will move to National Technical Nuclear Forensics (NTNF) program (0207573F) in FY18.												
Accomplishments/Planned Programs Subtotals								0.000	18.583	45.588	-	45.588
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA07: PE 0305202F: Dragon U-2 (JIMP)	34.471	37.217	56.586	0.000	56.586	48.882	38.682	16.994	17.120	Continuing	Continuing	
Remarks												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 644818 / <i>Imaging and Targeting Support</i>
D. Acquisition Strategy Imaging and Targeting Support efforts are prioritized on an annual basis by the Geospatial Intelligence Capabilities Working Group, in accordance with the validated gaps in the Challenging Targets Initial Capabilities Document. Resulting funded efforts are then contracted for and/or executed by either various program offices, laboratories, industry, and/or other government agencies. Advanced Synthetic Aperture Radar 2B efforts are conducted by Air Force Lifecycle Management Center/Intelligence, Surveillance, and Reconnaissance and Special Operations Forces Program Office(AFLCMC/WIN), in conjunction and cooperation with AFLCMC/Robins AFB for flight test support. Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods, including the use of Engineering Change Proposals to modify existing contracts and new contracts that were awarded both competitively or on a sole source basis.		
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0604257F / Advanced Technology and Sensors				Project (Number/Name) 644818 / Imaging and Targeting Support					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MTS-B Track Through Launch Transient	SS/CPFF	Raytheon : McKinney, TX	-	0.000		1.045	Mar 2017	0.342	Nov 2017	0.000		0.342	Continuing	Continuing	1.400
DRACO 4.0	SS/CPFF	Lockheed Martin : King of Prussia, PA	-	0.000		2.000	Jan 2017	1.900	Nov 2017	0.000		1.900	Continuing	Continuing	3.900
Full Spectrum HSI MQ-9 Pod	SS/CPFF	Raytheon : McKinney, TX	-	0.000		2.600	Apr 2017	2.458	Jan 2018	0.000		2.458	Continuing	Continuing	2.000
ALOFT	SS/CPFF	UTC Aerospace Systems : Westford, MA	-	0.000		0.000		1.400	Dec 2017	0.000		1.400	Continuing	Continuing	1.400
LWIR PI	C/CPFF	Raytheon : El Segundo, CA	-	0.000		0.000		2.000	Jan 2018	0.000		2.000	Continuing	Continuing	-
Agile Pod Harvest Reaper	SS/CPFF	Various : Various	-	0.000		1.615	Feb 2017	0.131	Dec 2017	0.000		0.131	Continuing	Continuing	0.200
Other Technology Efforts (Prioritized by GCWG)	Various	Various : Various	-	0.000		1.118	Dec 2016	12.902	Dec 2017	0.000		12.902	Continuing	Continuing	-
ASARS 2B	SS/CPIF	Raytheon : El Segundo, CA	-	0.000		5.160	Mar 2017	21.400	Jan 2018	0.000		21.400	Continuing	Continuing	-
Nuclear Forensics - Prompt Diagnostics	Various	Various : Various	-	0.000		2.700	Feb 2017	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	0.000		16.238		42.533		0.000		42.533	-	-	
Remarks															
On an annual basis, the GEOINT Capabilities Working Group reviews developmental technologies against warfighter capabilities and requirements based on strategic roadmaps and on the Airborne Sensors for ISR Analysis of Alternatives. Projects advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement for the coming fiscal year.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0604257F / Advanced Technology and Sensors				Project (Number/Name) 644818 / Imaging and Targeting Support					
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA: Other Govt Cost	Various	Various : Dayton, OH	-	0.000		2.345	Dec 2016	3.055	Nov 2017	0.000		3.055	Continuing	Continuing	-
Subtotal			-	0.000		2.345		3.055		0.000		3.055	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		18.583		45.588		0.000		45.588	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity

3600 / 4

R-1 Program Element (Number/Name)

PE 0604257F / Advanced Technology and Sensors

Project (Number/Name)

644818 / Imaging and Targeting Support

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
I_TS - Advanced SAR Development																												
- Key Radar																												
-- Flight Demo (Key Radar)																												
--- SOCOM Demo (Key Radar) (April 17)																												
- AMMOD																												
-- Data Collect (AMMOD) (April 17)																												
- SlimSAR Multi-INT																												
-- System Demo (SlimSAR) (July 17)																												
I_TS - Advanced Hyperspectral Development																												
- Full Spectrum (HSI) MQ-9 Pod																												
I_TS - EO/IR																												
- MTS-B Turbulence Correction																												
- ALOFT																												
- MTS-B Track Through Launch Transient																												
I_TS - LIDAR																												
- Lidar/HSI Data Fusion																												
-- Flight Demos (Lidar/HSI Data Fusion)																												
I_TS - Sensor Studies/Analysis																												
I_TS - Other Technology Efforts (Prioritized by GCWG)																												
- Agile Pod Harvest Reaper																												
Advanced Airborne PCPAD Development																												
- DRACO 4.0																												
ASARS 2B Technology Development and Maturation																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																				Date: May 2017																	
Appropriation/Budget Activity 3600 / 4										R-1 Program Element (Number/Name) PE 0604257F / Advanced Technology and Sensors										Project (Number/Name) 644818 / Imaging and Targeting Support																	
										FY 2016		FY 2017		FY 2018		FY 2019		FY 2020		FY 2021		FY 2022															
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
- ASARS 2B Flight Demonstration										<div></div>																											

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 644818 / <i>Imaging and Targeting Support</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
I_TS - Advanced SAR Development	1	2017	4	2022
- Key Radar	1	2017	4	2017
-- Flight Demo (Key Radar)	1	2017	3	2017
--- SOCOM Demo (Key Radar) (April 17)	3	2017	3	2017
- AMMOD	1	2017	4	2017
-- Data Collect (AMMOD) (April 17)	3	2017	3	2017
- SlimSAR Multi-INT	1	2017	4	2017
-- System Demo (SlimSAR) (July 17)	4	2017	4	2017
I_TS - Advanced Hyperspectral Development	1	2017	4	2019
- Full Spectrum (HSI) MQ-9 Pod	1	2017	4	2018
I_TS - EO/IR	1	2017	4	2022
- MTS-B Turbulence Correction	1	2017	3	2017
- ALOFT	1	2017	4	2018
- MTS-B Track Through Launch Transient	1	2017	4	2019
I_TS - LIDAR	1	2017	4	2022
- Lidar/HSI Data Fusion	1	2017	3	2017
-- Flight Demos (Lidar/HSI Data Fusion)	1	2017	3	2017
I_TS - Sensor Studies/Analysis	1	2017	4	2022
I_TS - Other Technology Efforts (Prioritized by GCWG)	1	2017	4	2022
- Agile Pod Harvest Reaper	1	2017	1	2018
Advanced Airborne PCPAD Development	2	2017	4	2022
- DRACO 4.0	2	2017	4	2019

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>		Project (Number/Name) 644818 / <i>Imaging and Targeting Support</i>	
		Start		End	
Events		Quarter	Year	Quarter	Year
ASARS 2B Technology Development and Maturation		1	2017	4	2022
- ASARS 2B Flight Demonstration		3	2018	4	2018
Note Starting in FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 674818, Imaging and Targeting Support transferred to PE 0604257F, Advanced Technology and Sensors, Project 644818.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>				Project (Number/Name) 645148 / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
645148: <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>	-	0.000	14.784	21.647	0.000	21.647	27.776	53.385	39.152	39.954	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Sense and Avoid (SAA)-Related Requirements Development and Analysis, National Policy Standards Development, and Technology Development and Demonstration	0.000	14.784	21.647	0.000	21.647
Description: Support development and analysis of warfighter requirements and analysis of possible solution alternatives. Develop SAA technology and capabilities for Group 4-5 remotely. Collaborate with the Federal Aviation Administration, National Air and Space Administration, and other Services to develop national policy and standards. Conduct SAA related studies, analysis, modeling and simulation, demonstrations, program planning and project execution.					
FY 2016 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604257F / Advanced Technology and Sensors		Project (Number/Name) 645148 / Common-Airborne Sense and Avoid (C-ABSAA)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>- In FY 2016, the Common-Airborne Sense and Avoid (C-ABSAA)effort was reported in PE 0305206F, Airborne Reconnaissance Systems, Project 675148, C-ABSAA.</p> <p>FY 2017 Plans:</p> <ul style="list-style-type: none">- Assist/advise/support ACC with the Remotely Piloted Aircraft (RPA) Sense and Avoid (SAA) Analysis of Alternatives (AoA) effort- Support Air Combat Command (ACC) as they conduct analysis to identify possible materiel solutions to SAA gaps- Conduct C-ABSAA Materiel Solution Analysis activities- Continue SAA science and technology research and development with Air Force Research Laboratory (AFRL)- Collaborate with FAA, NASA, and other Services and agencies on national policy and standards- Build and exercise modeling and simulation capabilities to support requirements, policy/standards, and technology development <p>FY 2018 Base Plans:</p> <ul style="list-style-type: none">- Will conduct C-ABSAA Materiel Solution Analysis activities- Will begin C-ABSAA Technology Maturation & Risk Reduction Phase- Will develop Capabilities Development Document (CDD)for C-ABSAA Technology Maturation and Risk Reduction phase- Will prepare/present all documentation/results as part of C-ABSAA Milestone A decision review- Will continue to build and exercise modeling and simulation capabilities to support requirements, policy/standards, and technology development- Will continue SAA science and technology research and development with AFRL- Will continue to collaborate with FAA, NASA, and other Services and agencies on national policy and standards- Will flight demonstrate SAA applications for various sensors such as radar, electro-optical, and infrared technologies- Will verify sensor, guidance, and control vulnerabilities and countermeasures through analysis and flight test for future planning and development- Will start development of open, scalable architecture to support automation and control for integration with other users operating in worldwide airspaces <p>FY 2018 OCO Plans: N/A</p>						
Accomplishments/Planned Programs Subtotals		0.000	14.784	21.647	0.000	21.647

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 645148 / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>	

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

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

Remarks

D. Acquisition Strategy

C-ABSAA materiel solutions will be developed by the Air Force Life Cycle Management Center's Sensors Division under direction of the Program Executive Office for Intelligence, Surveillance, and Reconnaissance and Special Operations Forces, in response to a deliberate requirements definition process. C-ABSAA will integrate Better Buying Power 3.0 initiatives throughout its acquisition lifecycle and rely upon acquisition of government data rights to maximize contractor competition from technology development through production. The program intends to provide the warfighter with sense and avoid capability for Group 4-5 Remotely Piloted Aircraft (RPA) with increased, time-phased capability improvements as technology and risks achieve satisfactory levels. Group 4-5 RPA platforms will be expected to integrate C-ABSAA capability into their unique systems either via retrofit or in design, development, and/or production.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>						Project (Number/Name) 645148 / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C-ABSAA Technology Development	C/Various	Various : Various	-	0.000		13.254	Oct 2016	20.071	Oct 2017	0.000		20.071	Continuing	Continuing	-
Subtotal			-	0.000		13.254		20.071		0.000		20.071	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration (PMA)	Various	Various : Various	-	0.000		1.530	Oct 2016	1.576	Oct 2017	0.000		1.576	Continuing	Continuing	-
Subtotal			-	0.000		1.530		1.576		0.000		1.576	-	-	-
Project Cost Totals			-	0.000		14.784		21.647		0.000		21.647	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017			
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>					Project (Number/Name) 645148 / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>			

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Analysis of Alternatives																												
Materiel Solution Analysis																												
Capability Development Document																												
Milestone A (Apr 2018)																												
Technology Development and Risk Reduction																												
Milestone B (Apr 2020)																												
Engineering and Manufacturing Development																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 645148 / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Analysis of Alternatives	1	2017	4	2017
Materiel Solution Analysis	1	2017	3	2018
Capability Development Document	3	2018	2	2020
Milestone A (Apr 2018)	3	2018	3	2018
Technology Development and Risk Reduction	4	2018	2	2020
Milestone B (Apr 2020)	3	2020	3	2020
Engineering and Manufacturing Development	4	2020	4	2022

Note

In FY15, efforts were reported in PE 0305220F, RQ-4, Project 675148, Common Airborne Sense and Avoid (C-ABSAA). In FY16, efforts were reported in PE 0305206F, Airborne Reconnaissance Systems, Project 675148, C-ABSAA.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604257F / Advanced Technology and Sensors				Project (Number/Name) 646025 / Data Compression			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
646025: Data Compression	-	0.000	1.451	1.484	0.000	1.484	1.508	1.540	1.567	1.599	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Data Compression effort provides the warfighter with capability to efficiently compress and decompress airborne Intelligence, Surveillance, and Reconnaissance (ISR) sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial satellite communications (SATCOM) or military SATCOM. The effort develops, tests, and will implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and Distributed Common Ground System. Outputs will meet standard certification for use within the Department of Defense Geospatial Intelligence and Measurement and Signatures Intelligence architectures.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Reduction of Data Using Compression Enhancements (RDUCE)								0.000	1.451	1.484	-	1.484
Description: The Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne Intelligence, Surveillance, and Reconnaissance (ISR) sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial satellite communications (SATCOM) or military SATCOM. The effort will develop, test and implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and the Distributed Common Ground System. Outputs will meet standard certification for use within the Department of Defense Geospatial Intelligence and Measurement and Signatures Intelligence architectures.												
FY 2016 Accomplishments: In FY 2016, efforts were reported in PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression.												
FY 2017 Plans: - Develop and test persistent electro-optical and infrared (EO/IR) and phase history Synthetic Aperture Radar (SAR) data compression capabilities, and other phenomenologies. - Develop and test compression and decompression algorithms for Persistent SAR and Smart Data Discrimination. - Develop documentation for standards acceptance.												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>		Project (Number/Name) 646025 / <i>Data Compression</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<ul style="list-style-type: none"> - Provide engineering services for algorithm familiarization, assessment, and improvement. - Participate in Sensor Open System Architecture (SOSA) planning and integration. <p><i>FY 2018 Base Plans:</i></p> <ul style="list-style-type: none"> - Will continue to develop and test Persistent EO/IR and Phase History SAR data compression capabilities, and other phenomenologies, including but not limited to light detection and ranging (LIDAR) and Airborne Synthetic Aperture Radar System 2B (ASARS 2B) integration. - Will continue to develop and test compression and decompression algorithms for Persistent SAR and Smart Data Discrimination. - Will continue to develop documentation for standards acceptance. - Will continue to provide engineering services for algorithm familiarization, assessment, and improvement. - Will continue to participate in SOSA planning and integration. 					
Accomplishments/Planned Programs Subtotals	0.000	1.451	1.484	-	1.484

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
D. Acquisition Strategy											
The Data Compression acquisition approach is to design and develop compression and decompression technology hardware and software components, interfaces and standards for various airborne intelligence, surveillance, and reconnaissance platforms, ground stations, data storage facilities, and exploitation tools utilizing existing contracts with full and open competition where appropriate. Integration will be accomplished by the requisite program offices.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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 0604288F I National Airborne Ops Center (NAOC) Recap							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	7.850	0.000	7.850	9.813	19.696	101.772	136.513	Continuing	Continuing
646507: NAOC Recap Development	-	0.000	0.000	7.850	0.000	7.850	9.813	19.696	101.772	136.513	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0302015F, E-4B National Airborne Operations Center (NAOC) Project 674777, E-4B Aircraft Modernization efforts were transferred to PE 0604288F, National Airborne Ops Center (NAOC) Recap, Project 646507, NAOC Recap Development, in order to provide greater transparency.

A. Mission Description and Budget Item Justification

The E-4B National Airborne Operations Center (NAOC) is a survivable node of the National Military Command System (NMCS), providing POTUS, SECDEF and the CJCS a worldwide, survivable, and enduring node of the NMCS to fulfill national security requirements throughout all stages of conflict. As a command, control and communications center directing US forces, executing emergency war orders and coordinating the activities of civil authorities including national contingency plans, this capability ensures continuity of operations plans and continuity of government as required in a national emergency or after negation/destruction of ground command and control centers.

The E-4B NAOC Recapitalization effort will replace the aging E-4B fleet which faces capability gaps, diminishing manufacturing sources, increased maintenance costs, and parts obsolescence as it approaches the end of its serviceable life. The recapitalization effort will be informed by Air Force and Department of Defense analyses used to determine a holistic approach to replacing the aging E-4B fleet and integrating its capabilities with other nuclear and national command and control mission sets.

In 2015, the Joint Staff completed a Mission Area Analysis (MAA) focused on the Nuclear Command, Control and Communication (NC3) National Military Command system (NMCS) airborne fleets. This analysis examined alternative architectures and CONOPS for achieving requirements, and suggested potential programmatic, platform, and/or mission system synergies across and between fleet recapitalization programs (E-4B, E-6, VC-25, C-32). Further, the Joint Staff documented the essential functions necessary to execute Nuclear Command and Control, and defined the operational role of the NC2 enterprise out to 2030 in an NC2 CONOPS. From 2014-2016, the Joint Staff performed a NC2 Capabilities Based Assessment (CBA) to determine potential gaps in the NC2 mission and architecture. The findings of these studies have culminated in an evolved NMCS "aerial layer mission alignment strategy" that allows the Department of Defense (DoD) to consolidate the airborne command center capabilities provided by the E-4B and E-6B into a single fleet of uniformly-configured aircraft. This concept is known as the Survivable Airborne Operations Center, or SAOC.

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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 0604288F I National Airborne Ops Center (NAOC) Recap				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	0.000	0.000	0.000	0.000	0.000	
Current President's Budget	0.000	0.000	7.850	0.000	7.850	
Total Adjustments	0.000	0.000	7.850	0.000	7.850	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	0.000	7.850	0.000	7.850	
Change Summary Explanation In FY2018, \$7.850M continues E-4B NAOC Recap efforts. In FY2018, PE 0302015F, E-4B National Airborne Operations Center (NAOC) Project 674777, E-4B Aircraft Modernization efforts were transferred to PE 0604288F, National Airborne Ops Center (NAOC) Recap, Project 646507, NAOC Recap Development, in order to provide greater transparency.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: E-4B NAOC Recap				0.000	0.000	7.850
Description: Recapitalization efforts include those activities related to the current E-4B NAOC fleet. Efforts will involve early acquisition activities, to include but not limited to, preparation for a Materiel Development Decision (MDD), an Analysis of Alternatives (AoA), development of initial requirements/acquisition strategy, risk reduction activities, and other efforts necessary to initiate a recapitalization program.						
FY 2016 Accomplishments: Efforts accomplished in PE 0302015F.						
FY 2017 Plans: Efforts accomplished in PE 0302015F.						
FY 2018 Plans: Conduct an Analysis of Alternatives complete risk reduction studies & analyses, and begin Materiel Solution Analysis.						
Accomplishments/Planned Programs Subtotals				0.000	0.000	7.850

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 0604288F / <i>National Airborne Ops Center (NAOC) Recap</i>						
D. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
• RDTE: BA07: PE 0302015F: <i>E-4B National Airborne Operations Center (NAOC)</i>	0.150	7.921	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Remarks											
E. Acquisition Strategy N/A											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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 0604317F I Technology Transfer							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	7.494	3.368	3.295	0.000	3.295	3.058	3.119	3.171	3.236	Continuing	Continuing
646003: Partnership Intermediary Agreement(s)	-	7.494	3.368	3.295	0.000	3.295	3.058	3.119	3.171	3.236	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Technology Transfer was titled Defense Technology Transfer and Defense Technology Link (TechLink) in previous Office of the Secretary of Defense (OSD) budgets. The program was devolved from OSD in FY12 to achieve efficiencies in program management. TechLink, DoD's first National level Partnership Intermediary (PI), was established by OSD in 1999 to provide direct Technology Transfer support to all Air Force, Army, Navy, and independent DoD Research Laboratories. TechLink is a performance based, metrics-driven organization.

The mission of Technology Transfer is to: (1) Establish license agreements to transfer patented inventions from DoD research laboratories to industry for conversion into new dual-use products and services to support DoD's defense mission and benefit the US economy; and (2) Establish collaborative research and development agreements (CRADAs) with the private-sector for development of new, innovative, dual-use technology. Both of these activities enable DoD to leverage the investment and capabilities of the private-sector in development of new defense-related products and services, lowering DoD costs and also helping ensure that DoD-developed or co-developed technologies are transitioned to DoD operational use.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	7.612	3.368	3.286	0.000	3.286
Current President's Budget	7.494	3.368	3.295	0.000	3.295
Total Adjustments	-0.118	0.000	0.009	0.000	0.009
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.118	0.000			
• Other Adjustments	0.000	0.000	0.009	0.000	0.009

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0604317F I Technology Transfer	
Congressional Add Details (\$ in Millions, and Includes General Reductions) Project: 646003: Partnership Intermediary Agreement(s) Congressional Add: Program Increase <			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0604317F / <i>Technology Transfer</i>	
		FY 2016	FY 2017
Congressional Add: Program Increase		4.100	0.000
FY 2016 Accomplishments: Conducted Congressionally-directed effort			
FY 2017 Plans: N/A			
Congressional Adds Subtotals		4.100	0.000
D. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
N/A			
E. Acquisition Strategy			
PE 064317F uses a Partnership Intermediary Agreement (PIA) with TechLink at the University of Montana. Through this agreement TechLink helps the Department of Defense to establish licensing and other technology transfer agreements with US industry. The effort is run through the Air Force Research Laboratory/Small Business office at Wright Patterson Air Force Base.			
F. Performance Metrics			
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017				
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							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	440.671	62.034	74.308	17.365	0.000	17.365	72.039	4.152	0.000	0.000	0.000	670.569
645341: Direct Strike Penetrator Systems	440.671	62.034	74.308	17.365	0.000	17.365	72.039	4.152	0.000	0.000	0.000	670.569
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 475												
<p>Note</p> <p>In FY 2018, PE 0604602F, Armament/Ordnance Development, Project 653134, BLU-109 and BLU-113 Upgrade efforts were transferred to PE 0604327F, Hard and Deeply Buried Target Defeat System (HDBTDS) Program, Project 645341, Direct Strike Penetrator Systems, in order to consolidate hard target munitions in one program element.</p> <p>A. Mission Description and Budget Item Justification</p> <p>The Direct Strike Penetrator Systems develops advanced precision guided penetrator munitions to include development/integration of advanced precision, navigation, and timing (PNT) capabilities (i.e., GPS, non-GPS, optical, passive, active, etc.) that will provide the Air Force with improved ability to attack Hard & Deeply Buried Targets (HDBT), such as bunker and tunnel facilities, using air-to-surface conventional munitions. Systems developed will hold HDBTs at risk using fewer weapons, reducing the number of missions necessary to defeat targets, and resulting in an increase to mission survivability. Direct Strike Penetrators will provide critical global strike capability not met by inventory conventional weapons. It will hold at risk the best defended and protected high value assets essential to an enemy's warfighting ability.</p> <p>A Hard Target Munitions (HTM) Analysis-of-Alternatives (AoA) was conducted to determine the best weapons and/or development efforts for addressing the HDBT mission area. The HTM AoA determined it was necessary to develop a family of HTMs in order to apply effects to the entire range of HDBTs set. The Air Force is using the AoA to start development, production, and modification activities for HDBT attack weapons identified in it as most effective and affordable.</p> <p>Major thrust areas include:</p> <ul style="list-style-type: none">- Massive Ordnance Penetrator (MOP) is a 30,000 lb class precision guided penetrator designed to defeat hard and deeply buried targets.- Advanced 5000-pound Penetrator (A5K) will develop an improved 5000-pound class penetrator to address capability gaps identified in the HTM AoA. Funding for the A5K penetrator development effort falls under Direct Strike Penetrator Systems beginning FY18.- M-Code and Enhanced Anti-Jam (EAJ) develop and integrate advanced PNT capabilities to allow operations in anti-access/area denial (A2/AD) environments. M-Code and EAJ also provide increased accuracy, better signal acquisition, and advanced security.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0604327F I Hard and Deeply Buried Target Defeat System (HDBTDS) Program
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Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes, and prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	54.637	74.308	32.287	0.000	32.287
Current President's Budget	62.034	74.308	17.365	0.000	17.365
Total Adjustments	7.397	0.000	-14.922	0.000	-14.922
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	8.403	0.000			
• SBIR/STTR Transfer	-1.006	0.000			
• Other Adjustments	0.000	0.000	-14.922	0.000	-14.922

Change Summary Explanation

FY2018: +\$17.365M, transfer of BLU-113 Upgrade funds (\$0.645M) from PE 0604602F and added funds (\$16.720M) to continue development of the Advanced 5000lb (A5K) Penetrator

FY2018: -\$32.287M, transfer to PE 0604201F for M-Code Development

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Massive Ordnance Penetrator (MOP) Weapon Development, Target Construction, Testing and Analysis.	62.034	14.900	0.000	0.000	0.000
Description: Design, develop, and test the baseline and Enhanced Threat Response (ETR) MOP Weapon and integrate it on the B-2. Construct relevant hard and deeply buried targets for testing. Execute MOP testing in support of development efforts. Analyze MOP weapon effectiveness.					
FY 2016 Accomplishments: Continued development of the third and fourth phases (ETR III & IV) for the current MOP weapon, including development of an acquisition strategy for incorporation of M-code. Constructed several hard and deeply buried targets for live weapon testing for both ETR III & IV weapon modification. Conducted several live weapon tests					

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
to validate the ETR III modifications. Analyzed weapons effects and developed methods to optimize the MOP weapon's effectiveness. FY 2017 Plans: Completed development of the ETR IV capability for the MOP weapon, including incorporation of a M-Code GPS Receiver. Conducted live weapon tests to validate the ETR IV modifications. Analyzed weapons effects and develop methods to optimize the MOP weapon's effectiveness. FY 2018 Base Plans: N/A FY 2018 OCO Plans: N/A						
Title: Advanced 5000 lb (A5K) Penetrator Programs Description: Conduct A5K design, development, integration, and testing to improve performance against increasingly hardened targets. This effort will utilize existing and improved technologies to field an integrated penetrator weapon system to include: an improved penetrator warhead, a smart fuze system that can detect layers/voids, and a modified JDAM tail kit for all weather, precision guidance, navigation, and control. FY 2016 Accomplishments: N/A FY 2017 Plans: N/A FY 2018 Base Plans: Warhead development, to include smart fuzing, will utilize simulation based design to start the design process. Trade studies and technical reviews will be accomplished to ensure that the A5K system meets the attributes identified in the HTM AoA. Integration with the JDAM tailkit will commence with the strake design and initial autopilot development. FY 2018 OCO Plans: N/A		0.000	0.000	17.365	0.000	17.365
Title: M-Code/EAJ		0.000	59.408	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Description: M-Code and EAJ provides the capability to operate in increasing adversarial A2/AD jamming environments. M-Code and EAJ also provide increased accuracy, better signal acquisition, and advanced security.											
FY 2016 Accomplishments: N/A											
FY 2017 Plans: Began development of M-Code with Enhanced Anti-Jam (EAJ) receiver for implementation into weapon systems.											
FY 2018 Base Plans: N/A											
FY 2018 OCO Plans: N/A											
Accomplishments/Planned Programs Subtotals						62.034	74.308	17.365	0.000	17.365	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PAAF: BA01: Line Item #353190: WRM-Ammunition (MOP)	39.690	3.600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	39.690
• RDTE: BA05: PE 0604602F: Armament/Ordnance Development	13.396	4.496	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	17.892
• RDTE: BA04: PE 0604201F: Integrated Avionics Planning & Development	0.000	0.000	60.444	0.000	60.444	15.006	0.000	0.000	0.000	0.00	63.956
Remarks											
E. Acquisition Strategy											
MOP is a sole source, cost plus fixed fee contract.											
The M-Code/EAJ effort will have multiple contract awards.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 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	
<p>A5K will have multiple contract awards.</p> <p>F. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MOP Weapon Development	SS/CPIF	Boeing : St Louis, MO	248.739	15.123	Feb 2017	7.432	Mar 2017	0.000		0.000		0.000	0.000	271.294	195.772
M-Code/EAJ Receiver Development/Integration	SS/TBD	Boeing : St Louis, MO	0.000	0.000		53.467	Feb 2017	0.000		0.000		0.000	32.449	85.916	85.916
MOP Hard Target Munitions (HTM) Capabilities Analysis	Various	Whitney, Bradley & Brown; ARA; Booz Allen : Eglin, FL	1.436	0.288		0.000		0.000		0.000		0.000	0.000	1.724	1.724
MOP HTM Concept/Technology Study	Various	Several Local Companies : Eglin, FL	3.244	0.000		0.000		0.000		0.000		0.000	0.000	3.244	3.244
MOP HTM Weapons Effects/Target Analysis	RO	Defense Threat Reduction Agency : Albuquerque, NM	5.308	0.005		0.000		0.000		0.000		0.000	0.000	5.313	5.313
MOP HTM Concept Tech Data	Various	Several Local Companies : Eglin AFB, FL	0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	0.000
MOP HTM Technical Support	Various	Jacobs Engr. : Eglin, FL	2.769	0.000		0.000		0.000		0.000		0.000	0.000	2.769	2.769
A5K Development	Various	SAIC : Herndon, VA	0.000	0.000		0.000		9.377	Oct 2017	0.000		9.377	23.621	32.998	32.998
Subtotal			261.496	15.416		60.899		9.377		0.000		9.377	56.070	403.258	327.736
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MOP Govt Support	Various	Several Govt Labs and test Centers : Eglin AFB, FL	14.028	3.513	Jan 2016	0.664	Oct 2016	0.000		0.000		0.000	0.000	18.205	13.199
Subtotal			14.028	3.513		0.664		0.000		0.000		0.000	0.000	18.205	13.199

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MOP System Test & Evaluation	Various	AFLCMC : Eglin , Holloman, Edwards, FL	8.492	2.426	Jan 2016	1.820	Jun 2017	0.000		0.000		0.000	0.000	12.738	6.369
MOP Flight Test Range Support	Various	White Sands Missile Range : White Sands Missile Range, NM	5.646	0.783	Jan 2016	0.524	Jun 2017	0.000		0.000		0.000	0.000	6.953	13.644
MOP Target Construction and Instrumentation	Various	Defense Threat Reduction Agency : Albuquerque, NM	127.469	33.157	Jan 2016	6.178	Jun 2017	0.000		0.000		0.000	0.000	166.804	81.527
MOP Test and Evaluation Activities	Various	AF Flight Test Center : Albuquerque, NM	12.368	4.823		0.420	Jun 2017	0.000		0.000		0.000	0.000	17.611	13.123
A5K Test and Evaluation Activities	Various	96 TW : Eglin, FL	0.000	0.000		0.000		7.120	Aug 2018	0.000		7.120	17.934	25.054	-
M-Code/EAJ Test and Evaluation Activities	Various	AFLCMC : Eglin, Holloman, Edwards, FL	0.000	0.000		1.035	Jun 2017	0.000		0.000		0.000	0.000	1.035	5.815
Subtotal			153.975	41.189		9.977		7.120		0.000		7.120	17.934	230.195	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MOP Program Management Administration (PMA)	Various	AFLCMC/EBD : Eglin AFB, FL	10.560	1.916	Jan 2016	0.968	Oct 2016	0.000		0.000		0.000	0.000	13.444	0.000
M-Code/EAJ Program Management Administration (PMA)	Various	AFLCMC/EBD : Eglin AFB, FL	0.000	0.000		1.800	Oct 2016	0.000		0.000		0.000	0.000	1.800	0.000
A5K/A2K Program Management Administration (PMA)	Various	AFLCMC/XR : Eglin AFB, FL	0.612	0.000		0.000		0.868	Oct 2017	0.000		0.868	2.187	3.667	0.000
Subtotal			11.172	1.916		2.768		0.868		0.000		0.868	2.187	18.911	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force							Date: May 2017				
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0604327F / Hard and Deeply Buried Target Defeat System (HDBTDS) Program			Project (Number/Name) 645341 / Direct Strike Penetrator Systems				
	Prior Years	FY 2016		FY 2017		FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	440.671	62.034		74.308		17.365	0.000	17.365	76.191	670.569	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
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 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MOP ETR-III Modification Design and Qualification Testing																												
MOP ETR-IV Modification Design and Qualification Testing																												
MOP ETR-III Test Construction and Flight Testing																												
MOP ETR-IV Test Construction and Flight Testing																												
MOP Analysis																												
A5K Design, Development and Testing																												
M-Code/EAJ Development/Integration																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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-III Modification Design and Qualification Testing	1	2016	1	2016
MOP ETR-IV Modification Design and Qualification Testing	1	2016	2	2017
MOP ETR-III Test Construction and Flight Testing	2	2016	3	2016
MOP ETR-IV Test Construction and Flight Testing	1	2017	2	2017
MOP Analysis	1	2016	2	2017
A5K Design, Development and Testing	1	2018	1	2021
M-Code/EAJ Development/Integration	1	2017	4	2021

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

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0604414F I Cyber Resiliency of Weapon Systems-ACS							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	40.000	32.253	0.000	32.253	51.089	61.123	75.096	83.547	Continuing	Continuing
642810: <i>Cyber Workforce Development</i>	-	0.000	0.000	10.461	0.000	10.461	17.593	19.559	19.928	21.090	Continuing	Continuing
642812: <i>System Security Engineering</i>	-	0.000	0.000	7.663	0.000	7.663	13.157	17.129	14.699	17.099	Continuing	Continuing
642816: <i>Agile/Adaptable Standards</i>	-	0.000	15.000	5.467	0.000	5.467	5.030	5.034	17.032	18.451	Continuing	Continuing
642834: <i>Mission Assurance for fielded Systems</i>	-	0.000	20.000	3.245	0.000	3.245	9.082	12.512	16.476	19.267	Continuing	Continuing
642836: <i>Mission Thread Analysis</i>	-	0.000	5.000	5.417	0.000	5.417	6.227	6.889	6.961	7.640	Continuing	Continuing

Note

This program, BA 04 PE 0604414F, project 642810, Acquisition Workforce Cyber Expertise, is a new start.

This program, BA 04 PE 0604414F, project 642812, Prototype, evaluation, and transition system security engineering, is a new start.

A. Mission Description and Budget Item Justification

The Cyber Resiliency of Weapon Systems (CRWS) for Agile Combat Support (ACS) provides funding to increase weapon systems cyber security and resiliency in all phases and activities of the acquisition life cycle by accomplishing two goals: first, to mature technologies and develop prototypes to help avoid fielding weapon systems susceptible to cyberattack and second, to enable the modification of fielded systems to protect them from cyberattacks. To meet these goals, this budget activity addresses cyber security and resiliency gaps in: the skills of the acquisition workforce by increasing skills, knowledge, and experience of the organic workforce; the system security engineering activities by integrating cyber security into the system engineering policy, products, and processes; actionable intelligence by improving the requirements for collecting cyber threat information to weapon systems as well as the skills for intelligence analysts to identify critical information to be passed to the acquisition community; a common security environment by leveraging information technology capabilities to accommodate a protected median for sharing information about weapon system cyber susceptibilities and vulnerabilities; standards for designing new weapon systems by defining a government reference architecture which provides future weapon system designers the opportunity use open system architectures; cyber security/resiliency of fielded weapon systems by designing mitigations strategies and identifying requirements for known vulnerabilities; having a mission focused analysis for identifying critical subsystem and support system needing additional cyber security and resiliency by delivering a systematic approach for looking across weapon systems used to achieve each and every Air Force mission.

In CY, project 642816, Agile/Adaptable Standards, is a new start.

In CY, project 642834, Mission Assurance for fielded Systems, is a new start.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604414F I <i>Cyber Resiliency of Weapon Systems-ACS</i>
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In CY, project 642836, Mission Thread Analysis, is a new start.

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 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	40.000	32.253	0.000	32.253
Total Adjustments	0.000	40.000	32.253	0.000	32.253
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	40.000	32.253	0.000	32.253

Change Summary Explanation

\$40M FY 2017 Request for Additional Appropriations (RAA) to address emergency warfighting readiness requirements.

FY 2018 increase due to increased efforts that provide an in-depth strategy for active defense, resiliency, and risk management in addressing both legacy and new weapon systems.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>				Project (Number/Name) 642810 / <i>Cyber Workforce Development</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
642810: <i>Cyber Workforce Development</i>	-	0.000	0.000	10.461	0.000	10.461	17.593	19.559	19.928	21.090	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 04 PE 0604414F, project 642810, Acquisition Workforce Cyber Expertise, is a new start.

A. Mission Description and Budget Item Justification

Under the Cyber Workforce Development project funding is provided to prototype, evaluate, and transition techniques that address gaps in expertise, skills, capacity, and knowledge in cyber security and resiliency that is needed to assist acquisition professionals in the performance of their acquisition life cycle and sustainment of weapon systems duties. Specifically, this project increases the knowledge and skills required to counter cyber threats to all cyber-systems within weapon systems by going beyond those skills required to only counter cyber threats to Internet Protocol network-based information systems.

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

	FY 2016	FY 2017	FY 2018
Title: Acquisition Workforce Cyber Expertise	-	-	10.461
Description: Increases knowledge and advanced skills of acquisition workforce			
FY 2018 Plans: Prototype techniques to increase cyber security/resiliency skills in the functional areas of the acquisition workforce. Prototype cyber expert cell concepts and locations.			
Accomplishments/Planned Programs Subtotals			-
	-	-	10.461

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

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

Remarks

D. Acquisition Strategy

When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures, whichever is most appropriate.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642810 / <i>Cyber Workforce Development</i>

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017			
Appropriation/Budget Activity 3600 / 4							R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>					Project (Number/Name) 642810 / <i>Cyber Workforce Development</i>				

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prototype Air-Cyber Expert Cell	Various	AFMC : TBD	-	0.000		0.000		6.931		0.000		6.931	Continuing	Continuing	-
Prototype Space-Cyber Expert Cell	Various	AFSPC : TBD	-	0.000		0.000		3.530		0.000		3.530	Continuing	Continuing	-
Subtotal			-	0.000		0.000		10.461		0.000		10.461	-	-	-

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		0.000		10.461		0.000		10.461	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>			Project (Number/Name) 642810 / <i>Cyber Workforce Development</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Prototype Air-Cyber Expert Acquisition Cell																												
Evaluate Air-Cyber Expert Acquisition Cell																												
Transition Air-Cyber Expert Acquisition Cell																												
Prototype Space-Cyber Expert Acquisition Cell																												
Evaluate Space-Cyber Expert Acquisition Cell																												
Transition Space-Cyber Expert Acquisition Cell																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642810 / <i>Cyber Workforce Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Prototype Air-Cyber Expert Acquisition Cell	1	2018	4	2019
Evaluate Air-Cyber Expert Acquisition Cell	1	2019	2	2020
Transition Air-Cyber Expert Acquisition Cell	1	2020	4	2022
Prototype Space-Cyber Expert Acquisition Cell	1	2018	3	2020
Evaluate Space-Cyber Expert Acquisition Cell	3	2019	4	2020
Transition Space-Cyber Expert Acquisition Cell	1	2020	4	2022

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>				Project (Number/Name) 642812 / <i>System Security Engineering</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
642812: <i>System Security Engineering</i>	-	0.000	0.000	7.663	0.000	7.663	13.157	17.129	14.699	17.099	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
This program, BA 04 PE 0604414F, project 642812, Prototype, evaluation, and transition system security engineering, is a new start.

A. Mission Description and Budget Item Justification
Under the System Security Engineering (SSE) project funding is provided to prototype, evaluate, and transition cyber secure and resilient risk-informed processes, tools, products, and policies into all phases and activities of the acquisition life cycle and sustainment processes and organizations used to acquire weapon systems. This activity addresses the cyber security and resiliency gaps the Air Force has in the lack of common security environment; system security engineering processes and policies; contracting language; skills and processes to identify actionable intelligence on cyber threats; and acceptance criteria used when acquiring weapon systems.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Title: Prototype, evaluation, and transition system security engineering	-	-	7.663
Description: Prototypes, evaluates, and transitions cyber security and resiliency activities into policy, processes, products, and people.			
FY 2018 Plans: Prototype common cyber security common security environment for sharing of cyber information related to weapon systems across the Air Force. Prototype improvements in intelligence collection skills and processes to identify cyber threats to weapon systems. Prototype products, tools, policy, and processes to integrate cyber security and resiliency in all phases and activities of the acquisition life cycle and sustainment of weapon systems.			
Accomplishments/Planned Programs Subtotals	-	-	7.663

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

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

Remarks

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642812 / <i>System Security Engineering</i>
D. Acquisition Strategy When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures, whichever is most appropriate.		
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604414F / Cyber Resiliency of Weapon Systems-ACS				Project (Number/Name) 642816 / Agile/Adaptable Standards			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
642816: Agile/Adaptable Standards	-	0.000	15.000	5.467	0.000	5.467	5.030	5.034	17.032	18.451	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification Under the Agile and Adaptable Standards project funding is provided to prototype, evaluate, and transition standards for use in weapon systems to address gaps created by not having a government reference architecture (GRA) for avionics systems and position, navigation & timing (PNT) systems. The policies, processes, and products will be prototyped, evaluated, and transitioned to allow for designers to build agile and adaptable cyber secure/resilient systems, subsystems, and support systems. Concepts in improving workforce skills, knowledge, and expertise will be prototyped, evaluated, and transitioned to enable the efficient and effective institutionalization of resultant GRAs into all phases and activities of the acquisition life cycle and sustainment of weapon systems.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: Agile and Adaptable Standards Description: Prototypes, evaluates, and transitions agile and adaptable system standards for integration into Air Force weapon systems FY 2017 Plans: Initial prototyping of open system architecture components for use in advanced avionics systems and Precision Navigation and Timing (PNT) systems; and accelerates prototyping of techniques to increase cyber security and resiliency acquisition skills, knowledge, and expertise needed for the workforce to facilitate the institutionalizing of government reference architectures enabling adaptive and agile designs for weapon systems. FY 2018 Plans: Prototype open system architecture components for use in advanced avionics systems and PNT systems. Prototype techniques to increase cyber security/resiliency acquisition skills, knowledge, and expertise needed for the workforce to facilitate the institutionalizing of government reference architectures enabling adaptive and agile designs for weapon systems.									-	15.000	5.467	
Accomplishments/Planned Programs Subtotals									-	15.000	5.467	
C. Other Program Funding Summary (\$ in Millions) N/A Remarks												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642816 / <i>Agile/Adaptable Standards</i>
D. Acquisition Strategy When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures, whichever is most appropriate.		
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604414F / Cyber Resiliency of Weapon Systems-ACS				Project (Number/Name) 642834 / Mission Assurance for fielded Systems			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
642834: Mission Assurance for fielded Systems	-	0.000	20.000	3.245	0.000	3.245	9.082	12.512	16.476	19.267	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Under the Mission Assurance for fielded Systems project funding is provided to identify and verify cyber susceptibilities/vulnerabilities; determine the risk to the user and platform, the risk to the enterprise by correlating cross-platform impacts, and the risk to the mission. This effort also identifies mitigations to high risk cyber vulnerabilities and recommends a transition path for identified mitigations on fielded weapon systems, subsystems, and support systems. Activities in this project include the investigation and maturation of technologies and the identification of changes to Tactics, Techniques, and Procedures as mitigations to cyber vulnerabilities found on weapon systems, subsystems, and support systems. This project addresses the gap between the cyber security/resiliency that has been accomplished on traditional internet protocol (IP) based information technology (IT) used on the DoD Information Network (DODIN) and lack of focused effort of cyber security/resiliency on non-DODIN IT plus non-IP based technologies typically found on fielded weapon systems, subsystems, and support systems.

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

	FY 2016	FY 2017	FY 2018
Title: Cyber Vulnerability Evaluations and Mitigation Prototyping	-	20.000	3.245
Description: Prototypes, evaluates and identifies transition paths for cyber mitigations to cyber vulnerabilities			
FY 2017 Plans: Initiates the evaluation of fielded weapon systems, subsystems, and support systems for cyber susceptibilities and vulnerabilities; and initiates prototyping of mitigations for cyber vulnerabilities on fielded weapon systems, subsystems, and support systems in realistic, high fidelity environments.			
FY 2018 Plans: Evaluate fielded weapon systems, subsystems, and support systems for cyber susceptibilities and vulnerabilities. Prototype mitigations for cyber vulnerabilities on fielded weapon systems, subsystems and support systems in realistic, high fidelity environments.			
Accomplishments/Planned Programs Subtotals			
	-	20.000	3.245

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

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642834 / <i>Mission Assurance for fielded Systems</i>	

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

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

D. Acquisition Strategy

When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures.

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604414F / Cyber Resiliency of Weapon Systems-ACS				Project (Number/Name) 642836 / Mission Thread Analysis			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
642836: Mission Thread Analysis	-	0.000	5.000	5.417	0.000	5.417	6.227	6.889	6.961	7.640	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Under the Cyber Mission Thread Analysis (CMTA) project funding is provided to evaluate and prioritize the cyber threat for each Air Force mission thread addressing the gaps created by not having an institutionalized, repeatable process for end-to-end cyber risk analysis across systems of systems and organizations enabling each mission capability. Activities include the prototyping, evaluation, and transition of cyber threat analysis methodologies, functional mission thread analysis methodologies, techniques, supporting software tools, and information technologies to achieve a repeatable, integrated, supportable, sustainable, effective and efficient assessment of cyber impacts to Air Force mission capabilities. Each evaluation will identify cyber risks to users, weapon systems, and missions (from most to least likely) in Air Force operations which will be fed back to the appropriate acquisition Program Executive Offices, Program Offices, and MAJCOMs as well as to policy, processes, products, and people accordingly. Highlighted in a complete cyber mission thread analysis will be critical systems, subsystems, and/or support systems that require increased cyber resiliency to ensure Air Force weapon systems can fight "In-Thru-From" a cyber contested environment.

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

	FY 2016	FY 2017	FY 2018
Title: Cyber Mission Threat Analysis	-	5.000	5.417
Description: Prototypes, evaluates, and transitions methodologies, tools, and equipment in support of cyber threat for mission threads analyses.			
FY 2017 Plans: Initiates the prototyping of cyber mission thread analysis (CMTA) methodologies, techniques, and tools; and accelerates the CMTA of a number of Air Force mission threads. Initiates the prioritization of Air Force mission threads for future analysis.			
FY 2018 Plans: Prototype cyber threat and functional mission thread analysis methodologies, techniques, and tools. Evaluate cyber threat for Air Refueling mission thread. Evaluate cyber threat for Global Strike mission thread. Identify next priority mission threads for future analysis.			
Accomplishments/Planned Programs Subtotals	-	5.000	5.417

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

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>				Project (Number/Name) 642836 / <i>Mission Thread Analysis</i>			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
<u>Remarks</u>											
D. Acquisition Strategy											
When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures, whichever is most appropriate.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604422F I Weather System Follow-on							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	46.307	118.953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
644289: Weather Satellite Follow-On	-	46.307	118.953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0604422F, Weather System Follow-on efforts were transferred to PE 1206422F, Weather System Follow-on, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206422F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	46.307	118.953	0.000	0.000	0.000
Total Adjustments	46.307	118.953	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	46.307	118.953	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity					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 0604425F / <i>Space Situation Awareness Systems</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	10.901	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
640290: <i>Deep Space Advanced Radar Concept</i>	-	0.000	10.901	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0604425F, BA04, Space Situational Awareness Systems efforts were transferred to PE 1206425F, BA04 Space Situational Awareness Systems due to the creation of a new Major Force Program for Space. FY2017 funding is now documented in the exhibits for PE 1206425F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	10.901	0.000	0.000	0.000
Total Adjustments	0.000	10.901	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	10.901	0.000	0.000	0.000

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

	FY 2016	FY 2017	FY 2018
Title: DARC	-	10.901	-
Description: In FY2018, PE 0604425F, BA04, Space Situational Awareness Systems efforts were transferred to PE 1206425F, BA04 Space Situational Awareness Systems due to the creation of a new Major Force Program for Space. FY2017 funding is now documented in the exhibits for PE 1206425F.			
FY 2017 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
In FY2018, PE 0604425F, BA04, Space Situational Awareness Systems efforts were transferred to PE 1206425F, BA04 Space Situational Awareness Systems due to the creation of a new Major Force Program for Space. FY2017 funding is now documented in the exhibits for PE 1206425F.				
Accomplishments/Planned Programs Subtotals		-	10.901	-
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>					PE 0604776F <i>I Deployment & Distribution Enterprise R&D</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	25.890	26.222	0.000	26.222	28.563	29.154	29.661	30.268	Continuing	Continuing
640211: <i>GLOBAL ACCESS</i>	-	0.000	6.513	7.212	0.000	7.212	7.776	7.549	7.702	7.860	Continuing	Continuing
640212: <i>C2/OPTIMIZATION/ MODELING AND SIMULATION</i>	-	0.000	15.534	14.127	0.000	14.127	15.552	16.207	16.479	16.816	Continuing	Continuing
640213: <i>CYBER</i>	-	0.000	3.843	4.883	0.000	4.883	5.235	5.398	5.480	5.592	Continuing	Continuing

Note

This program, BA 04 PE 0604776F, project 640211, Hybrid Airship, is a new start.
This program, BA 04 PE 0604776F, project 640211, Mini Robotic Dredge, is a new start.

This program, BA 04 PE 0604776F, project 640212, Modeling & Simulation Innovation, is a new start.
This program, BA 04 PE 0604776F, project 640212, Full Spectrum Mission Assurance, is a new start.
This program, BA 04 PE 0604776F, project 640212, Modeling Dynamics of Modular Causeways to Improve Debarkation Sites, is a new start.
This program, BA 04 PE 0604776F, project 640212, Web Based Seaport Explosive Safety Planning, is a new start.

A. Mission Description and Budget Item Justification

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

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

FY18 New Starts include Full Spectrum Mission Assurance, Modeling the Dynamics of Modular Causeway System, Web Based Seaport Explosives Safety Planning(640212) and Mini Robotics Dredge (640211).

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
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 0604776F I Deployment & Distribution Enterprise R&D			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	25.890	26.147	0.000	26.147
Current President's Budget	0.000	25.890	26.222	0.000	26.222
Total Adjustments	0.000	0.000	0.075	0.000	0.075
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.075	0.000	0.075
Change Summary Explanation					
In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise (DDE))in order to support auditability, increase management efficiency, and reduce administrative actions.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604776F / Deployment & Distribution Enterprise R&D				Project (Number/Name) 640211 / GLOBAL ACCESS			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
640211: GLOBAL ACCESS	-	0.000	6.513	7.212	0.000	7.212	7.776	7.549	7.702	7.860	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
This program, BA 04 PE 0604776F, project 640211, Hybrid Airship, is a new start.												
This program, BA 04 PE 0604776F, project 640211, Mini Robotic Dredge, is a new start.												
In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise (DDE))in order to support auditability, increase management efficiency, and reduce administrative actions.												
A. Mission Description and Budget Item Justification												
This program provides for the development, integration, demonstration and detailed assessment of DOD procedures/technologies targeted at optimizing throughput at the nodes as well as across the conduits of the deployment and distribution supply chains, from origin to point of use as well as return. Needed capabilities include inventory/cargo management, materiel handling innovations, improved physical node access, port throughput improvements, innovative delivery methods (e.g., precision airlift, autonomous re-supply), and cargo/container security. This project addresses required mission support to combatant commanders and other customers of DOD's distribution and transportation systems in the area of deployment/distribution velocity management, manned/unmanned systems to the point of effect, and increased global reach in austere/anti-access environments.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: Preamble Initial Look Leading to Accelerated Results									-	1.600	-	
Description: Develop capability to support a deployed engineering assessment team in the expedient recon and load-capacity determination of offload structures and plan/design required repairs.												
FY 2017 Plans:												
TRL 5-7: Prototype a remotely operated vehicle capability that provide rapid/accurate assessment of pier conditions both above and below the waterline to expedite repairs.												
Title: Port Improvement via Exigent Repair (PIER) JCTD									-	2.650	1.212	
Description: Develop robust capability to rapidly restore damaged pier to a minimal militarily-capable to support reception, power projection & sustainment operations.												
FY 2017 Plans:												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640211 / <i>GLOBAL ACCESS</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
TRL 5-7: AT&L endorsed, Congressionally approved BA3 Joint Capability Technology Demonstration (JCTD) to rapidly restore damaged pier to a minimal militarily-capable to support reception, power projection & sustainment operations. FY 2018 Plans: TRL 5-7: AT&L endorsed, Congressionally approved BA3 Joint Capability Technology Demonstration (JCTD) to rapidly restore damaged pier to a minimal militarily-capable to support reception, power projection & sustainment operations.			
Title: Enhanced Vision Navigation for Joint Precision Airdrop System Description: Enhance capability of a guided airdrop system to navigate in contested/denied environments where Global Positioning System data is either suspect or unavailable. FY 2017 Plans: TRL 5: U.S. Army (Natick) led effort to prototype technologies to enable accurate delivery of airdropped supplies in a Global positioning System (GPS) denied environment. FY 2018 Plans: TRL 5-7: Continue U.S. Army (Natick) led effort to prototype technologies to enable accurate delivery of airdropped supplies in a Global positioning System (GPS) denied environment.		-	1.363
Title: Expeditionary End-to-End Fueling Concept Description: Addressing gap in theater fuel delivery/distribution capabilities to inform the development of the Army Early Entry Fluid Distribution System as well as provide a development path for Navy/USMC ship-to-shore capabilities. FY 2017 Plans: TRL 5/6: Prototyping modular pumping system to enhance over-the-shore and inland petroleum discharge capability. FY 2018 Plans: TRL 5/6: Prototyping modular pumping system to enhance over-the-shore and inland petroleum discharge capability.		-	0.250
Title: Dropsonde Optimization Description: Mobility assets lack drop zone situational awareness, pre-drop confirmation of clear/safe drop zone, capability of post-drop assessment, and autonomous/passive bundle geo-location. FY 2017 Plans:		-	0.200
			0.455

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>				Project (Number/Name) 640211 / <i>GLOBAL ACCESS</i>				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
TRL 4-7: Provide a single pass solution based on wind/weather impact from information gained at an optimized/planned drop zone. FY 2018 Plans: TRL 4-7: Provide a single pass solution based on wind/weather impact from information gained at an optimized/planned drop zone.												
Title: Precision On-Demand Aerial Resupply Description: Develop a precision on-demand Aerial Resupply capability to provide small units in remote/austere locations the ability to request and track aerial resupply missions in real-time. FY 2017 Plans: TRL 5-7: Combines android smartphones, tactical radios, bundle tracking system, beacon technologies, Air National Guard LITENING Pod, DOD Iridum Gateway & Joint Precision Air Drop System Mission Planner into a prototype to facilitate on-demand resupply.										-	0.450	-
Title: Hybrid Airship Description: Study serves as a risk reducing, stepping stone to a class of air vehicles with energy use per ton-mile approximating the efficiency achieved by overland commercial trucking on improved highway systems. FY 2018 Plans: TRL 4: Explore future Airship development and mitigate long-term technical risk for future heavy lift airships.										-	-	0.220
Title: Mini Robotic Dredge Description: Prototype a tactical dredging capability to deepen an usable port facility FY 2018 Plans: TRL 5/6: Ability to clear a shipping lane/berthing area to allow for pier side unloading operations.										-	-	0.950
Accomplishments/Planned Programs Subtotals										-	6.513	7.212
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / Deployment & Distribution Enterprise R&D	Project (Number/Name) 640211 / GLOBAL ACCESS	

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
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Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>				Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
640212: <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>	-	0.000	15.534	14.127	0.000	14.127	15.552	16.207	16.479	16.816	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 04 PE 0604776F, project 640212, Modeling & Simulation Innovation, is a new start.
This program, BA 04 PE 0604776F, project 640212, Full Spectrum Mission Assurance, is a new start.
This program, BA 04 PE 0604776F, project 640212, Modeling Dynamics of Modular Causeways to Improve Debarkation Sites, is a new start.
This program, BA 04 PE 0604776F, project 640212, Web Based Seaport Explosive Safety Planning, is a new start.

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

A. Mission Description and Budget Item Justification

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

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

	FY 2016	FY 2017	FY 2018
Title: Analytics Driven Command Decision Support	-	0.960	0.979
Description: Developing the capability that improves organizational decision making by providing a holistic methodology that capitalizes on relevant information, captures accurate data, and leverages best practice tools and decision-making processes.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604776F / Deployment & Distribution Enterprise R&D	Project (Number/Name) 640212 / C2/OPTIMIZATION/MODELING AND SIMULATION		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
TRL 5: Operational prototype of analytic tool & user manual to enable analytics drive command decision support					
FY 2018 Plans: TRL 5-7: Operational prototype of analytic tool & user manual to enable analytics drive command decision support					
Title: Data Lake Description: Develop and demonstrate the capability that allows incongruent data to be brought together to provide automated decision support. FY 2017 Plans: TRL 4-6: Researching application and prototyping this technology as it relates to the Joint Deployment and Distribution enterprise. FY 2018 Plans: TRL 4-7: Researching application and prototyping this technology as it relates to the Joint Deployment and Distribution enterprise.			-	0.600	0.700
Title: End-to-End Deployment and Distribution Modeling Description: Provide an integrated deployment/distribution environment to provide continuous and optimal balancing of total demand verse capacity from planning through mission execution. FY 2017 Plans: TRL 4-6: Assessment of various algorithmic optimization approaches. FY 2018 Plans: TRL 4-6: Assessment of various algorithmic optimization approaches to provide a complete view of the end-to-end mobility system, air refueling (AR) tankers need to be integrated with USTRANSCOM's analytical tool suite for programmatic studies and analysis.			-	3.925	1.963
Title: Global Mission Scheduling Description: Development effort to optimize air movement requirements against resources and movement requirements. FY 2017 Plans: TRL 4-7: Cognitively engineered prototype to facilitate detailed Tactical Air Control Center (Air Mobility Command) mission planning, scheduling and execution			-	1.925	-
Title: Map Based Planning Services Description: Enable planners, via a collaborative geospatially enabled environment, to conduct deliberate course of action planning to include force flow feasibility concurrent with plan development.			-	1.500	1.500

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
FY 2017 Plans: TRL 4-6: Prototype globally accessible enclave and explore how data with a geospatial element can be visualized in a geo-temporal context to enhance Combatant Command planning.					
FY 2018 Plans: TRL 4-6: Prototype globally accessible enclave and explore how data with a geospatial element can be visualized in a geo-temporal context to enhance Combatant Command planning.					
Title: Massachusetts Institute of Technology Lincoln Labs Description: Partnership with MIT-LL to research efforts to improve enterprise operational architecture supporting high-end analytics, integrated information technology/data structures, understanding of cloud capabilities and multi-level cyber security defense. FY 2017 Plans: TRL 4-6: Multi-faceted effort prototyping, via Lincoln Secure Enclave Lab, numerous technologies to enhance operational analytics; data integration, mining, & forensic analytics, etc. FY 2018 Plans: TRL 4-6: Multi-faceted effort prototyping, via Lincoln Secure Enclave Lab, numerous technologies to enhance operational analytics; data integration, mining, & forensic analytics, etc.			-	1.370	2.325
Title: Modeling & Simulation Innovation Description: Select student research/faculty-assisted projects (e.g., Joint Transportation Asset Scheduling Kit, Next Generation Cargo Capability, Applying Post Modern Portfolio Theory to Mitigate Risk in International Shipping, Optimal CH-47/C-130 Workload Balance, Remotely Piloted Aircraft Performing Airdrop Mission). FY 2018 Plans: TRL 4-7: Collaborative partnership with Air Force Institute of Technology for graduate research addressing Joint Deployment and Distribution Enterprise challenges.			-	-	0.125
Title: Support Planning for Air Refueling Tasking and Allocation Description: Provide collaborative decision aid to enable planners to the optimize use of the worldwide Active Duty, Air National Guard and Air Force Reserve Air Refueling fleets while maintaining or increasing operational effectiveness, agility and capacity. FY 2017 Plans:			-	1.288	0.162

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
TRL 4/5: Prototype the capability for air refueling planners an integrated human-in-the-loop and machine based cooperative system to optimizing global air refueling operations.			
FY 2018 Plans: TRL 4-7: Prototype the capability for air refueling planners an integrated human-in-the-loop and machine based cooperative system to optimizing global air refueling operations.			
Title: Strategies for Enterprise Metadata Management Description: Comprehensive account of strategies, optional implementations and recommendations for enterprise-wide management of metadata.		-	1.000
FY 2017 Plans: TRL 4-6: Collect, populate and prototype metadata tools and applications.			
FY 2018 Plans: TRL 4-7: Collect, populate and prototype metadata tools and applications.			
Title: Technology Transfer Description: U. S. Transportation Command uses Technology Transfer mechanisms of the Federal Laboratories to facilitate voluntary collaboration by experts from government, industry, and academia, revealing the costs and benefits of innovations, to understand the feasibility of future capabilities.		-	0.151
FY 2017 Plans: TRL 4 - 6: Continue to actively promote and broker Cooperative Research and Development Agreements (CRADAs) between DOD labs and industry for development of technology with both commercial and military applications. This activity will particularly focus on non-traditional defense contractors and is intended to help lower the expense of new defense-related technology development through cost-sharing with industry and to help DOD benefit from private-sector technology investments and innovations. Continue to actively market DOD-developed technologies to U.S. companies and establish Patent License Agreements to commercialize these technologies for both civilian and military.			
FY 2018 Plans: TRL 4 - 6: Continue to actively promote and broker Cooperative Research and Development Agreements (CRADAs) between DOD labs and industry for development of technology with both commercial and military applications. This activity will particularly focus on non-traditional defense contractors and is intended to help lower the expense of new defense-related technology development through cost-sharing with industry and to help DOD benefit from private-sector technology investments and			
			0.285

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604776F / Deployment & Distribution Enterprise R&D		Project (Number/Name) 640212 / C2/OPTIMIZATION/MODELING AND SIMULATION	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
innovations. Continue to actively market DOD-developed technologies to U.S. companies and establish Patent License Agreements to commercialize these technologies for both civilian and military.					
Title: Program Execution			-	2.815	3.848
Description: Provide technical assistance and program management support to the USTRANSCOM RDT&E Program.					
FY 2017 Plans: TRL 4-6: Program support to explore technology solutions to capability gaps identified through Joint Concept Development documents, the Joint Capabilities Integration and Development System process, Joint Experimentation, etc. to increase the responsiveness, efficiency and effectiveness of the Joint Deployment & Distribution Enterprise.					
FY 2018 Plans: TRL 4-6: Program support to explore technology solutions to capability gaps identified through Joint Concept Development documents, the Joint Capabilities Integration and Development System process, Joint Experimentation, etc. to increase the responsiveness, efficiency and effectiveness of the Joint Deployment & Distribution Enterprise.					
Title: Full Spectrum Mission Assurance			-	-	0.960
Description: All-threats/hazards, collaborative transportation risk management activity to identify unacceptable physical/cyber risks					
FY 2018 Plans: TRL 5-7: An operational picture environment fed by standardized, reusable, and shareable data layers of actionable info.					
Title: Modeling Dynamics of Modular Causeways to Improve Debarkation Sites			-	-	0.300
Description: High-fidelity model to provide planners with precise knowledge of Modular Causeway behavior.					
FY 2018 Plans: TRL 4-7: Developing the ability to simulate causeway operations in order to enhance joint logistics over-the-shore.					
Title: Web Based Seaport Explosive Safety Planning			-	-	0.480
Description: Provide seaport planners capability to manage net explosive weight/hazard munitions					
FY 2018 Plans: TRL 4-6: Reduce planner port layout from 80 to 5 hours					
Accomplishments/Planned Programs Subtotals			-	15.534	14.127

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0604776F / Deployment & Distribution Enterprise R&D				Project (Number/Name) 640212 / C2/OPTIMIZATION/MODELING AND SIMULATION			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
D. Acquisition Strategy											
Requirements for joint deployment and distribution enterprise technology enhancements are annually identified, validated and prioritized by the Joint Deployment & Distribution Enterprise (JDDE) community. Pursuit of the development of new/improved capabilities to meet these requirements is managed by the United States Transportation Command (USTRANSCOM). Prototype products, once evaluated by the users, are spirally transitioned by the operational community.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>						Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support	Various	Various : Belleville, IL	-	0.000		14.864	Nov 2016	13.270	Nov 2017	0.000		13.270	Continuing	Continuing	-
Subtotal			-	0.000		14.864		13.270		0.000		13.270	-	-	-
Remarks Funds will be realigned within PE.															
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Support PMO	Various	Various : Belleville, IL	-	0.000		0.670	Apr 2016	0.857	Apr 2017	0.000		0.857	Continuing	Continuing	-
Subtotal			-	0.000		0.670		0.857		0.000		0.857	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		15.534		14.127		0.000		14.127	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force							Date: May 2017			
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0604776F / Deployment & Distribution Enterprise R&D			Project (Number/Name) 640212 / C2/OPTIMIZATION/MODELING AND SIMULATION				
	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																Date: May 2017			
Appropriation/Budget Activity 3600 / 4								R-1 Program Element (Number/Name) PE 0604776F / Deployment & Distribution Enterprise R&D								Project (Number/Name) 640212 / C2/OPTIMIZATION/MODELING AND SIMULATION			
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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / Deployment & Distribution Enterprise R&D	Project (Number/Name) 640212 / C2/OPTIMIZATION/MODELING AND SIMULATION	

Schedule Details

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604776F / Deployment & Distribution Enterprise R&D				Project (Number/Name) 640213 / CYBER			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
640213: CYBER	-	0.000	3.843	4.883	0.000	4.883	5.235	5.398	5.480	5.592	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise (DDE))in order to support auditability, increase management efficiency, and reduce administrative actions.												
A. Mission Description and Budget Item Justification This program provides for the development, integration, demonstration and detailed assessment of capabilities to ensure USTRANSCOM mission assurance is in a persuasive/dynamic cyber environment. USTRANSCOM requires the procedures/technologies to improve cyber surveillance and control of networks across multiple domains and the ability to continue critical network operations in contested unclassified and classified network environments. The Command also needs the ability to differentiate between valid/unauthorized users and determine/quantify the trustworthiness of hardware/software systems. Additionally USTRANSCOM must have the ability to rapidly analyze & correlate data regarding malicious activities, select/evoke real-time defense actuators, perform automated reasoning capabilities that address data quality issues, and the ability to rapidly return to a known/safe operating state.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: Cyber Mission Assurance Capability Description: Interface with existing sensor data to provide input for analyses of mission impact, mission performance, and mission effectiveness so appropriate alerts and courses of action can be developed, disseminated, and coordinated. FY 2017 Plans: TRL 5: Improved productivity, survivability, and efficiencies; reduced time/effort to respond to disruptive network events/cyber threats FY 2018 Plans: TRL 5-7: Improved productivity, survivability, and efficiencies; reduced time/effort to respond to disruptive network events/cyber threats									-	1.660	0.900	
Title: Identity and Access Management Description: Need secure means to credential user access to proper applications & data via single sign approach. FY 2017 Plans:									-	0.300	0.670	

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017		
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>				Project (Number/Name) 640213 / <i>CYBER</i>			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018
TRL 4/5: Researching to deliver to the enterprise a set of prototype custom attribute solutions.											
FY 2018 Plans: TRL 4-7: Researching to deliver to the enterprise a set of prototype custom attribute solutions.											
Title: Operationalizing Cyber Security Description: Provide USTRANSCOM Joint Cyber Center (JCC) organizational effectiveness tools to enhance cyber-security operations, plans & processes. FY 2017 Plans: TRL 4-6: Prototype an advanced cyber-security Command and Control model as well as extend research on non-intrusive data gathering to enhance Joint Cyber Center operations. FY 2018 Plans: TRL 4-7: Prototype an advanced cyber-security Command and Control model as well as extend research on non-intrusive data gathering to enhance Joint Cyber Center operations.									-	0.969	0.988
Title: Lincoln Labs Description: Partnership with MIT-LL to research efforts to improve enterprise operational architecture supporting high-end analytics, integrated information technology/data structures, understanding of cloud capabilities and multi-level cyber security defense. FY 2017 Plans: TRL 4-6: Multi-faceted effort prototyping, via Lincoln Secure Enclave Lab, numerous technologies to enhance cyber analytics, forensics, etc. FY 2018 Plans: TRL 4-7: Multi-faceted effort prototyping, via Lincoln Secure Enclave Lab, numerous technologies to enhance cyber analytics, forensics, etc.									-	0.914	2.325
Accomplishments/Planned Programs Subtotals									-	3.843	4.883
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>				Project (Number/Name) 640213 / <i>CYBER</i>			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
Remarks											
D. Acquisition Strategy											
Requirements for joint deployment and distribution enterprise technology enhancements are annually identified, validated and prioritized by the Joint Deployment & Distribution Enterprise (JDDE) community. Pursuit of the development of new/improved capabilities to meet these requirements is managed by the United States Transportation Command (USTRANSCOM). Prototype products, once evaluated by the users, are spirally transitioned by the operational community.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0604857F I Operationally Responsive Space							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	22.123	17.921	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
64A020: AF Operational TACSATS	-	22.123	17.921	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0604857F, Operationally Responsive Space efforts were transferred to PE 1204857F, Operationally Responsive Space, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1204857F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	22.123	17.921	0.000	0.000	0.000
Total Adjustments	22.123	17.921	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	22.123	17.921	0.000	0.000	0.000

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

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	264.673	349.304	840.650	0.000	840.650	877.002	727.309	578.073	127.591	Continuing	Continuing
645350: <i>Experimentation</i>	-	264.673	64.247	95.613	0.000	95.613	87.862	87.415	87.373	89.164	Continuing	Continuing
645351: <i>Prototyping</i>	-	0.000	285.057	745.037	0.000	745.037	789.140	639.894	490.700	38.427	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Technology Transition Program (TTP) provides funding to demonstrate, prototype and experiment with technologies and concepts to enable or accelerate their transition to acquisition programs and/or operational use. TTP addresses the gap between initial technology or concept development and demonstration, and successful acquisition and operational capability implementation. Experimentation explores new concepts and their applications in potential future operating environments within a system-of-systems context. Prototyping enables integration and demonstration of emerging technologies as a bridge between the laboratory and the warfighter. TTP allows acquisition program managers (the capability developers) and warfighters (the capability recipients and end users) to prototype, integrate, and demonstrate candidate technologies and assess them in an operational environment in partnership with Program Executive Officers (PEO), schoolhouses, simulation facilities, and development planning organizations.

For FY18, Project 645350, Transition Prioritization was re-named Experimentation to better describe the efforts in the project.
For FY18, Project 645351, Advanced Engine Development was re-named Prototyping to better describe the efforts in the project.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	266.514	347.304	497.741	0.000	497.741
Current President's Budget	264.673	349.304	840.650	0.000	840.650
Total Adjustments	-1.841	2.000	342.909	0.000	342.909
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	6.722	0.000			
• SBIR/STTR Transfer	-8.563	0.000			
• Other Adjustments	0.000	2.000	342.909	0.000	342.909

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	
<u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u>		FY 2016	FY 2017
Project: 645350: <i>Experimentation</i>			
Congressional Add: <i>Alternative Energy Research</i>		20.000	0.000
Congressional Add Subtotals for Project: 645350		20.000	0.000
Congressional Add Totals for all Projects		20.000	0.000
<u>Change Summary Explanation</u>			
Reprogramming in FY 2016 reflects technology transition of Auto Ground Collision Avoidance System (Auto GCAS) to Air National Guard F-16 fleet.			
\$2M FY 2017 Request for Additional Appropriations(RAA) to address Hypersonics Prototyping efforts.			
Increase in FY 2018 reflects acceleration of Adaptive Engine Transition Program (AETP), AETP Air Superiority 2030+ study effort, Spectral Halo Pod prototyping, hypersonics prototyping, and low-cost attritable aircraft technology (LCAAT) prototyping.			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program				Project (Number/Name) 645350 / Experimentation			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
645350: Experimentation	-	264.673	64.247	95.613	0.000	95.613	87.862	87.415	87.373	89.164	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Experimentation project funds experimentation campaigns to explore new concepts and their applications in potential future operating environments within a system-of-systems context. Concepts and enabling technologies such as artificial intelligence, machine learning, directed energy weapons and multi-domain operations hold great promise, yet their transition to acquisition programs and fielded capabilities is typically hampered due to uncertainties regarding their military application and organizational implications. Implementing successful transition approaches for complex and widely applicable concepts requires a comprehensive and coordinated campaign of learning. Experimentation campaigns enable organizational learning through the methodical and systematic application of experimentation and supporting analysis. Experimentation campaigns are centered on an operational level warfighting concept to provide context for assessment, and use wargaming, simulation, and field experimentation to evolve, refine, and validate the warfighting concept leading to solid, evidentiary-based materiel and non-materiel capability development approaches with associated recommendations. Experimentation campaigns improve the effectiveness of operations by developing concepts and generating new information to address challenging threats of the future which aids the fielding of advanced technologies by providing the credible evidence decision makers need to make sound strategic decisions and investment choices. Experimentation campaigns are directed by the Air Force Capability Development Council to ensure funding supports the highest Air Force priorities.

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

For FY18, Project 645350, Transition Prioritization was re-named Experimentation to better describe the efforts in the project.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Propulsion Technology Transition	221.603	0.000	0.000	0.000	0.000
Description: Next-generation jet engine technology.					
FY 2016 Accomplishments: Completed various adaptive engine component risk reduction rig tests. Completed additional engine design efforts culminating in a preliminary design update review. Completed manufacturing of core engine components and initiated assembly of core modules for future testing. Completed requirements review. Initiated detailed design efforts.					
FY 2017 Plans: For FY 2017 and beyond, the work from this effort will transition to Project 645351, Prototyping, effort AETP.					
FY 2018 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program		Project (Number/Name) 645350 / Experimentation		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Not applicable.						
FY 2018 OCO Plans: Not applicable.						
Title: Sustainment Technology Transition Description: Product support and sustainment technologies.		6.722	0.368	0.000	0.000	0.000
FY 2016 Accomplishments: Continued to transition Auto Ground Collision Avoidance System (Auto GCAS) to Air National Guard F-16 fleet.						
FY 2017 Plans: Continue to transition Auto GCAS to Air National Guard F-16 fleet.						
FY 2018 Base Plans: In FY 2018 and beyond, this effort will be accomplished under Project 645351, Prototyping, effort Lifecycle Prototyping.						
FY 2018 OCO Plans: Not applicable.						
Title: Experimentation Campaigns Description: Execution of experimentation campaigns to explore promising concepts and enabling technologies. Activities may include facilitated workshops, wargaming, modeling and simulation, and virtual and hardware prototyping to enable experimentation campaigns.		16.348	63.879	95.613	0.000	95.613
FY 2016 Accomplishments: Demonstrated the potential of networked, extended range munitions to deliver Close Air Support (CAS) effects and to place manned CAS platforms outside the range of enemy surface fires. Conducted a live fire event using the High Energy Liquid Laser Area Defense System (HELLADS) laser system, demonstrating that emergent and mature technological systems can combine to cue, track, and destroy air targets in defense of the National Capital Region.						
FY 2017 Plans: Conduct multiple experimentation campaigns to include assessing needed capabilities for prolonged CAS operations in permissive to some contested environments such as counterinsurgency, counterterrorism, stability operations, and peacekeeping operations; exploring the effects of increased information accessible						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Experimentation</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
throughout the entire battlespace; exploring ways and means to defeat the most challenging battlefield threats by investigating a wide range of promising new concepts and enabling technologies. Initiate hypersonics prototyping efforts.					
FY 2018 Base Plans: Continue experimentation campaigns to advance multi-domain operations and other high priority areas, as directed by the Air Force Capability Development Council. For FY 2018 and beyond, hypersonics and other prototyping efforts will be accomplished under Project 645351, Prototyping, effort Lifecycle Prototyping.					
FY 2018 OCO Plans: Not applicable.					
Accomplishments/Planned Programs Subtotals	244.673	64.247	95.613	0.000	95.613
	FY 2016	FY 2017			
Congressional Add: Alternative Energy Research	20.000	0.000			
FY 2016 Accomplishments: Conducted Congressionally-directed efforts.					
FY 2017 Plans: Not applicable.					
Congressional Adds Subtotals	20.000	0.000			
C. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					
D. Acquisition Strategy					
Experimentation campaigns will aid the fielding of advanced technologies by providing the credible evidence decision makers need to make sound strategic decisions and investment choices.					
The Air Force Capability Development Council directs experimentation campaigns. The Air Force Strategic Development Planning and Experimentation office manages and executes each experimentation campaign. Contracting strategies vary based on the activities of each campaign.					
E. Performance Metrics					
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.					

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

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program	Project (Number/Name) 645350 / Experimentation
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sustainment Technology Transition	SS/FFP	LMCO : Various	-	6.722	Oct 2015	0.368	Jul 2017	0.000		0.000		0.000	Continuing	Continuing	-
Propulsion Technologies - GE	C/CPIF	GE : Evendale, OH	-	63.992	Oct 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Propulsion Technologies - PW	C/CPIF	PW : East Hartford, CT	-	68.348	Oct 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Propulsion Technologies (AETP) - GE	C/CPIF	GE : Evendale, OH	-	39.400	Jun 2016	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Propulsion Technologies (AETP) - PW	C/CPIF	PW : East Hartford, CT	-	39.400	Jun 2016	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Experimentation Campaigns	C/Various	Various : Various	-	16.348	Oct 2015	63.879	Feb 2017	95.613	Feb 2018	0.000		95.613	Continuing	Continuing	-
Congressional Add	C/CPAF	Various : Various	-	20.000	Jun 2017	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	254.210		64.247		95.613		0.000		95.613	-	-	-

Remarks

For FY 2017 and beyond, the work under Propulsion Technologies will be reported under Project 645351, effort AETP.
For FY 2018 and beyond, Sustainment Technology Transition will be reported under Project 645351, effort Lifecycle Prototyping.

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engine Testing	MIPR	Arnold Engineering Development Complex : Arnold AFB, TN	-	9.434	Oct 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program					Project (Number/Name) 645350 / Experimentation					

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	9.434		0.000		0.000		0.000		0.000	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Not specified. : TBD	-	1.029	Jan 2016	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	1.029		0.000		0.000		0.000		0.000	-	-	-

Remarks Further budget details can be provided in the appropriate forum.															
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	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	264.673		64.247		95.613		0.000		95.613	-	-	-

Remarks N/A															
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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)			Project (Number/Name)				
3600 / 4					PE 0604858F / Tech Transition Program			645350 / Experimentation				

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Sustainment Technology Transition																												
Propulsion Technology Transition																												
Experimentation Campaigns																												
Congressional Add																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Experimentation</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Sustainment Technology Transition	1	2016	4	2017
Propulsion Technology Transition	1	2016	4	2016
Experimentation Campaigns	1	2016	4	2022
Congressional Add	1	2016	4	2017

Note

For FY 2017 and beyond, the work under Propulsion Technologies will be reported under Project 645351, effort AETP.
 For FY 2018 and beyond, Sustainment Technology Transition will be reported under Project 645351, effort Lifecycle Prototyping.
 For FY 2018 and beyond, hypersonics prototyping efforts will be accomplished under Project 645351, effort Lifecycle Prototyping.

Further schedule details regarding individual experimentation campaigns can be provided in the appropriate forum.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program				Project (Number/Name) 645351 / Prototyping			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
645351: Prototyping	-	0.000	285.057	745.037	0.000	745.037	789.140	639.894	490.700	38.427	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 645351, Prototyping, enables integration and demonstration of emerging technologies in an operational or operational-like environment in order to capitalize on successful laboratory research and development efforts with high warfighter priority. Integration and demonstration of prototypes also allows leadership to make informed strategy and resource decisions based on the results of such prototype demonstrations. In addition to the current prototyping effort under the AETP effort, future prototyping efforts funded from this Project will aim to capitalize on various emerging warfighter technology areas (e.g. hypersonics, directed energy weapons).

Prototyping enables a key linkage between research and development in the lab and fielding advanced technologies to the warfighter. Under Project 645351, AETP will serve as a model prototyping effort to reestablish the Air Force's experimentation and prototyping culture. Adaptive engine technology combines fuel efficiency characteristics of high-bypass turbofan engines used by commercial airliners with high performance characteristics of military fighter engines. AETP is maturing fuel-efficient, adaptive-cycle engine technologies and demonstrating flight-weight, prototype adaptive engines. The engine architecture has undergone initial technology development and proof of concept work via the Air Force Research Laboratory's Adaptive Versatile Engine Technology program (ADVENT) and the Adaptive Engine Technology Development program (AETD). As such, the technology is now ready for transition to a prototyping effort under AETP. In like manner, Project 645351 plans to support other prototyping efforts in the future, enabling similar emerging technology transitions.

For FY18, Project 645351, Advanced Engine Development was re-named Prototyping to better describe the efforts in this Project.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Adaptive Engine Transition Program	0.000	285.057	592.851	-	592.851
Description: The adaptive engine architecture relies on a third stream of air that can be modulated into a bypass stream or into the engine's core. Additional bypass air increases fuel efficiency at cruise conditions, increasing range and decreasing tanker demand, while providing additional cooling air for thermal management of onboard electronics. Additional core air produces greater thrust required for higher energy conditions necessary for military fighters (acceleration, supersonic flight). AETP will also mature new materials and component technology which can be individually transitioned to existing legacy platforms.					
AETP will design and manufacture multiple flight-weight adaptive engine prototypes, complete component rig assessments, characterize materials, and inform manufacturing process improvements. By producing flight-weight prototypes, the program will demonstrate adaptive engine technology can be scaled to meet military fighter engine size requirements, while ensuring appropriate manufacturing- and technology-readiness levels.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program		Project (Number/Name) 645351 / Prototyping		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
By performing sea-level, altitude, and durability assessments across multiple power settings, the prototype engines will demonstrate fuel efficiency increases, thrust increases, and new component technologies. These assessments will provide data to quantify the capability and reduce risk in areas such as thermal capacity, reliability, and supportability, among others.						
AETP has been initiated to reduce lead-time and technology risk for next-generation adaptive engine systems through technology maturation and risk reduction activities. The program is not specific to any one platform; rather, it is aimed at reducing risk in preparation for revolutionary, next-generation propulsion systems for multiple combat aircraft applications. AETP will increase acquisition agility by enabling varying degrees of technology insertion across multiple platforms.						
FY 2016 Accomplishments: In FY 2016 and prior, the work leading to this effort was performed under Project 645350, effort Propulsion Technology Transition.						
FY 2017 Plans: Conduct detailed design and component rig activities. Continue various detailed design and component rig activities. Continue technology, affordability, and sustainability studies. More details can be provided in an appropriate forum.						
FY 2018 Base Plans: Continue detailed design activities. Continue component rig activities. Continue technology, affordability, and sustainability studies. Conduct AETP Air Superiority 2030+ study. More details can be provided in an appropriate forum.						
Title: Lifecycle Prototyping		0.000	0.000	152.186	-	152.186
Description: Lifecycle prototyping, product support and sustainment technologies.						
FY 2016 Accomplishments: In FY 2016 and FY 2017, this effort was reported under Project 645350, effort Sustainment Technology Transition.						
FY 2017 Plans: N/A						
FY 2018 Base Plans:						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017							
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>		Project (Number/Name) 645351 / <i>Prototyping</i>							
B. Accomplishments/Planned Programs (\$ in Millions)											
		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total					
Continue hypersonics prototyping efforts to mature critical enabling technologies required to facilitate successful operations and delivery of effects across the hypersonic regime. Initiate Spectral Halo Pod prototyping effort to enhance exploratory concept which will advance a capability to be used by multi-generation aircraft and also employ multiple domains to disrupt, degrade, and collapse adversarial capabilities. Initiate low cost design and manufacturing of low-cost attritable aircraft technology. Begin flight testing and demonstration of low-cost attritable aircraft prototype with representative payloads and subsystems. May add additional prototyping activities for emerging technologies based on Department guidance. Continue to develop product support and sustainment technologies to support the warfighter and reduce sustainment costs.											
Accomplishments/Planned Programs Subtotals		0.000	285.057	745.037	-	745.037					
C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
D. Acquisition Strategy											
The Air Force has awarded two limited source, cost plus incentive fee contracts to General Electric and Pratt & Whitney due to their unique qualifications to design a high performance, flight-weight adaptive turbine engine in the thrust class for AETP. Incentive categories include engine weight, performance factors, and maintainability and supportability, with specific metrics for each area incentivized. The government agency responsible for managing this program is the Air Force Life Cycle Management Center, Propulsion Directorate, Wright-Patterson Air Force Base, Ohio.											
For Lifecycle Prototyping efforts beginning in FY 2018, the acquisition strategies are under development.											
Miscellaneous emerging prototyping will be based on guidance from Department leadership.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program				Project (Number/Name) 645351 / Prototyping					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Adaptive Engine Transition Program - GE	C/CPIF	GE : Evendale, OH	-	0.000		136.000	Jun 2016	314.425	Jun 2016	0.000		314.425	Continuing	Continuing	-
Adaptive Engine Transition Program - PW	C/CPIF	PW : East Hartford, CT	-	0.000		148.000	Jun 2016	277.426	Jun 2016	0.000		277.426	Continuing	Continuing	-
Hypersonics Prototyping	TBD	TBD : TBD	-	0.000		0.000		90.000	Jan 2018	0.000		90.000	Continuing	Continuing	-
Spectral Halo Pod Prototyping	TBD	TBD : TBD	-	0.000		0.000		50.000	Jan 2018	0.000		50.000	Continuing	Continuing	-
Low-Cost Attritable Aircraft Technology Prototyping	TBD	TBD : TBD	-	0.000		0.000		12.186	Jan 2018	0.000		12.186	Continuing	Continuing	-
Subtotal			-	0.000		284.000		744.037		0.000		744.037	-	-	-
Remarks															
In FY 2016 and prior, the work for Advanced Engine Development originally was performed under Project 645350.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Various : TBD	-	0.000		1.057	Dec 2016	1.000	Dec 2017	0.000		1.000	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017		
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>				Project (Number/Name) 645351 / <i>Prototyping</i>				

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	0.000		1.057		1.000		0.000		1.000		-	-	-
Project Cost Totals			-	0.000		285.057		745.037		0.000		745.037		-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645351 / <i>Prototyping</i>
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	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AETP Detailed Design, Engine Fabrication, Engine Assessments																												
Lifecycle Prototyping																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645351 / <i>Prototyping</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AETP Detailed Design, Engine Fabrication, Engine Assessments	1	2017	4	2021
Lifecycle Prototyping	1	2018	4	2022

Note
AETP consists of three phases: detailed design, engine fabrication, and engine assessments.

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

Additional details, including hypersonics, Spectral Halo Pod, low-cost attritable aircraft technology, and other emerging prototyping efforts, can be provided in the appropriate forum.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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 0605230F I Ground Based Strategic Deterrent							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	64.966	113.919	215.721	0.000	215.721	347.638	574.661	1,539.050	2,557.439	12,656.015	18,069.409
641025: GROUND BASED STRATEGIC DETERRENT (GBSD)	0.000	64.966	113.919	215.721	0.000	215.721	347.638	574.661	1,539.050	2,557.439	12,656.015	18,069.409
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 493												
A. Mission Description and Budget Item Justification												
The Ground Based Strategic Deterrent (GBSD) will design, develop, produce and deploy a replacement for the current Intercontinental Ballistic Missile (ICBM) Minuteman III (MM III) weapon system. The GBSD program is scoped to deliver a fully integrated weapon system beginning in FY29 timeframe to close key capability gaps and vulnerabilities identified in the GBSD Capabilities Based Assessment, GBSD Initial Capabilities Document, and the GBSD Analysis of Alternatives; and to mitigate ground-based deterrent degradation due to MM III component age-out and attrition.												
The major activities in the GBSD program include 1)Government system engineering (SE), analytics, and test capability development; 2) Flight System (FS) Risk Reduction; 3) Weapon System Command and Control (WSC2) Risk Reduction; 4) Launch Systems (LS) Risk Reduction; 5) Weapon System Integration (WSI) Risk Reduction. FS is an integrated missile stack which includes the propulsion, post-boost, guidance, and re-entry systems (RS) sub-components. WSC2 encompasses all command and control components and interfaces, associated ground hardware, ground control equipment and associated software directly related to the survivability, monitoring and launch of the replacement flight system. LS include Launch Control Center (LCC) and Launch Facility (LF) restoration and modernization of real property and structures and associated ground mechanical systems. The GBSD program will include Prime contractor development of applicable support equipment, data, flight test hardware and infrastructure, and training material while examining and mitigating risk during the MM III to GBSD transition. Government SE investments include development of an organic, computer-aided, model based systems engineering (MBSE), integration, and test software, product life-cycle management (PLM) framework, and modernization of existing SE labs and infrastructure. Efforts are focused on current and future requirements and technologies and reduced life cycle costs. This program also includes any needed nuclear surety and certification and system vulnerability assessments.												
BA4 - This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	75.166	113.919	293.959	0.000	293.959	
Current President's Budget	64.966	113.919	215.721	0.000	215.721	
Total Adjustments	-10.200	0.000	-78.238	0.000	-78.238	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	-0.200	0.000				
• SBIR/STTR Transfer	-10.000	0.000				
• Other Adjustments	0.000	0.000	-78.238	0.000	-78.238	
Change Summary Explanation						
FY 2018 funding reflects a decrease of \$78.238M to align with the Independent Cost Estimate (ICE).						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Technology Maturation Risk Reduction				64.966	113.919	215.721
Description: The objectives of TMRR for GBSD are as follows: 1) advance GBSD major activities, systems engineering activities, trade-studies, information technology, data management, analytical capabilities and deliver a modular, integrated weapon system preliminary design and 2) mature technologies related to the major activities and demonstrate performance of sub-system capabilities through prototyping, modeling, and simulation.						
FY 2016 Accomplishments:						
- Initiated studies and analysis of Flight System subcomponents						
- Developed GBSD WSC2 systems architecture and components						
- Supported the Enterprise Capability Collaboration Team (ECCT) to identify and examine the GBSD WSC2 and LS concepts and technologies						
- Advanced GBSD data management, systems modeling and simulation, and analytical capabilities						
- Identified and assessed an integrated GBSD weapon system that included areas where component consolidation may have provided maintenance, security and performance advantages						
- Assessed areas where FS, communications, and infrastructure may support fielding and transitioning the MM III to GBSD to meet capabilities requirements						
- Milestone A completed (Aug 2016)						
FY 2017 Plans:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0605230F <i>I Ground Based Strategic Deterrent</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Examine and mature FS, WSC2, cybersecurity, and associated ground system technologies, define requirements and modular architectures through trade studies, prototyping, demonstration and analysis - Mature and refine software integration and modular system architecture requirements - Mature the assessment of the current MM III LS to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities - Mature the weapon system preliminary design and reduce integration risk by conducting trade studies, system engineering, test activities, and systems modeling and simulation - Further develop analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and information is securely transmitted between the government and each contractor. - Continue to assess fielding requirements for FS, WSC2 and LS and appropriate timelines to transition from MM III to GBSD solution <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue to examine and mature FS, WSC2, cybersecurity, and associated ground system technologies, define requirements and modular architectures through trade studies, prototyping, demonstration and analysis - Continue to mature and refine software integration and modular system architecture requirements - Continue to mature the assessment of the current MM III LS to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities - Continue to mature the weapon system preliminary design and reduce integration risk by conducting trade studies, system engineering, test activities, and systems modeling and simulation - Continue to further develop analytical, information technology, and data management capabilities to ensure weapon system design information is properly secured and information dissemination between contractors - Continue to assess fielding requirements for FS, WSC2 and LS and appropriate timelines to transition from MM III to GBSD solution - Complete System Requirements Review, cost-capability trade studies, and validate draft Capability Development Document. - Expand and develop analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and information is securely transmitted between the government and each contractor 				
Accomplishments/Planned Programs Subtotals		64.966	113.919	215.721

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>						R-1 Program Element (Number/Name) PE 0605230F <i>I Ground Based Strategic Deterrent</i>					
D. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
• RDTE:BA04:PE 0603851F: <i>Intercontinental Ballistic Missile - Dem/Val</i>	34.765	108.663	10.736	0.000	10.736	42.173	44.442	66.077	67.431	Continuing	Continuing
• MILCON: PE 0605230F: <i>Ground Based Strategic Deterrent (GBSD)</i>	0.000	0.000	0.000	0.000	0.000	0.000	108.000	151.037	135.700	319.220	713.957
Remarks											
E. Acquisition Strategy											
<p>The objective of the GBSD program strategy is to deliver a full, integrated weapon system capability that meets Air Force Global Strike Command's CDD requirements beginning in FY29. For the TMRR phase of this strategy, the Program Office will competitively award two contracts in FY17. The objectives of TMRR for GBSD are as follows: 1) to deliver low-risk, technologically mature, integrated weapon system preliminary design; 2) incorporate a modular open systems architecture; 3) perform cost-capability analysis to aid with validation of user requirements; 4) demonstrate performance of sub-system capabilities through prototyping, modeling, and simulation. The TMRR phase will include a System Requirements Review (SRR), System Functional Review (SFR), System Software Review (SSR), and will culminate in a system Preliminary Design Review (PDR). The contractor may elect to perform additional risk reduction testing on select components to further evolve the PDR design during TMRR in order to lower component integration risk during Engineering and Manufacturing Development (EMD). The anticipated period of performance for the TMRR contracts will be from 4QFY17 to 4QFY20. After MS B approval, EMD contract will be competitively awarded as early as FY20.</p>											
F. Performance Metrics											
<p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
GBSD Technology Maturation and Risk Reduction (TMRR) Contractor #1	C/CPFF	TBD : TBD	0.000	0.000		5.707	Sep 2017	58.346	Nov 2017	0.000		58.346	294.997	359.050	359.050
GBSD TMRR Contractor #2	C/CPFF	TBD : TBD	0.000	0.000		5.707	Sep 2017	58.346	Nov 2017	0.000		58.346	294.997	359.050	359.050
GBSD EMD Contracts	C/Various	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	13,944.160	13,944.160	-
Subtotal			0.000	0.000		11.414		116.692		0.000		116.692	14,534.154	14,662.260	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
GBSD Integration Support Contract (TMRR)	C/FFP	BAE : Hill AFB, UT	0.000	28.933	Oct 2015	36.720	Oct 2016	41.205	Oct 2017	0.000		41.205	152.999	259.857	-
GBSD Electronic Parts Strategy and Commonality (TMRR)	MIPR	Naval Surface Warfare Center (NSWC) Crane : Crane, IN	0.000	3.779	Mar 2016	6.359	Dec 2016	4.802	Dec 2017	0.000		4.802	5.000	19.940	-
GBSD Federally Funded Research and Development Center (FFRDC) (TMRR)	MIPR	Aerospace Corporation : El Segundo, CA	0.000	2.630	Dec 2015	5.404	Nov 2016	5.610	Oct 2017	0.000		5.610	18.360	32.004	-
GBSD MITRE (TMRR)	MIPR	MITRE : Bedford, MA	0.000	2.144	Feb 2016	2.358	Dec 2016	3.492	Oct 2017	0.000		3.492	10.476	18.470	-
GBSD Technical Area Task Support (TMRR)	MIPR	Air Force Global Strike Command : Barksdale AFB, LA	0.000	1.742	Jan 2016	1.218	Feb 2017	0.000		0.000		0.000	0.000	2.960	-
GBSD Software Engineering Institute (TMRR)	MIPR	Carnegie Mellon : Pittsburgh, PA	0.000	0.360	Jan 2016	1.979	Feb 2017	2.569	Oct 2017	0.000		2.569	8.406	13.314	-
GBSD Reentry Systems (RS) FFRDC Support and Analysis (TMRR)	MIPR	Sandia National Laboratories : Various	0.000	0.000		7.796	Mar 2017	6.510	Nov 2017	0.000		6.510	7.500	21.806	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0605230F / Ground Based Strategic Deterrent						Project (Number/Name) 641025 / GROUND BASED STRATEGIC DETERRENT (GBSD)			
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
GBSD RS FFRDC Analysis and Acquisition Intelligence Support (TMRR)	Various	Various : Various	0.000	0.000		2.344	Mar 2017	6.426	Oct 2017	0.000		6.426	23.084	31.854	-
GBSD Software Support (TMRR)	TBD	TBD : TBD	0.000	0.000		0.583	Jun 2017	1.416	Jan 2018	0.000		1.416	4.668	6.667	-
GBSD EMD Support	C/Various	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	1,702.011	1,702.011	-
Subtotal			0.000	39.588		64.761		72.030		0.000		72.030	1,932.504	2,108.883	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
GBSD Test and Assessments (TMRR)	Various	Various : Various	0.000	18.103	Sep 2016	25.002	Jan 2017	4.715	Nov 2017	0.000		4.715	1.311	49.131	-
GBSD Cybersecurity, Test and Evaluation Framework, Codes/Crypto (TMRR)	MIPR	Johns Hopkins University-Applied Physics Lab : Laurel, MD	0.000	4.027	Feb 2016	3.308	Jan 2017	2.179	Jan 2018	0.000		2.179	7.466	16.980	-
GBSD Integrated Test Team (TMRR)	PO	Arnold engineering Development Complex : Arnold AFB, TN	0.000	0.549	Jun 2016	1.332	Nov 2016	3.269	Oct 2017	0.000		3.269	19.239	24.389	-
GBSD Independent Operational Test Agency (TMRR)	PO	Air Force Operational and Evaluation Center : Hill AFB, UT	0.000	0.000		1.025	Mar 2017	1.518	Jan 2018	0.000		1.518	216.797	219.340	-
GBSD Integrated Threat Analysis and Simulation Environment (ITASE) I (TMRR)	MIPR	DIA-Missile and Space Intelligence Center : Redstone Arsenal, AL	0.000	0.000		2.402	Jan 2017	2.283	Jan 2018	0.000		2.283	9.975	14.660	-
GBSD ITASE II (TMRR)	MIPR	DIA-National Air and Space Intelligence	0.000	0.000		0.450	May 2017	2.313	Nov 2017	0.000		2.313	3.287	6.050	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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>			
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Center : Fairborn, OH													
GBSD Nuclear Dust and Debris Environments Study (TMRR)	TBD	TBD : TBD	0.000	0.000		1.160	Jun 2017	0.809	Jun 2017	0.000		0.809	1.821	3.790	-
GBSD RS Test and Assesments (TMRR)	MIPR	Various : Various	0.000	0.000		1.095	Jan 2017	6.077	Jan 2017	0.000		6.077	15.275	22.447	-
GBSD EMD Test Support	C/Various	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	844.954	844.954	-
Subtotal			0.000	22.679		35.774		23.163		0.000		23.163	1,120.125	1,201.741	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
GBSD PMA	Various	Various : Various	0.000	2.699	Oct 2015	1.970	Oct 2016	3.836	Oct 2017	0.000		3.836	88.020	96.525	-
Subtotal			0.000	2.699		1.970		3.836		0.000		3.836	88.020	96.525	-
Project Cost Totals			0.000	64.966		113.919		215.721		0.000		215.721	17,674.803	18,069.409	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0605230F / <i>Ground Based Strategic Deterrent</i>	Project (Number/Name) 641025 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>	

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Materiel Solution Analysis Phase																												
Milestone A (Aug 2016)																												
TMRR Phase																												
PDR (Jun 2020)																												
Milestone B (Sep 2020)																												
EMD Phase																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0605230F / Ground Based Strategic Deterrent	Project (Number/Name) 641025 / GROUND BASED STRATEGIC DETERRENT (GBSD)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Materiel Solution Analysis Phase	1	2016	3	2016
Milestone A (Aug 2016)	4	2016	4	2016
TMRR Phase	4	2016	4	2020
PDR (Jun 2020)	3	2020	3	2020
Milestone B (Sep 2020)	4	2020	4	2020
EMD Phase	1	2021	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0201184F I Counter Narco-Terrorism Program Office							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	1.850	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
649492: STRATEGIC ISR	-	1.850	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification This project provides for Counter-Drug activities.												
B. Program Change Summary (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Previous President's Budget				0.000	0.000	0.000	0.000	0.000				
Current President's Budget				1.850	0.000	0.000	0.000	0.000				
Total Adjustments				1.850	0.000	0.000	0.000	0.000				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				1.850	0.000							
• SBIR/STTR Transfer				0.000	0.000							
• Other Adjustments				0.000	0.000	0.000	0.000	0.000				
Change Summary Explanation FY16 transfer from Drug Interaction and Counter-Drug Activities, Defense consistent with provisions in Public Law 113-76.												
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Title: Counter-drug Activities										1.850	-	-
Description: Counter-drug Activities												
FY 2016 Accomplishments: Counter-drug Activities.												
Accomplishments/Planned Programs Subtotals										1.850	-	-

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0201184F <i>I Counter Narco-Terrorism Program Office</i>	
D. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
E. Acquisition Strategy N/A		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0207110F I Next Generation Air Dominance							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	32.495	167.595	294.746	0.000	294.746	507.705	1,318.301	1,204.800	1,244.912	Continuing	Continuing
646007: 2030+ AIR DOMINANCE AOS	-	32.495	167.595	293.743	0.000	293.743	504.404	1,315.000	1,200.000	1,240.000	Continuing	Continuing
646203: Air Dominance Air-to-Air Weapon	-	0.000	0.000	1.003	0.000	1.003	3.301	3.301	4.800	4.912	Continuing	Continuing

Note

This program, BA 04 PE 0207110F, project 646203, AS2030 Weapons, is a new start.

A. Mission Description and Budget Item Justification

Next Generation Air Dominance enables future execution of Air Force air superiority doctrine within the Air Superiority core mission area, as directed in Joint Requirements Oversight Council Memorandum (JROCM) 043-13 and by the CSAF approved Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT) Flight Plan. Program efforts mitigate critical capability gaps identified in the March 2011 Air Force Next Generation Tactical Air (TACAIR) Capabilities Based Assessment and revalidated in 2016 by the AS2030 ECCT. This program will provide air superiority capability improvements in the areas of persistence, survivability, lethality, connectivity, interoperability, and affordability. Funding provides program management support; operational concept exploration; technology studies, assessments and development; operational and system architecture development; maturation and risk reduction of air superiority related technologies, which includes weapons systems; 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	8.830	20.595	12.875	0.000	12.875
Current President's Budget	32.495	167.595	294.746	0.000	294.746
Total Adjustments	23.665	147.000	281.871	0.000	281.871
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	23.950	147.000			
• SBIR/STTR Transfer	-0.285	0.000			
• Other Adjustments	0.000	0.000	281.871	0.000	281.871

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0207110F I Next Generation Air Dominance
<p><u>Change Summary Explanation</u></p> <p>FY16 - \$23.95M reprogrammed 20Sep16 via approved FY16 Omnibus to further expand the scope of concept development & integration assessments and technology risk reduction activities addressing family of systems concepts.</p> <p>FY17 - \$147M added to further expand the scope of concept development, integration assessments, and accelerate technology risk reduction activities addressing family of systems concepts.</p> <p>FY18 - \$280.868M added to further expand the scope of concept development & integration assessments and accelerate technology risk reduction activities addressing family of systems concepts.</p> <p>- \$1.003M added to establish the Air Dominance Air-to-Air Weapon project for concept development, integration assessments and technology risk reduction activities addressing air dominance weapons.</p>		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
646007: 2030+ AIR DOMINANCE AOS	-	32.495	167.595	293.743	0.000	293.743	504.404	1,315.000	1,200.000	1,240.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Next Generation Air Dominance enables future execution of Air Force air superiority doctrine within the Air Superiority core mission area, as directed in Joint Requirements Oversight Council Memorandum (JROCM) 043-13 and by the CSAF approved Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT) Flight Plan. Program efforts mitigate critical capability gaps identified in the March 2011 Air Force Next Generation Tactical Air (TACAIR) Capabilities Based Assessment and revalidated in 2016 by the AS2030 ECCT. This program will provide air superiority capability improvements in the areas of persistence, survivability, lethality, connectivity, interoperability, and affordability. Funding provides program management support; operational concept exploration; technology studies, assessments and development; operational and system architecture development; maturation and risk reduction of air superiority related technologies, which includes weapons systems; 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. Accomplishments/Planned Programs (\$ in Millions)

	FY 2016	FY 2017	FY 2018
Title: 2030+ Air Dominance	32.495	167.595	293.743
Description: The 2030+ Air Dominance candidate concepts consist 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. These efforts will provide for contractors to conduct analyses, identify technology candidates and perform concept refinement. Furthermore, studies are required to develop operational/system architectures to include family of systems and system of systems. In addition, technical risk reduction activities will be performed to include experimentation, integration and building demonstrative prototypes.			
FY 2016 Accomplishments: The 2030+ Air Dominance candidate concepts consist 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. These efforts will provide for contractors to conduct analyses, identify technology candidates and perform concept refinement. Furthermore, studies are required to develop operational/system			

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

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>architectures to include family of systems and system of systems. In addition, technical risk reduction activities will be performed to include experimentation, integration and building demonstrative prototypes.</p> <p>FY 2017 Plans: The 2030+ Air Dominance candidate concepts will integrate technologies into evolving threat environments and scenarios. Studies that refine system concepts and operational/system architectures to include family of systems and system of systems are required in support of the strategic choices.</p> <p>FY 2018 Plans: The 2030+ Air Dominance candidate concepts consist 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. These efforts will provide for contractors to conduct analyses, identify technology candidates and perform concept refinement. Furthermore, studies are required to develop operational/system architectures to include family of systems and system of systems. In addition, technical risk reduction activities will be performed to include experimentation, integration and building demonstrative prototypes.</p>			
Accomplishments/Planned Programs Subtotals	32.495	167.595	293.743

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: None	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000
Remarks N/A											
D. Acquisition Strategy The Next Generation Air Dominance acquisition strategy is based on top-down, multi-domain capabilities development planning and oversight framework. Cross-functional teams will conduct war-games and experiments to quantify the operational value of alternative concepts and technologies to provide solutions to current and future air superiority capability gaps.											
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Research/Development Efforts	Various	Various : Various	-	31.395		164.295		277.643		0.000		277.643	Continuing	Continuing	-
Subtotal			-	31.395		164.295		277.643		0.000		277.643	-	-	-
Remarks Contractual specifics are not available at this level of security classification.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Various : Various	-	1.100		3.300		16.100		0.000		16.100	Continuing	Continuing	-
Subtotal			-	1.100		3.300		16.100		0.000		16.100	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	32.495		167.595		293.743		0.000		293.743	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force							Date: May 2017			
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			
	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks Details of contract data are not shown because of the level of security classification.										

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0207110F / <i>Next Generation Air Dominance</i>			Project (Number/Name) 646007 / <i>2030+ AIR DOMINANCE AOS</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Concept Exploration																												
Integration Studies																												
Technology Risk Reduction																												
Analysis of Alternatives																												
FY18 Strategic Planning Choices Presented																												
FY19 Strategic Planning Choices Presented																												
FY20 Strategic Planning Choices Presented																												
FY21 Strategic Planning Choices Presented																												
FY22 Strategic Planning Choices Presented																												
FY23 Strategic Planning Choices Presented																												
FY24 Strategic Planning Choices Presented																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207110F / <i>Next Generation Air Dominance</i>	Project (Number/Name) 646007 / <i>2030+ AIR DOMINANCE AOS</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Concept Exploration	1	2016	4	2022
Integration Studies	3	2016	4	2022
Technology Risk Reduction	3	2016	4	2022
Analysis of Alternatives	2	2017	3	2018
FY18 Strategic Planning Choices Presented	1	2016	1	2016
FY19 Strategic Planning Choices Presented	1	2017	1	2017
FY20 Strategic Planning Choices Presented	1	2018	1	2018
FY21 Strategic Planning Choices Presented	1	2019	1	2019
FY22 Strategic Planning Choices Presented	1	2020	1	2020
FY23 Strategic Planning Choices Presented	1	2021	1	2021
FY24 Strategic Planning Choices Presented	1	2022	1	2022

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0207110F / Next Generation Air Dominance				Project (Number/Name) 646203 / Air Dominance Air-to-Air Weapon			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
646203: Air Dominance Air-to-Air Weapon	-	0.000	0.000	1.003	0.000	1.003	3.301	3.301	4.800	4.912	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 04 PE 0207110F, project 646203, AS2030 Weapons, is a new start.

A. Mission Description and Budget Item Justification

Next Generation Air Dominance enables future execution of Air Force air superiority doctrine within the Air Superiority core mission area, as directed in Joint Requirements Oversight Council Memorandum (JROCM) 043-13 and by the CSAF approved Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT) Flight Plan. Program efforts mitigate critical capability gaps identified in the March 2011 Air Force Next Generation Tactical Air (TACAIR) Capabilities Based Assessment and revalidated in 2016 by the AS2030 ECCT. This program will provide air superiority capability improvements in the areas of persistence, survivability, lethality, connectivity, interoperability, and affordability. Funding provides program management support; operational concept exploration; technology studies, assessments and development; operational and system architecture development; maturation and risk reduction of air superiority related technologies, which includes weapons systems; 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. Accomplishments/Planned Programs (\$ in Millions)

	FY 2016	FY 2017	FY 2018
Title: AS2030 Weapons	0.000	0.000	1.003
Description: The 2030+ Air Dominance Weapon Systems candidate concepts will develop, refine and integrate technologies into evolving threat scenarios and environments. Funding supports studies that refine system concepts and operational/system architectures to include family of systems and system of systems are required in support of the strategic choices and technical risk reduction activities that include but not limited to experimentation, integration and building demonstrative prototypes.			
FY 2016 Accomplishments: N/A			
FY 2017 Plans: N/A			
FY 2018 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0207110F / Next Generation Air Dominance				Project (Number/Name) 646203 / Air Dominance Air-to-Air Weapon			

B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
<p>The 2030+ Air Dominance candidate concepts consist 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. These efforts will provide for contractors to conduct analyses, identify technology candidates and perform concept refinement. Furthermore, studies are required to develop operational/system architectures to include family of systems and system of systems. In addition, technical risk reduction activities will be performed to include experimentation, integration and building demonstrative prototypes.</p>												
Accomplishments/Planned Programs Subtotals										0.000	0.000	1.003

C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>						<u>Cost To</u>
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
D. Acquisition Strategy											
<p>The Next Generation Air Dominance Air-to-Air Weapon acquisition strategy is based on top-down, multi-domain capabilities development planning and oversight framework. Cross-functional teams will conduct war-games and experiments to quantify the operational value of alternative concepts and technologies to provide solutions to current and future air superiority capability gaps.</p>											
E. Performance Metrics											
<p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0207455F I Three Dimensional Long-Range Radar (3DELRR)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	91.723	7.865	49.491	10.645	0.000	10.645	13.729	24.828	0.259	0.266	0.000	198.806
646002: Three Dimensional Expeditionary Long Range Radar	91.723	7.865	49.491	10.645	0.000	10.645	13.729	24.828	0.259	0.266	0.000	198.806
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 393												
A. Mission Description and Budget Item Justification												
Mission Description: The Three-Dimensional Expeditionary Long-Range Radar (3DELRR) will be the principal USAF long-range, ground-based sensor for detecting, identifying, tracking and reporting aerial tracks for the Joint Force Air Component Commander through the Theater Air Control System. The 3DELRR system will provide multiple benefits and increased capabilities to the USAF and to the joint Services: 1) Replace the aging USAF AN/TPS-75 radar system, which is at the end of its service life and costly to maintain; 2) Detect and track highly maneuverable, small radar cross section air-breathing targets; 3) Mitigate reliability, operational availability, maintainability, transportability and sustainability issues, which plague the AN/TPS-75 radar system; 4) Enable greater battlefield and battlespace awareness through its precise, real-time air picture of sufficient quality to control individual aircraft under a wide range of environmental and operational conditions; 5) Serve as a pilot program for Defense Exportability Features to maximize early in the design phase export potential while reducing 3DELRR life cycle costs through increased production; and 6) Provide exchange of information to the Marine Corps (Navy) via the Composite Tracking Network interface and to the Army via the Integrated Fire Control Network interface.												
Note: This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)				
3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0207455F I Three Dimensional Long-Range Radar (3DELRR)				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	8.139	49.491	50.614	0.000	50.614	
Current President's Budget	7.865	49.491	10.645	0.000	10.645	
Total Adjustments	-0.274	0.000	-39.969	0.000	-39.969	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	-0.274	0.000				
• Other Adjustments	0.000	0.000	-39.969	0.000	-39.969	
Change Summary Explanation						
- FY18 \$39.969M due to Engineering and Manufacturing Development contract delays as a result of protests						
The start of Engineering and Manufacturing Development (EMD) has been delayed due to contractor protests and continued source selection activities. The Air Force plans to award its EMD prime contract mid 3QFY17.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Contractor Engineering and Manufacturing Development (EMD)				0.000	40.367	0.000
Description: Contractor's portion of EMD efforts contribute to the overall development of 3DELRR capabilities.						
FY 2016 Accomplishments:						
- Activities included studies, analyses, and risk mitigation to support program planning and execution						
FY 2017 Plans:						
Activities include but are not limited to the following:						
Conduct program management and systems engineering activities to kick off and begin executing the EMD Phase of 3DELRR:						
- Start EMD prime contract and clarify requirements through Post Award Conference						
- Establish joint teams through Acquisition Program Transition Workshop						
- Execute Delta Preliminary Design Review (PDR) and Engineering Design Readiness Review (EDRR)						
- Clarify Critical Design Review requirements & criteria						
- Conduct Program Management Reviews						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
- Begin contractor test planning and preparation FY 2018 Plans: Activities will include but are not limited to the following: Conduct program management and systems engineering activities to continue execution of Engineering and Manufacturing Development (EMD) Phase of 3DELRR: - Mature system design through successful Critical Design Review (CDR) - Conduct Integrated Baseline Review (IBR) - Continue contractor developmental test planning and preparation - Start build of three (3) EMD production ready units; fabricate components & subsystems - Start contractor developmental testing of components & subsystems - Conduct initial physical configuration audit - Support studies and analysis to assess future capabilities				
Title: Government Developmental Test and Evaluation (DT and E) Planning/Preparation Description: Early planning/preparation postures Government DT&E, which will begin in FY19. FY 2016 Accomplishments: T&E activities included, but were not limited to: - Developed the test strategy and test related documentation - Planned developmental test and evaluation events as well as cyber-security planning - Participated in technical and test related working groups FY 2017 Plans: Activities include but are not limited to the following: - Provide test expertise and support at Delta Preliminary Design Review (PDR) and Engineering Design Readiness Review (EDRR) - Develop and refine Test Evaluation Master Plan (TEMP) and other test planning documentation - Contribute to technical interchanges and test-related working groups - Begin detailed test planning such as design of experiments and integration of cyber-security FY 2018 Plans: Activities will include but are not limited to the following: - Provide test expertise and support at CDR and IBR - Continue development and refinement of TEMP and other test planning documentation - Conduct site-surveys and continue cyber-security planning		0.480	0.676	1.681

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017				
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0207455F I Three Dimensional Long-Range Radar (3DELRR)							
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018		
- Monitor and evaluate contractor developmental testing; tailor lessons for Government DT&E - Contribute to technical interchanges and test-related working groups - NOTE: Training and travel ramp up this FY in preparation for Government DT&E start in FY19												
Title: Program Management/Systems Engineering/Technical Support								7.385	8.448	8.964		
Description: Efforts provide management, engineering and technical support to the program office.												
FY 2016 Accomplishments: - Activities included analyses and planning for future execution to include, but were not limited to, modeling and simulation, information assurance, program protection, and cyber-security												
FY 2017 Plans: - Begin Engineering and Manufacturing Development (EMD) efforts to further mature technology readiness and manufacturing capabilities - Lead and manage program through daily interaction with contractor and key stakeholders - Oversee programmatic, design and technical reviews, e.g., Delta Preliminary Design Review (PDR), Engineering Design Readiness Review (EDRR), etc. - Manage, analyze and process contract data requirements for cost, schedule and performance - Identify, monitor and mitigate program and technical risks; facilitate program office reporting												
FY 2018 Plans: - Continue EMD efforts to further mature technology readiness and manufacturing capabilities - Lead and manage program through daily interaction with contractor and key stakeholders - Oversee programmatic, design and technical reviews, e.g., Critical Design Review (CDR), Integrated Baseline Review (IBR), program reviews, etc. - Monitor reliability growth during contractor component, subsystem and system level testing - Identify, monitor and mitigate program and technical risks; facilitate program office reporting												
Accomplishments/Planned Programs Subtotals								7.865	49.491	10.645		
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• OPAF: BA03: Line Item # 833060: 3D Expeditionary Long Range-Radar	0.000	0.000	0.000	0.000	0.000	10.099	118.109	128.734	139.768	722.690	1,119.400	

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force						Date: May 2017					
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 Program Element (Number/Name) PE 0207455F I Three Dimensional Long-Range Radar (3DELRR)							
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Remarks											
Given contractor protests, continued source selection and the expected award of the EMD prime contract in mid 3QFY17, the Air Force will reassess the timing of its OPAF funding requirement during the FY19 PB process.											
E. Acquisition Strategy											
The 3DELRR strategy is a single step acquisition approach for full capability to develop, produce and field a highly capable and sustainable, expeditionary long-range radar. A limited competition was conducted among the multiple contractors that participated in two Pre-EMD (or Technology Maturation and Risk Reduction) phases. The EMD contract will be awarded mid 3QFY17 to a single developer to complete the final design, build, integration and test of the 3DELRR system—with options to produce Low Rate Initial Production (LRIP) units, conduct Interim Contractor Support (ICS) and Full Rate Production (FRP).											
The primary contract type for EMD is a Fixed Price Incentive Firm (FPIF). The contract also includes a FPIF option to execute LRIP, Cost Plus Fixed Fee (CPFF) options for ICS and Firm Fixed Price (FFP) options for FRP. A CPFF option is planned for ICS due to the uncertainty of the quantity and the exact nature of the work. An FFP option is planned for FRP due to stable requirements and low risk of changes in scope. The program office will exercise the LRIP option upon Milestone Decision Authority (MDA) approval at MS C. The program office will also seek MDA approval to exercise ICS options (as necessary) and FRP options.											
The EMD prime contractor will deliver three (3) EMD units, which will be the primary assets used for contractor, Government, developmental and operational testing. The LRIP option provides scope for the retrofit of these three (3) EMD units to production quality specifications, plus it enables the delivery of three (3) additional production quality units for a total of six (6) units at Initial Operational Capability (IOC). The FRP options will deliver an additional twenty-nine (29) units for a total of thirty-five (35) units at Full Operational Capability (FOC).											
The MDA for the 3DELRR program is the Under Secretary of Defense for Acquisition, Technology and Logistics [USD (AT&L)]. The Air Force Program Executive Officer (PEO) for Battle Management (AFPEO BM) located at Hanscom AFB, MA is the PEO for 3DELRR. The Air Force Life Cycle Management Center (AFLCMC) located at Wright-Patterson AFB, OH is the contracting authority for the 3DELRR program, as AFLCMC provides contracting, legal, comptroller, programmatic, engineering, test and logistics support.											
F. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EMD Phase (Prime Contract)	C/FPIF	Pending Source Selection : TBD	72.659	0.000		40.367	May 2017	0.000	Oct 2017	0.000		0.000	10.991	124.017	265.000
Subtotal			72.659	0.000		40.367		0.000		0.000		0.000	10.991	124.017	265.000
Remarks - Program delayed due to protests and continued source selection; projected contract award mid 3QFY17 - Target value of EMD prime contract is based on the most current Program Office Estimate - FINANCIAL PERFORMANCE: 3DELRR is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the 3DELRR EMD contract is a FPIF contract with progress payments. 20 percent of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering - A	SS/CPFF	MIT/Lincoln Laboratory : Lexington, MA	3.380	1.607	Nov 2015	1.900	Nov 2016	1.600	Nov 2017	0.000		1.600	1.396	9.883	-
System Engineering - B	SS/CPFF	Carnegie Mellon University : Pittsburgh, PA	0.269	0.000	Oct 2015	0.150	Oct 2016	0.150	Oct 2017	0.000		0.150	0.000	0.569	-
System Engineering - C	SS/CPFF	GTRI : Atlanta, GA	0.000	0.725	Feb 2017	0.725	May 2017	0.725	Dec 2017	0.000		0.725	1.850	4.025	-
System Engineering - D	SS/CPFF	MITRE : Bedford, MA	0.000	2.758	Oct 2015	1.867	Oct 2016	3.080	Oct 2017	0.000		3.080	4.276	11.981	-
Subtotal			3.649	5.090		4.642		5.555		0.000		5.555	7.522	26.458	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Developmental Test and	PO	46 TS : Eglin AFB, FL	1.262	0.240	Feb 2016	0.676	Oct 2016	1.681	Oct 2017	0.000		1.681	13.915	17.774	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 4				PE 0207455F / Three Dimensional Long-Range Radar (3DELRR)				646002 / Three Dimensional Expeditionary Long Range Radar							
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Evaluation Planning and Preparation															
Subtotal			1.262	0.240		0.676		1.681		0.000		1.681	13.915	17.774	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration	Various	AFLCMC/HBDD : Hanscom AFB, MA	14.153	2.535	Oct 2015	3.806	Oct 2016	3.409	Oct 2017	0.000		3.409	6.654	30.557	-
Subtotal			14.153	2.535		3.806		3.409		0.000		3.409	6.654	30.557	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			91.723	7.865		49.491		10.645		0.000		10.645	39.082	198.806	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

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

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EMD Contract Award																												
Government DT&E Planning/Preparation																												
EMD																												
Critical Design Review (CDR) (October 2017)																												
Contractor Test																												
Developmental Test and Evaluation Test Readiness Review (July 2019)																												
Government Development Test																												
EMD Unit Delivery																												
Operational Test Readiness Review (OTRR) (December 2020)																												
Milestone C (January 2021)																												
Government Operational Test																												
Low Rate Initial Production (LRIP)																												
Full Rate Production (FRP) Decision (March 2022)																												
Full Rate Production																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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
EMD Contract Award	3	2017	3	2017
Government DT&E Planning/Preparation	3	2017	4	2019
EMD	3	2017	2	2021
Critical Design Review (CDR) (October 2017)	1	2018	1	2018
Contractor Test	2	2018	3	2019
Developmental Test and Evaluation Test Readiness Review (July 2019)	4	2019	4	2019
Government Development Test	4	2019	4	2020
EMD Unit Delivery	4	2019	4	2019
Operational Test Readiness Review (OTRR) (December 2020)	1	2021	1	2021
Milestone C (January 2021)	2	2021	2	2021
Government Operational Test	2	2021	1	2022
Low Rate Initial Production (LRIP)	2	2021	4	2022
Full Rate Production (FRP) Decision (March 2022)	2	2022	2	2022
Full Rate Production	2	2022	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	143.118	278.147	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
643833: MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP	-	143.118	278.147	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0305164F, NAVSTAR Global Positioning System (User Equipment) efforts were transferred to PE 1203164F, NAVSTAR Global Positioning System (User Equipment), due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203164F.

B. Program Change Summary (\$ in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	143.118	278.147	0.000	0.000	0.000
Total Adjustments	143.118	278.147	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	143.118	278.147	0.000	0.000	0.000

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

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					PE 0305236F I <i>Common Data Link Executive Agent (CDL EA)</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	42.338	41.509	0.000	41.509	42.196	43.029	43.866	44.761	Continuing	Continuing
641334: <i>Common Data Link (CDL)</i>	-	0.000	42.338	41.509	0.000	41.509	42.196	43.029	43.866	44.761	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Common Data Link Executive Agent (CDL EA) provides the DoD standard for interoperable, multi-service, multi-agency, Intelligence, Surveillance, and Reconnaissance (ISR) datalinks for 10,000+ DoD manned/unmanned airborne and ground platforms. As the DoD CDL EA, the Air Force is responsible for cross-service application of CDL RDT&E Military Intelligence Program (MIP) funds facilitating compliance to Congressional and DoD mandates. The CDL EA develops, modifies, distributes, and maintains specifications for the CDL waveform family; ensuring design configuration control, commonality, and interoperability among ISR platforms. Additionally, funds support managing resources allocated for development, maturation, and migration of CDL technologies.

CDL EA enables compliance with OSD and Congressional mandates to effectively utilize spectrum, use approved cryptographic equipment, and provide direct support to current operations. CDL is a vital link in DoD's existing and emerging communication architectures, providing flexibility to accommodate Command and Control (C2) data and myriad types of Signals Intelligence (SIGINT), Geospatial Intelligence (GEOINT), and Full-Motion Video (FMV) data. The CDL specifications permit current and future ISR asset operations worldwide by providing sensor data directly via point-to-point and broadcast to ground sites, airborne platforms and dismounted users. Also, CDL provides the capability to relay data via air-to-air or compatible satellite links when the asset and ground site are not in line-of-sight.

CDL EA's research and development activities support a broad array of tactical, operational, and strategic ISR users and include achieving higher data rates, open architecture development, multi- access and multi-node network management, crypto modernization, advancements needed to operate in contested environments, terminal and antenna design enhancements, operations in other spectral bands, and improving spectrum efficiency. Further, CDL development improves large area surveillance missions while supporting continuous improvements and implementation of line-of-sight platform and CDL terminal Command and Control (C2), plus increased ISR (C2ISR) capabilities. Activities also include studies and analysis to support current and future requirements documentation, program planning and execution. CDL prototype terminal designs provide for future technology insertion and reduce non-recurring engineering and life-cycle costs to the user.

In addition, the Cryptographic Modernization thrust enables CDL to develop a miniaturized gigabit rate Communications Security (COMSEC) device capable of managing CDL data. The miniaturized COMSEC device will allow faster throughput while reducing Size, Weight, and Power (SWaP) requirements.

This program was previously in Budget Activity 7, Operational System Development, but was migrated to BA4 due to better fit of specification development and prototype terminal development activities.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017			
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 0305236F I Common Data Link Executive Agent (CDL EA)					
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget		0.000	42.338	41.390	0.000	41.390	
Current President's Budget		0.000	42.338	41.509	0.000	41.509	
Total Adjustments		0.000	0.000	0.119	0.000	0.119	
• Congressional General Reductions		0.000	0.000				
• Congressional Directed Reductions		0.000	0.000				
• Congressional Rescissions		0.000	0.000				
• Congressional Adds		0.000	0.000				
• Congressional Directed Transfers		0.000	0.000				
• Reprogrammings		0.000	0.000				
• SBIR/STTR Transfer		0.000	0.000				
• Other Adjustments		0.000	0.000	0.119	0.000	0.119	
C. Accomplishments/Planned Programs (\$ in Millions)					FY 2016	FY 2017	FY 2018
Title: Common Data Link (CDL) Technology Advancement					0.000	9.670	10.000
Description: CDL evolutionary concept development, exploratory prototyping, advanced technology demonstrations, and studies of emerging technologies and capability gaps.							
FY 2016 Accomplishments: In FY16 activities were reported in Budget Activity 7, PE 0305236F, Project 674819, CDL							
FY 2017 Plans: - Continue to research and evaluate technology developments for enhancing networking, as well as more effective ground and lightweight airborne terminal components - Continue to develop multispectral operations flexibility, increased spectrum efficiency and integration of improved transmission components - Continue development of enhanced, CDL-based ISR communication capabilities across multiple platforms and echelons - Continue exploratory prototyping efforts and advanced technology demonstrations in support of emerging communication backbone architecture development across air, space and terrestrial layers; to include: agile high capacity data transport, assured communications and multi-mode access networks - Continue to research and develop upgrades to support current and future specification employment profiles							
FY 2018 Plans:							

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0305236F <i>I Common Data Link Executive Agent (CDL EA)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Will continue to research and evaluate technology developments for enhancing networking, as well as more effective ground and lightweight airborne terminal components - Will continue to develop multispectral operations flexibility, increased spectrum efficiency and integration of improved transmission components - Will continue development of enhanced, CDL-based ISR communication capabilities across multiple platforms and echelons - Will continue exploratory prototyping efforts and advanced technology demonstrations in support of emerging communication backbone architecture development across air, space and terrestrial layers; to include: agile high capacity data transport, assured communications and multi-mode access networks - Will continue to research and develop upgrades to support current and future specification employment profiles 				
Title: Common Data Link (CDL) Specification Development, Validation, Test and Maintenance Description: Systems engineering lifecycle for CDL and NATO STANAG 7085 specification development: requirement decomposition, specification development (modeling, maturation, documentation), specification validation (and associated component prototyping), testing, configuration management, and process maintenance. FY 2016 Accomplishments: In FY16 activities were reported in Budget Activity 7, PE 0305236F, Project 674819, CDL FY 2017 Plans: <ul style="list-style-type: none"> - Continue development and testing of Higher Data Rates to existing and emerging terminals, while also prototyping Small Unmanned Airborne Systems (SUAS) terminal development that combines Size, Weight and Power (SWaP) improvements with higher data rate capability and integration of improved transmission components - Continue adding capabilities required to support the Joint Aerial Layer Network (JALN) High Capacity Backbone (HCB), Anti-Access Area-Denial (A2AD) requirements, and other emerging operational capabilities - Continue development of spectrally efficient CDL waveform specification - Continue to work with CDL industry partners and DoD Services to document, validate and implement common terminal control interfaces through use of commercially recognized standards - Continue configuration control of the CDL architecture, standards, specifications and modules - Continue development of CDL test equipment capable of compliance testing to the latest, validated version of CDL specifications FY 2018 Plans: <ul style="list-style-type: none"> - Will continue development and testing of Higher Data Rates to existing and emerging terminals, while also prototyping terminal development that combines Size, Weight and Power (SWaP) improvements with higher data rate capability and integration of improved transmission components 		0.000	25.668	24.690

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0305236F <i>I Common Data Link Executive Agent (CDL EA)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Will continue adding capabilities required to support the Joint Aerial Layer Network (JALN) High Capacity Backbone (HCB), Anti-Access Area-Denial (A2AD) requirements, and other emerging operational capabilities - Will continue development of spectrally efficient CDL waveform specification - Will continue to work with CDL industry partners and DoD Services to document, validate and implement common terminal control interfaces through use of commercially recognized standards - Will continue configuration control of the CDL architecture, standards, specifications and modules - Will continue development of CDL test equipment capable of compliance testing to the latest, validated version of CDL specifications 				
Title: Common Data Link (CDL) Cryptographic Modernization (previously listed as Gigabit Encryption) Description: Phased development effort to modernize CDL Communications Security (COMSEC) devices and standards to maximize performance and reduce SWaP requirements while supporting commonality, modularity, portability, remote management, multi-level security and releasability. FY 2016 Accomplishments: In FY16 activities were reported in Budget Activity 7, PE 0305236F, Project 674819, CDL FY 2017 Plans: <ul style="list-style-type: none"> - Continue development of Generation Two Nano and Mini cryptographic cores for U.S. and NATO release - Continue development of multi-channel, gigabit data rate (Mega) cryptographic cores FY 2018 Plans: <ul style="list-style-type: none"> - Will complete development of generation two Nano and Mini cryptographic cores for U.S. and NATO release - Will continue development of multi-channel, gigabit data rate (Mega) cryptographic cores 		0.000	7.000	6.819
Accomplishments/Planned Programs Subtotals		0.000	42.338	41.509
D. Other Program Funding Summary (\$ in Millions) N/A Remarks E. Acquisition Strategy The Air Force serves as the DoD Common Data Link Executive Agent, with support from each Service's designated CDL lead and the Airborne Network Division (AFLCMC/HNA). The CDL EA develops interoperable ISR data links mandated for use by Assistant Secretary of Defense (Networks and Information Integration) (ASD(NII)) policy. Once CDL technology development matures and a specification is published, platforms are responsible for CDL compliant terminal procurement;				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0305236F I Common Data Link Executive Agent (CDL EA)
National Security Agency (NSA) and Joint Interoperability Test Command (JITC) compliance certifications; integration; and installation. Acquisition strategy varies by contract. When possible, contracts are awarded under full and open competition.		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0305236F / Common Data Link Executive Agent (CDL EA)				Project (Number/Name) 641334 / Common Data Link (CDL)					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Air Force Information Assurance Modernization / Network Management	MIPR	NSA : Ft Meade, MD	-	0.000		7.000	Nov 2016	6.843	Nov 2017	0.000		6.843	Continuing	Continuing	-
Marine CDL for Tactical UAS	Various	Various : Various	-	0.000		3.000	Nov 2016	2.933	Mar 2018	0.000		2.933	Continuing	Continuing	-
Terminal Database	C/CPFF	Booze Allen : McClean, VA	-	0.000		0.700	May 2017	0.684	Nov 2017	0.000		0.684	Continuing	Continuing	-
Compliance Test Tool	C/Various	Various : Various	-	0.000		3.637	Jun 2017	3.556	Dec 2017	0.000		3.556	Continuing	Continuing	-
Under Threshold Combined	Various	Various : Various	-	0.000		7.045	Dec 2016	6.887	Dec 2017	0.000		6.887	Continuing	Continuing	-
Subtotal			-	0.000		21.382		20.903		0.000		20.903	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Special studies, analysis, and engineering services	SS/CPFF	Johns Hopkins University/Applied Physics Lab : Laurel, MD	-	0.000		0.790	May 2017	0.684	Jan 2018	0.000		0.684	Continuing	Continuing	-
Service Tech Support & Spec Development	MIPR	Various : Various	-	0.000		7.800	Jan 2017	7.625	Jan 2018	0.000		7.625	Continuing	Continuing	-
Subtotal			-	0.000		8.590		8.309		0.000		8.309	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Interoperability Test Center (JITC)	MIPR	JITC : Ft Huachuca, AZ	-	0.000		1.000	Jun 2017	0.978	Jan 2018	0.000		0.978	Continuing	Continuing	-
46 Test Squadron	PO	46 TS/OGEX : Eglin AFB, FL	-	0.000		0.369	Nov 2016	0.192	Feb 2018	0.000		0.192	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>						Project (Number/Name) 641334 / <i>Common Data Link (CDL)</i>			
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	0.000		1.369		1.170		0.000		1.170	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA-MITRE Engineering Support (FFRDC)	SS/T&M	MITRE Corp : Bedford, MA	-	0.000		0.100	Nov 2016	0.167	Oct 2017	0.000		0.167	Continuing	Continuing	-
PMO/Service- MITRE Engineering Direct Mission Support (FFRDC)	SS/T&M	MITRE Corp. : Bedford, MA	-	0.000		6.059	Nov 2016	6.198	Oct 2017	0.000		6.198	Continuing	Continuing	-
PMA - PMO Support (A&AS)	C/CPFF	PE Systems : Littleton, MA	-	0.000		0.766	Mar 2017	0.749	Jul 2018	0.000		0.749	Continuing	Continuing	-
PMA - Under Threshold Program Mgmt/Tech Support	Various	Various : Various	-	0.000		4.072	Jun 2017	4.013	Dec 2017	0.000		4.013	Continuing	Continuing	-
Subtotal			-	0.000		10.997		11.127		0.000		11.127	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		42.338		41.509		0.000		41.509	-	-	-
Remarks															

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

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>	Project (Number/Name) 641334 / <i>Common Data Link (CDL)</i>
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	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CDL Technology Advancement																												
- Spectrum efficient/Frequency agile CDL																												
- Capability Gap Analysis / Roadmap Update																												
- Multi-access / Mesh Network Advancements																												
CDL Specification Development, Validation, Test and Maintenance																												
- SUAS SWAP Constrained Rev B Terminals																												
- CDL Compliance Test Set																												
CDL Cryptographic Modernization																												
- Multi-algorithm US/Coalition crypto core modules (Generation 2)																												
- Multi-sensor aware/Shared state crypto core modules																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>	Project (Number/Name) 641334 / <i>Common Data Link (CDL)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CDL Technology Advancement	1	2017	4	2022
- Spectrum efficient/Frequency agile CDL	1	2017	4	2018
- Capability Gap Analysis / Roadmap Update	1	2017	4	2017
- Multi-access / Mesh Network Advancements	1	2017	4	2019
CDL Specification Development, Validation, Test and Maintenance	1	2017	4	2022
- SUAS SWAP Constrained Rev B Terminals	1	2017	4	2017
- CDL Compliance Test Set	1	2017	2	2020
CDL Cryptographic Modernization	1	2017	2	2021
- Multi-algorithm US/Coalition crypto core modules (Generation 2)	1	2017	2	2018
- Multi-sensor aware/Shared state crypto core modules	2	2019	2	2021

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

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>I Cyber Operations Technology Development</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	91.845	162.702	226.287	5.400	231.687	203.833	200.530	213.998	219.345	Continuing	Continuing
646008: <i>US Cyber Command Technology Development</i>	-	91.845	162.702	226.287	5.400	231.687	203.833	200.530	213.998	219.345	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

US Cyber Command's (USCYBERCOM) mission is to deter or defeat strategic threats to US interests and infrastructure, provide mission assurance for the operations and defense of the Department of Defense information environment, and support the achievement of Joint Force Commander objectives.

USCYBERCOM in conjunction with the Services and National Agencies will develop and expand infrastructure architectures and capabilities/tools to support Cyber Mission Forces (CMF).

The portfolio was restructured to facilitate alignment of resources to capabilities.

The focus is on four broad program areas:

1. Common Services: funding is for enterprise capabilities that enable mission execution for the Cyber Mission Forces. Common Services includes a Unified Platform (UP) to enable CMF to conduct planning and execution of full-spectrum cyber operations. UP supports and links the following common service capabilities enabling the CMF: Command and Control; defensive cyber operations; situational awareness; and training and assessment.
2. Access Platforms: funding supports development of capabilities and/or infrastructures used by Cyber Mission Forces for employment of access on networks to create effects. Efforts include research, analysis, testing, assessment and integration. Further details are held at higher classification levels.
3. Tools: funding supports development of common and specialized tools critical to gain access to or create effects on networks. Efforts include research, studies, analysis, testing, assessment of development, integration, and operational assessment of cyberspace capabilities, methodologies and tactics. Funding also supports OCO requirements for Cyber, Joint Task Force ARES.
4. Analytics: funding supports capabilities used in Cyber Mission Force operations to store, correlate, and analyze data collected from multiple sources to garner unique insights to enable decision making.

The origin, details and specific aspects of these efforts are classified and will be provided on a need-to-know basis. For further information please contact USCYBERCOM at 443-634-7769.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017				
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0306250F I Cyber Operations Technology Development						
This 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total		
Previous President's Budget		81.732	158.002	223.636	0.000	223.636		
Current President's Budget		91.845	162.702	226.287	5.400	231.687		
Total Adjustments		10.113	4.700	2.651	5.400	8.051		
• Congressional General Reductions		-0.020	0.000					
• Congressional Directed Reductions		0.000	0.000					
• Congressional Rescissions		0.000	0.000					
• Congressional Adds		12.000	0.000					
• Congressional Directed Transfers		0.000	0.000					
• Reprogrammings		0.884	0.000					
• SBIR/STTR Transfer		-2.751	0.000					
• Other Adjustments		0.000	4.700	2.651	5.400	8.051		
Change Summary Explanation								
Fiscal Year (FY) 2016 Congressional add of FY16 \$12 million for USCYBERCOM Combatant Command (COCOM) Support.								
Fiscal Year (FY) 2017 Request for Additional Appropriations: \$4.7 million in Overseas Contingency Operations (OCO) funding is required to accelerate the build of Title X Infrastructure and access platforms.								
Fiscal Year (FY) 2018 Total Adjustments reflects: OCO \$5.4 million for Joint Task Force ARES, Cyber Situational Awareness \$7 million, internal realignment (-\$5 million) and Air Force inflation.								
Some aspects of the congressional adds are classified and will be provided on a need-to-know basis. For further information please contact USCYBERCOM, 443-634-7769.								
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Combatant Command Support				29.164	36.700	-	-	-
Description: Supports development and testing of various tools critical to achieving Combatant Command military objectives. Including research, studies, integration, analysis, access development and operational assessment of cyberspace capabilities, methodologies and tactics in support of Combatant Command								

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0306250F I Cyber Operations Technology Development				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
objectives. Further details are held at higher classification levels.						
FY 2016 Accomplishments: - Support studies, analysis, testing and prototype development of cyber operations capabilities and tools in support of Combatant Command military objectives - Support advanced reverse engineering efforts, development of Electronic Warfare and cyberspace targeting efforts, a framework to underpin analytic and targeting efforts and seed funding for cyber capabilities and tools in support of cyber operations requirements - Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-634-7769.						
FY 2017 Plans: - Will continue to support studies, analysis, testing and development of cyber operations capabilities and tools in support of Combatant Command military objectives - Will support advanced reverse engineering efforts, development of Electronic Warfare and cyberspace targeting efforts - Will develop Cyber capabilities and prototype tools in support of operational requirements - Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-634-7769.						
Title: Defend the Nation Description: Funding supports the prototype development of a diverse cyber capability portfolio to enable efforts in order to defeat a wide variety of cyber attacks. Efforts include research, integration, analysis, access development, training, testing, and assessments for defensive cyber capabilities. FY 2016 Accomplishments: - Support cyber operations prototype tools development, engineering, data strategy, and development of a common operating picture that enables USCYBERCOM to conduct operations in defense of specified Department of Defense information networks		35.218	71.359	-	-	-

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0306250F I Cyber Operations Technology Development				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<div>- Support prototype tool development for Joint Cyber Centers with an event detection capability and engineering support to ensure smooth integration and development</div> <div>- Support efforts to solve operational limitations, vulnerabilities and requirements</div> <div>- Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-634-7769.</div> <div>FY 2017 Plans:<div>- Will continue to support studies, analysis, testing and development of cyber operations capabilities and tools in support of Combatant Command military objectives</div><div>- Will support advanced reverse engineering efforts, development of Electronic Warfare and cyberspace targeting efforts</div><div>- Will develop Cyber capabilities and prototype tools in support of operational requirements</div><div>- Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-634-7769.</div></div>						
<div>Title: Operate and Defend the DoDIN / Cyber Situational Awareness / Unified Platform</div> <div>Description: Supports engineering and development of tools, data strategy, and management of a common operating picture support operations focused on cyber key terrain at the global and national level and for cyber situational awareness for the services and CCMDs to support operations focused on cyber key terrain at the global and national level. Further details are held at higher classification levels.</div> <div>FY 2016 Accomplishments:<div>- Support cyber operations prototype tools development, engineering, data strategy, and development of a common operating picture that enables USCYBERCOM to conduct operations in defense of specified Department of Defense information networks</div><div>- Support prototype tool development for Joint Cyber Centers with an event detection capability and engineering support to ensure smooth integration and development</div></div>		27.463	54.643	-	-	-

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0306250F I Cyber Operations Technology Development				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>- Support efforts to solve operational limitations, vulnerabilities, and requirements</p> <p>- Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-634-7769.</p> <p>FY 2017 Plans:</p> <p>- Will continue cyber operations tools development, engineering, data strategy, and development of a common operating picture that enables USCYBERCOM to conduct operations in defense of specified Department of Defense information network</p> <p>- Will support prototype tool development for Joint Cyber Centers at all Combatant Commands with an event detection capability and engineering support to ensure smooth integration and development</p>						
<p>Title: Common Services</p> <p>Description: Funding supports capabilities used in Cyber Mission Force operations to correlate data collected from multiple sources to garner unique insight to enable decision making.</p> <p>This major thrust is not a new start. The portfolio was restructured to provide additional fidelity. Funds were transferred from FY17 major thrusts (FY17 Defend the Nation).</p> <p>The origin, details and specific aspects of these efforts are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM, 443-634-7769.</p> <p>FY 2018 Base Plans:</p> <p>Will establish and evolve the Military Cyberspace Operations Platform (MCOP) to enable combined arms, offensive and defensive operations.</p> <p>Will continue development and employment for a series of operational prototypes under the Unified Platform that reduces acquisition risk, responds to operational imperatives, and ultimately support full-spectrum cyberspace operations for the Cyber Mission Forces.</p> <p>Will support full deployment of CENTROPY, a Cyber C2 system that provides oversight and management of operational readiness.</p>		-	-	82.013	-	82.013

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0306250F I Cyber Operations Technology Development				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Will continue to support Phase 2 build-out for the Cyber Situation Awareness Evaluation of Alternatives.						
Will continue to support delivery of Unified Cyber Analysis Portal to Full Operational Capability (FOC) that provides a comprehensive solution for malware triage.						
Title: Access Platforms Description: Funding supports capabilities used in Cyber Mission Force operations to correlate data collected from multiple sources to garner unique insight to enable decision making. This major thrust is not a new start. The portfolio was restructured to provide additional fidelity. Funds were transferred from FY17 major thrusts (Combatant Command Support and Operate and Defend the DODIN and Cyber Situation Awareness and Unified Platform). The origin, details and specific aspects of these efforts are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM, 443-634-7769. FY 2018 Base Plans: Will continue employment of the on-net operations infrastructure used to conduct Title 10 cyberspace operations. Will continue employment of a USCYBERCOM cross domain solution that enables automated data flow from platform to data repository. Will support continued employment and deliver to Full Operational Capability (FOC), a system that provides a client/server platform to delivery multiple mission-based cyber effects. Will continue development of operational system that delivers distributed denial of service capabilities on the Department of Defense Information Network.		-	-	58.434	-	58.434
Title: Tools Description: Funding supports capabilities used in Cyber Mission Force operations to correlate data collected from multiple sources to garner unique insight to enable decision making.		-	-	75.588	5.400	80.988

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0306250F I Cyber Operations Technology Development				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>This major thrust is not a new start. The portfolio was restructured to provide additional fidelity. Funds were transferred from FY17 major thrusts (Combatant Command Support and Operate and Defend the DODIN and Cyber Situation Awareness and Unified Platform).</p> <p>The origin, details and specific aspects of these efforts are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM, 443-634-7769.</p> <p>FY 2018 Base Plans: Will continue development of the deployed exploitation framework for USCYBERCOM.</p> <p>Will continue execution of a spiral development process for cyberspace operations basic tools that provide operational agility during CMF effects operations.</p> <p>Will continue the tool repository and signature management study on each spiral of delivered tools that enables tool measurement and repository as well as a means to manipulate tool code to minimize risk of discovery.</p> <p>Will continue to support development and employment of the results of the study from the signature diversity study.</p> <p>FY 2018 OCO Plans: Will support Joint Task Force ARES OCO requirements.</p>						
<p>Title: Analytics</p> <p>Description: Funding supports capabilities used in Cyber Mission Force operations to correlate data collected from multiple sources to garner unique insight to enable decision making.</p> <p>This major thrust is not a new start. The portfolio was restructured to provide additional fidelity. Funds were transferred from FY17 major thrusts (Combatant Command Support and Operate and Defend the DODIN and Cyber Situation Awareness and Unified Platform).</p> <p>The origin, details and specific aspects of these efforts are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM, 443-634-7769.</p> <p>FY 2018 Base Plans:</p>		-	-	10.252	-	10.252

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0306250F <i>I Cyber Operations Technology Development</i>				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Will continue development of the Unclassified Amazon Web Services (AWS) GovCloud and Big Data Platform (BDP) that enables the Services CMF teams to identify anomalous behavior on the DODIN network.						
Will support development of technologies, policies, and processes needed to enable Intelligence and “indicator” sharing across the DODIN tiers and domains.						
Will support creation and development of Advanced Analytics that provides training and technical assistance on analytic tools and techniques, assist with developing target folders (to include target analysis, target system analysis, and network analysis), provide technical expertise on data query strategies, provide technical continuity for development efforts. Evaluate solutions and product capabilities. Provide analysis and report of solutions and/or product capabilities.						
Accomplishments/Planned Programs Subtotals		91.845	162.702	226.287	5.400	231.687
D. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
E. Acquisition Strategy Facilitate the delivery of technology capabilities to the Cyber Mission Forces, by applying innovative solutions for existing and emerging technologies. Contracts are awarded under full and open completion whenever possible. Variations of both Fixed Price (FP) and Cost Plus (CP) contracting vehicles will be used and managed by USCYBERCOM Acquisition authority, various Service Component contracting offices, Combatant Command Contracting offices and National Security Agency contracting offices.						
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.						

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Combatant Command Support	Various	Multiple Agencies : Various	-	29.164	Nov 2015	36.700	Jul 2017	0.000		0.000		0.000	Continuing	Continuing	-
Defend the Nation	Various	Multiple Agencies : Various	-	35.218	Nov 2017	71.359	Nov 2016	0.000		0.000		0.000	Continuing	Continuing	-
Operate and Defend the DoDIN / Cyber Situational Awareness / Unified Platform	Various	Multiple Agencies : Various	-	27.463	Nov 2015	54.643	Nov 2016	0.000		0.000		0.000	Continuing	Continuing	-
Common Services	Various	Multiple Agencies : Various	-	0.000		0.000		81.724	Feb 2018	0.000		81.724	Continuing	Continuing	-
Access Platforms	Various	Multiple Agencies : Various	-	0.000		0.000		58.085	Feb 2018	0.000		58.085	Continuing	Continuing	-
Tools	Various	Multiple Agencies : Various	-	0.000		0.000		73.966	Feb 2018	5.400		79.366	Continuing	Continuing	-
Analytics	Various	Multiple Agencies : Various	-	0.000		0.000		9.912	Feb 2018	0.000		9.912	Continuing	Continuing	-
Subtotal			-	91.845		162.702		223.687		5.400		229.087	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA	Various	Various : Various, MD	-	0.000		0.000		2.600	Feb 2018	0.000		2.600	Continuing	Continuing	-
Subtotal			-	0.000		0.000		2.600		0.000		2.600	-	-	-

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	91.845	162.702	226.287	5.400	231.687	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity

3600 / 4

R-1 Program Element (Number/Name)

PE 0306250F / Cyber Operations
Technology Development

Project (Number/Name)

646008 / US Cyber Command Technology
Development

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UP AoA (Common Services, formally Operate and Defend the DoDIN)																												
UP RR (Common Services)																												
Cyber C2 Pilot (Common Services, formally Combatant Command Support)																												
Cyber C2 FOC (Common Services)																												
Cyber C2 Spiral Development (Common Services)																												
Cyber SA Prototype (Common Services, formally Operate and Defend the DoDIN)																												
Cyber SA Spiral Development (Common Services)																												
Cyber UCAP FOC (Common Services)																												
Cyber UCAP Spiral Development (Common Services)																												
CYBERCOM access platform FOC (Access Platforms, formally Defend the Nation)																												
CYBERCOM access platform spiral development (Access Platforms)																												
Cyber data flow accross domain solution (Access Platforms)																												
Mission based platform IOC (Access Platforms)																												
DDoS for DODIN sustain (Access Platforms, formally Operate and Defend the DoDIN)																												
DDoS for DODIN spiral development (Access Platforms)																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																Date: May 2017																					
Appropriation/Budget Activity 3600 / 4										R-1 Program Element (Number/Name) PE 0306250F / Cyber Operations Technology Development								Project (Number/Name) 646008 / US Cyber Command Technology Development																			
										FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Exploitation framework spiral development (annual) - (Tools, formally Defend the Nation)																																					
Foundational tool suites (spirals annual) - (Tools)																																					
Mission based platform FOC (Access Platforms)																																					
Tool signature management study (Tools)																																					
Data analytics platform IOC (Analytics)																																					
Data analytics platform next GEN (Analytics)																																					
Data analytics platform technology insert (Analytics)																																					
Analytical capabilities spiral development (annual) - (Analytics)																																					

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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
UP AoA (Common Services, formally Operate and Defend the DoDIN)	1	2016	1	2019
UP RR (Common Services)	1	2017	4	2018
Cyber C2 Pilot (Common Services, formally Combatant Command Support)	1	2016	4	2017
Cyber C2 FOC (Common Services)	1	2018	4	2019
Cyber C2 Spiral Development (Common Services)	1	2020	4	2022
Cyber SA Prototype (Common Services, formally Operate and Defend the DoDIN)	1	2016	4	2018
Cyber SA Spiral Development (Common Services)	1	2019	4	2022
Cyber UCAP FOC (Common Services)	1	2017	3	2017
Cyber UCAP Spiral Development (Common Services)	3	2019	1	2021
CYBERCOM access platform FOC (Access Platforms, formally Defend the Nation)	1	2016	3	2017
CYBERCOM access platform spiral development (Access Platforms)	4	2017	4	2022
Cyber data flow accross domain solution (Access Platforms)	1	2017	4	2019
Mission based platform IOC (Access Platforms)	1	2017	3	2017
DDoS for DODIN sustain (Access Platforms, formally Operate and Defend the DoDIN)	1	2016	1	2019
DDoS for DODIN spiral development (Access Platforms)	1	2018	4	2022
Exploitation framework spiral development (annual) - (Tools, formally Defend the Nation)	1	2016	4	2022
Foundational tool suites (spirals annual) - (Tools)	1	2017	4	2022
Mission based platform FOC (Access Platforms)	1	2018	4	2022
Tool signature management study (Tools)	3	2017	4	2018
Data analytics platform IOC (Analytics)	1	2017	1	2018
Data analytics platform next GEN (Analytics)	2	2018	2	2020
Data analytics platform technology insert (Analytics)	3	2020	2	2022

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306250F / Cyber Operations Technology Development	Project (Number/Name) 646008 / US Cyber Command Technology Development	

Events	Start		End	
	Quarter	Year	Quarter	Year
Analytical capabilities spiral development (annual) - (Analytics)	1	2017	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0306415F I Enabled Cyber Activities							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	15.842	16.687	0.000	16.687	16.448	16.757	17.044	17.393	Continuing	Continuing
646008: US Cyber Command Technology Development	-	0.000	15.842	16.687	0.000	16.687	16.448	16.757	17.044	17.393	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

US Cyber Command's (USCYBERCOM) mission is to deter or defeat strategic threats to US interests and infrastructure, provide mission assurance for the operations and defense of the Department of Defense information environment, and support the achievement of joint force commander objectives.

USCYBERCOM develops or procures capabilities to enable Electronic Warfare and cyber-peculiar technologies for use by the Cyber Mission Forces (CMF).

In FY17 Enabled Cyber Activities was a new start.

The origin, details and specific aspects of these efforts are classified and will be provided on a need-to-know basis. For further information please contact USCYBERCOM at 443-634-7769.

This program is in Budget Activity 4, Advance 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.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	15.842	16.639	0.000	16.639
Current President's Budget	0.000	15.842	16.687	0.000	16.687
Total Adjustments	0.000	0.000	0.048	0.000	0.048
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.048	0.000	0.048

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0306415F <i>I Enabled Cyber Activities</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Title: Cyber Technology Development Description: Demonstrate, develop, and evaluate prototype Electronic Warfare and Cyber capabilities. The origin, details and specific aspects of these efforts are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM, 443-634-7769. FY 2016 Accomplishments: N/A FY 2017 Plans: Deliver to Initial Operational Capability (IOC) for EW technology against targeted enemy forces. FY 2018 Plans: Will facilitate the development and delivery of Electronic Warfare (EW) and cyber-peculiar technologies. Focus on broad program areas: Common Services, Access Platforms, Tools, and Analytics.		0.000	15.842	16.687
Accomplishments/Planned Programs Subtotals		0.000	15.842	16.687
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy Facilitate the delivery of new Electronic Warfare (EW) Cyber capability, by applying innovative solutions for existing and emerging technologies. Contracts are awarded under full and open competition whenever possible. Variations of both Fixed Price (FP) and Cost Plus (CP) contracting vehicles will be used and managed by various Service Component contracting offices, Combatant Command contracting offices and National Security Agency contracting offices.				
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0306415F / <i>Enabled Cyber Activities</i>				Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>					

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Cyber Technology Development	Various	Multiple Agencies: Various : TBD	-	0.000		15.842	Jul 2017	16.687	Mar 2018	0.000		16.687	Continuing	Continuing	-
Subtotal			-	0.000		15.842		16.687		0.000		16.687	-	-	-

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		15.842		16.687		0.000		16.687	-	-	-

Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0306415F / Enabled Cyber Activities		
			Project (Number/Name) 646008 / US Cyber Command Technology Development		

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EA Tech IOC																												
EA Capability Spiral (annual)																												
SATCOM Capability Spiral (annual)																												
Communications Capabiliy Spiral (annual)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306415F / <i>Enabled Cyber Activities</i>	Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EA Tech IOC	1	2017	3	2017
EA Capability Spiral (annual)	1	2017	4	2022
SATCOM Capability Spiral (annual)	1	2017	4	2022
Communications Capabiliy Spiral (annual)	1	2017	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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 0408011F I Special Tactics / Combat Control							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	4.500	0.000	4.500	0.000	0.000	0.000	0.000	Continuing	Continuing
646221: Ground-based Counter-IADS (C-IADS) Capability	-	0.000	0.000	4.500	0.000	4.500	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

This program, BA 04 PE 0408011F, project 646221, A2AD (Anti-access and area denial) Threat Defeat, is a new start.

A. Mission Description and Budget Item Justification

Develop and field capabilities used to in identify, develop, modify, demonstrate, and integrate technical solutions that utilize coordinated effects in the avoidance and defeat of modern threat systems. Research existing and projected threats to systems as well as self-protection strategies and technologies, to develop counter-threat systems that deliver coordinated effects against threat systems.

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

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	4.500	0.000	4.500
Total Adjustments	0.000	0.000	4.500	0.000	4.500
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	4.500	0.000	4.500

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>				Project (Number/Name) 646221 / <i>Ground-based Counter-IADS (C-IADS) Capability</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
646221: <i>Ground-based Counter-IADS (C-IADS) Capability</i>	-	0.000	0.000	4.500	0.000	4.500	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
This program, BA 04 PE 0408011F, project 646221, A2AD (Anti-access and area denial) Threat Defeat, is a new start.												
A. Mission Description and Budget Item Justification												
Develop and field capabilities used to in identify, develop, modify, demonstrate, and integrate technical solutions that utilize coordinated effects in the avoidance and defeat of modern threat systems. Research existing and projected threats to systems as well as self-protection strategies and technologies, to develop counter-threat systems that deliver coordinated effects against threat systems.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Title: A2AD (Anti-access and area denial) Threat Defeat										0.000	0.000	4.500
Description: Develop and field capabilities used to in identify, develop, modify, demonstrate, and integrate technical solutions that utilize coordinated effects in the avoidance and defeat of modern threat systems. Research existing and projected threats to systems as well as self-protection strategies and technologies, to develop counter-threat systems that deliver coordinated effects against threat systems.												
FY 2016 Accomplishments: N/A												
FY 2017 Plans: N/A												
FY 2018 Plans: - Includes, but is not limited to successful proof of concept demonstration against advanced threat systems.												
Accomplishments/Planned Programs Subtotals										0.000	0.000	4.500

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>				Project (Number/Name) 646221 / <i>Ground-based Counter-IADS (C-IADS) Capability</i>			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
• OPAF: BA03: Line item	31.107	49.333	15.524	0.000	15.524	15.580	16.072	16.361	16.657	Continuing	Continuing
#837100:: <i>Tactical C-E Equipment</i>											
Remarks											
D. Acquisition Strategy											
BAO Kit is executing initial prototype research and development for Ground base-Counter-IADS (C-IADS) capability. Development will include system engineering, design, integration and fielding for C-IADS and Indefinite Quantity system upgrades. Wright Patterson AFB, OH manages the contract effort											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0901410F I Contracting Information Technology System							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	5.782	15.867	0.000	15.867	22.709	24.986	10.714	17.611	Continuing	Continuing
643483: CON-IT	-	0.000	5.782	15.867	0.000	15.867	22.709	24.986	10.714	17.611	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2017 CON-IT transfers to PE 0901410F, Contracting Information Technology System, Project 643483, CON-IT, due to scope expansion beyond the EASE project and to enhance transparency, reporting, and execution activities.

A. Mission Description and Budget Item Justification

Contracting Information Technology System (CON-IT) provides a single contract writing system for the Air Force contracting community to support all contracting needs including base operations, logistics, contingency and weapons system contracting world-wide. CON-IT will enable strategic sourcing and other acquisition efficiencies by standardizing data, business rules, and milestone tracking. Furthermore, CON-IT will allow for a standardized and integrated method of anticipating, reacting, and responding to the current pace and changes in process, regulation, and technology across the contract domain. CON-IT will also address the immediate need of a Standard Procurement System (SPS) replacement as directed by Under Secretary of Defense (USD) for Acquisition, Technology and Logistics (AT&L) by 30 SEP 23 (OUSD/AT&L Memo, 12 JAN 17). SPS has an initial brownout date of 30 SEP 20 with a sunset date of 30 SEP 23. When fully implemented, CON-IT will enable process changes necessary to converge on a common contract writing/management capability within the Air Force.

CON-IT will address the current inefficiencies in the contracting domain, given there are multiple contract writing systems that continue to challenge the ability to operate responsively, consistently, and cost-effectively to award, administer, and close out mission critical contracts in a timely fashion. CON-IT will allow the contracting community to fully support compliance with financial auditability and Financial Improvement Audit Readiness (FIAR) goals that depend on the integrity of the data flow through the Procure to Pay (P2P) process.

CON-IT activities also include utilizing a non-traditional acquisition approach by using United States Department of Agriculture's (USDA) Enterprise Application Services (EAS) team via an interagency agreement to develop, test, validate, train end users, deploy, and maintain CON-IT. USDA's NITC (National Information Technology Center) will provide and maintain the hosting environment.

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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 0901410F I Contracting Information Technology System				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	0.000	5.782	9.072	0.000	9.072	
Current President's Budget	0.000	5.782	15.867	0.000	15.867	
Total Adjustments	0.000	0.000	6.795	0.000	6.795	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	0.000	6.795	0.000	6.795	
Change Summary Explanation						
FY2018: \$6.795M increase for CON-IT contract award, support equipment, and program support.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: CON-IT				0.000	5.782	15.867
Description: CON-IT provides a single, standardized, integrated, efficient contract writing system for the Air Force contracting community to support all contracting needs including base operations, logistics, contingency and weapons system contracting world-wide. CON-IT serves as a replacement for the SPS allowing consistent, cost-effective, and timely contract actions that will allow the Air Force to comply with financial auditability and FIAR goals that depend on the integrity of the data flow through the P2P process.						
FY 2016 Accomplishments:						
FY16 efforts reflected in PE 0702806F Acquisition and Management Support, Project 662906 Electronic Acquisition Service Environment						
FY 2017 Plans:						
- Complete Milestone B						
- Complete risk reduction/prototyping activities for initial capability						
- Update interagency agreement with System Integrator						
- Initiate development and deployment activities						
- Develop Government Furnished Equipment (GFE) requirements and test plans						
- Initiate IT infrastructure services						
- Continue CON-IT acquisition planning, reporting, and execution activities						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 0901410F <i>I Contracting Information Technology System</i>							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Continue development of plans for design, development, test, and training - Initiate planning activities and risk reduction for future capabilities <p><i>FY 2018 Plans:</i></p> <ul style="list-style-type: none"> - Will update interagency agreement with System Integrator - Will continue development and deployment activities - Will complete GFE requirements and development and test plans - Will continue IT infrastructure services - Will continue CON-IT acquisition planning, reporting, and execution activities for future capabilities - Will continue development of plans for design, development, test, and training - Will continue planning activities, prototyping, and and risk reduction for future capabilities - Will initiate development and deployment activities for future capabilities 												
Accomplishments/Planned Programs Subtotals										0.000	5.782	15.867
D. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>	
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	
Remarks												
E. Acquisition Strategy												
CON-IT will be developed using an incremental approach following the Services Development and Delivery Process (SDDP). An interagency agreement with USDA for risk reduction, prototyping and subsequent development activities will be used. Re-use of an existing fielded GOTS (Government-Off-The-Shelf) product from DISA (Defense Information Systems Agency) is the preferred approach/Course of Action.												
F. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0901410F / Contracting Information Technology System						Project (Number/Name) 643483 / CON-IT			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CON IT: Prime Developer/ Systems Integrator	MIPR	Contracting Information : Wright Patterson AFB, OH	-	0.000		0.000		8.000	Oct 2017	0.000		8.000	Continuing	Continuing	-
Subtotal			-	0.000		0.000		8.000		0.000		8.000	-	-	-
Remarks Interagency agreement with USDA (United States Department of Agriculture)															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CON IT: Prototype, risk reduction, test and staging environment from USDA	MIPR	Various : Various	-	0.000		1.000	Oct 2016	3.085	Oct 2017	0.000		3.085	Continuing	Continuing	-
Subtotal			-	0.000		1.000		3.085		0.000		3.085	-	-	-
Remarks USDA: United States Department of Agriculture															
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CON IT: Program Management	Various	AFLCMC/HIBB : WPAFB, OH	-	0.000		4.782	Dec 2016	4.782	Oct 2017	0.000		4.782	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0901410F / <i>Contracting Information Technology System</i>						Project (Number/Name) 643483 / <i>CON-IT</i>			

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
Administration, Cost Estimating Support, Travel, Supplies, Equipment, Program Office Network Support, Engineering Services, etc.																
Subtotal			-	0.000		4.782		4.782		0.000		4.782		-	-	-

Remarks
 A&AS: Advisory & Assistance Services
 Multiple contract awards for less than \$1M per award

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000	5.782	15.867	0.000	15.867	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0901410F / <i>Contracting Information Technology System</i>			Project (Number/Name) 643483 / <i>CON-IT</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Requirements, Development, Test Planning for CON-IT Increments 1 - 5																												
Inc 1 Milestone B (April 2017)																												
Development, Production, and Operational Testing Activities for CON-IT Inc 1 - 5																												
Deployment Activities for CON-IT Inc 1 - 5																												
Limited Deployment Decision (Inc 1)																												
Full Deployment Decision (Inc 1)																												
Inc 2 - 5 Deployment Decisions, Notional																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0901410F / <i>Contracting Information Technology System</i>	Project (Number/Name) 643483 / <i>CON-IT</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Requirements, Development, Test Planning for CON-IT Increments 1 - 5	1	2017	4	2022
Inc 1 Milestone B (April 2017)	3	2017	3	2017
Development, Production, and Operational Testing Activities for CON-IT Inc 1 - 5	3	2017	4	2022
Deployment Activities for CON-IT Inc 1 - 5	3	2018	4	2022
Limited Deployment Decision (Inc 1)	3	2018	3	2018
Full Deployment Decision (Inc 1)	2	2019	2	2019
Inc 2 - 5 Deployment Decisions, Notional	4	2018	3	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 1203164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	354.744	143.118	278.147	253.939	0.000	253.939	195.528	143.666	130.109	74.803	261.702	1,835.756
643833: MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP	354.744	143.118	278.147	253.939	0.000	253.939	195.528	143.666	130.109	74.803	261.702	1,835.756
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 447												
Note In FY2018, PE 0305164F, NAVSTAR Global Positioning System (User Equipment) efforts were transferred to PE 1203164F, NAVSTAR Global Positioning System due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203164F.												
A. Mission Description and Budget Item Justification The Global Positioning System (GPS) is a space-based radio Positioning, Navigation, and Timing (PNT) distribution system. GPS User Equipment (UE) consists of standardized receivers, antennas, antenna electronics, and other related equipment, grouped together in sets to derive navigation and time information transmitted from GPS satellites. These receiver sets are used by DoD. RDT&E funds UE development, integration, test, and analysis for new PNT receiver capabilities in Navigation Warfare (NAVWAR) across all military platforms using GPS services. The Military Global Positioning System User Equipment (MGUE) Increment 1 program is responsible for the development of standard modernized receiver form factors for the Service-nominated lead platforms. The MGUE Capability Development Document (CDD) was approved by the Joint Requirements Oversight Council (JROC) on 24 Jul 2014. MGUE Increment 1 is initiating a new family of modernized GPS receivers that will deliver significantly improved capability to counter current and emerging PNT threats and enable military operations in a NAVWAR environment where current legacy receiver performance would be compromised. MGUE Increment 1 received a Milestone A decision in April 2012 and is in the Technology Maturation and Risk Reduction phase. The program received direction in February 2014 from the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) to execute a new acquisition strategy, accelerating the program to provide test units faster to facilitate military end users. The MGUE program received a Milestone B decision in January 2017. The MGUE Increment 2 effort is planned to begin in FY2017 and will continue to employ Military Code (M-Code) receiver technology into additional applications (space receiver, precision guided munitions, and handheld receiver) to meet Service requirements. This effort leverages the MGUE Increment 1 technology to the maximum extent while addressing producibility of M-Code integrated circuits far into the future.												
----- Joint Service System Management Office (JSSMO)												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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 1203164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)				
Global Positioning System (GPS) receivers enable precision navigation solutions for warfighters across the spectrum of land, sea and air domains. In 2006, Assistant Secretary of Defense for Networks and Information Integration (ASD (NII)) directed the Air Force to develop production ready M-Code components to meet Service needs. Public Law 111-383 913, effective 7 Jan 2011, prohibits procurement of GPS equipment unless it is M-Code capable after FY2017. The completion of card level compatibility and security certification will enable integration of M-Code capability into military GPS Receivers.						
Additionally, in 2010, the Federal Aviation Administration (FAA) published new Automatic Dependent Surveillance Broadcast (ADS-B) rules effective January 1, 2020.						
The ADS-B rule requires platform operators to have ADS-B avionics installed and operating in order to fly Mode S Identification Friend or Foe (IFF) Transponder equipped aircraft into FAA and/or International Civil Aviation Organization (ICAO) Mode S enabled Air-to-Air and Air-to-Ground, Surveillance airspace. DoD aircraft are not exempt from the FAA mandate.						
FY2017 funding includes Embedded GPS/Inertial Navigation System (INS) (EGI), Miniaturized Airborne GPS Receiver (MAGR), Defense Advanced GPS Receiver (DAGR), and Government Reference Architecture development. This acquisition will enable the United States Air Force (USAF) to satisfy the DoD and civil mandates described above. Activities also include, but are not limited to, both current program planning and execution and future program planning. In FY 2018, JSSMO efforts transfer to PE 0604201F.						

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		141.861	278.147	235.790	0.000	235.790
Current President's Budget		143.118	278.147	253.939	0.000	253.939
Total Adjustments		1.257	0.000	18.149	0.000	18.149
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		9.999	0.000			
• SBIR/STTR Transfer		-8.742	0.000			
• Other Adjustments		0.000	0.000	18.149	0.000	18.149
Change Summary Explanation						
FY2016 - \$1.2M Increase needed to fund MGUE integration into B-2 Bomber test platform						
FY2018 - \$33.349M Funded program to FY2017 Service Cost Position (SCP)						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1203164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)		
FY2018 - (\$15.2M) Transfer JSSMO requirement to different PE				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Title: MGUE Increment 1		64.748	113.812	114.861
Description: The MGUE Increment 1 program will develop standard modernized receiver form factors for the Service-nominated lead platforms in accordance with the MGUE Inc 1 Capability Development Document (CDD).				
FY 2016 Accomplishments: Began developmental test of hardware and software. Continued security certification efforts. Assisted each lead platform office to integrate and tested M-Code receivers in their respective platforms. Evaluated Application Specific Integrated Circuit (ASIC) producibility and initiated long term M-Code ASIC producibility efforts.				
FY 2017 Plans: Complete Milestone B. Continue developmental test. Continue environmental and electromagnetic interference testing. Continue security certification efforts. Continue to assist each lead platform office to integrate and test M-Code receivers in their respective platforms. Stand up the new M-Code Cryptographic Initialization Capability. Conduct M-Code ASIC producibility analysis, risk reduction, and early engineering. Evaluate ASIC functional and performance capabilities. Continue Program Office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
FY 2018 Plans: Continue developmental test. Complete environmental and electromagnetic interface testing. Continue security certification efforts. Assist each lead platform office to integrate and test M-Code receivers in their respective platforms. Continue M-Code ASIC producibility analysis, risk reduction, and early engineering. Continue to evaluate functional and performance capabilities. Continue Program Office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
Title: MGUE Increment 2		0.000	4.250	1.500
Description: The MGUE Increment 2 effort is planned to begin in FY2017 and will continue to develop M-Code receiver technology for additional applications (space receiver, precision guided munitions, and handheld receiver) to meet Service requirements. This effort leverages the MGUE Increment 1 technology to the maximum extent while ensuring producibility of M-Code integrated circuits far into the future to support DoD PNT requirements.				
FY 2016 Accomplishments: N/A				
FY 2017 Plans:				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 1203164F I <i>NAVSTAR Global Positioning System (User Equipment) (SPACE)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Continue Increment 2 acquisition strategy preparation. Evaluate M-Code ASIC producibility analysis, risk reduction, and early engineering. Evaluate ASIC functional and performance capabilities. Assess receiver architectures for Increment 2 implementation. Conduct requirement trades and perform verification planning. Begin planning and preparations for next generation ASIC fabrication and manufacturing. Continue Program Office and other related support activities that may include, but are not limited to studies, technical analysis, requirements analysis, contract documentation development, risk reduction activities, etc.				
FY 2018 Plans: Complete Increment 2 acquisition strategy. Complete Increment 2 ASIC and receiver requirement analysis and perform verification planning. Evaluate next generation ASIC and receiver design, engineering, and architecture with vendors, to include ASIC modeling and prototyping at new foundry. Conduct security certification planning activities. Begin preparations for ASIC fabrication and manufacturing. Start targeted risk reduction efforts by contractor(s) for M-code Handheld. Continue Program Office and other related support activities that may include, but are not limited to studies, technical analysis, requirements analysis, contract documentation development, risk reduction activities, etc.				
Title: Advanced Technology		2.858	7.940	8.150
Description: Advanced Technology includes efforts to mature technology for future GPS receivers called out in the MGUE CDD. These efforts aim to find innovative solutions to increase resiliency in GPS performance and improve on size, weight, power, and cost of military receivers.				
FY 2016 Accomplishments: Researched new technologies to augment military GPS and explored alternate sources of position, navigation, and timing for the warfighter. Invested in key technologies for advanced receivers to include modernized GPS simulators and clocks, advanced antennas, programmable receivers and software-based receivers as part of targeted risk reduction efforts.				
FY 2017 Plans: Prepare for an improved key handling and tracking system for future M-Code GPS equipment. Develop advanced cryptography to enable a PNT Software Define Radio receiver. Research new technologies to augment military GPS and also explore alternate sources of position, navigation, and timing for the warfighter. Preform research for navigation warfare capabilities.				
FY 2018 Plans: Develop new technologies to augment US military GPS receiver development. Continue initiative to standardize the GPS Modernized UE advanced cryptography. Develop new receiver capability and cryptography to take advantage of all available satellite navigation systems and signals. Investigate integrity of other Global Navigation Satellite Systems (GNSS) signals for				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1203164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
delivering assured PNT. Continue development of key technologies for advanced modernization GPS simulators and clocks, advanced antennas and antenna electronics as part of targeted risk reduction efforts, and navigation warfare capabilities.				
Title: System/Platform Integration and Performance Certification Description: Integration of MGUE Increment 1 receiver form factors into the Service-nominated lead platforms in support of developmental and operational test events. Conduct technical and operational modernization impact analysis for MGUE Service lead platform integration. FY 2016 Accomplishments: Continued lead platform integration efforts. Completed B-2 lab testing in preparation for B-2 Operational Testing. Began GPS-based Positioning, Navigation, and Timing Service (GPNTS) integration and test activities supporting M-Code migration into the Arleigh Burke Destroyer. Began Army Defense Advanced Global Positioning System Receiver (DAGR) Distributed Device integration and test activities supporting M-code migration into the Stryker. Began Marine Joint Light Tactical Vehicle host equipment integration and test. Continued developmental and characterization testing. Continued updating GPS Enterprise Interface Control Documents for new M-Code receivers. FY 2017 Plans: Continue lead platform integration efforts in support of developmental and operational test events. Assist DoD integration of M-Code GPS receivers for joint Service non-lead platforms. FY 2018 Plans: Continue lead platform integration efforts in support of developmental and operational test events. Continue to assist DoD integration of M-Code GPS receivers for joint Service non-lead platforms. Assist DoD Integration of M-Code GPS receivers for joint Service non-lead platforms.		61.313	100.199	114.162
Title: Information Assurance, Security/Compatibility Certification, and Test/Evaluation Description: Develop, implement and maintain GPS security certification programs. Development of DoD Policy, Strategy & Resource Requirements for MGUE security certification and compatibility certification. Security certification, compatibility certification, and security approval ensures future military GPS receivers protect critical program information and continue working in all environments and concepts of operations called for by US Strategic Command. FY 2016 Accomplishments: Continued Modernized Security Evaluations/Tests for Selective Availability Anti-Spoofing Module (SAASM) and other legacy GPS receiver equipment. Reviewed, approved, and tracked SAASM/legacy receiver certified platforms and integrated applications for all of OSD. Continued MGUE security planning activities to include security approval for other than lead platforms, such as munitions and handhelds. Continued to enforce policy and other requirements related to receiver compatibility accreditation with		14.199	14.666	15.266

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1203164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
the GPS signal in space. Continued verification and validation required for security certification for all contractor's MGUE design. Continued security certification efforts for MGUE receivers. FY 2017 Plans: Complete the first security certification and compatibility on a MGUE ground form factor. Support lead platform integration and test activities. Continue Modernized Security Evaluations/Tests for SAASM and other legacy GPS receiver equipment. Review, approve, and track SAASM, M-Code receivers, and legacy receiver certified platforms and integrated applications for all of DoD. Continue MGUE security planning activities to include security approval for non-lead platforms. Continue to enforce policy and other requirements related to receiver compatibility accreditation with the GPS signal in space. Continue verification and validation required for security certification for all contractor's MGUE design. Continue security certification efforts for MGUE receivers. FY 2018 Plans: Support lead platform integration and test activities. Continue Modernized Security Evaluations/Tests for SAASM and other legacy GPS receiver equipment. Review, approve, and track SAASM, M-Code receivers, and legacy receiver certified platforms and integrated applications for all of DoD. Continue MGUE security planning activities to include security approval for non-lead platforms. Continue to enforce policy and other requirements related to receiver compatibility accreditation with the GPS signal in space. Continue verification and validation required for security certification for all contractor's MGUE design. Continue security certification efforts for MGUE receivers.				
Title: JSSMO Embedded GPS/INS - Modernized (EGI-M) Description: Incorporates M-Code and ADS-B capability into EGI receivers while addressing parts obsolescence. FY 2017 Plans: Develop a common core EGI-M design, begin missionization for initial platform and initiate box level testing.		-	21.304	-
Title: JSSMO MAGR 2K-M Description: Incorporates M-Code capability into MAGR 2K receivers while addressing parts obsolescence and providing a pathway to ADS-B Out implementation. FY 2017 Plans: Complete MAGR 2K-M design and begin box level testing.		-	8.574	-
Title: JSSMO DAGR-M Description: Integrates M-Code capability into DAGR receivers, providing M-Code capability for ground personnel and vehicles. FY 2017 Plans:		-	3.728	-

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 1203164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)						
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018	
Initiate design activities to incorporate the M-Code capability into the DAGR receiver.											
Title: JSSMO Government Reference Architecture (GRA)								-	2.928	-	
Description: Establish a GRA embodying open systems architecture concepts enabling robust, resilient GPS receiver designs which support future modifications at an accelerated pace and at lower cost than the current contractor proprietary architecture.											
FY 2017 Plans: Continue selection and/or development of hardware standards and software navigation communication protocols, such as Universal Navigational Interface (UNI). Begin development of ground demonstrator for the GRA architecture.											
Title: JSSMO Strategic Planning								-	0.746	-	
Description: Conduct strategic planning for GPS receiver modernization.											
FY 2017 Plans: Conduct strategic planning for GPS receiver, antenna and architecture development in support of M-Code incorporation and to accommodate mitigation of emerging navigation warfare threats; also travel and other support.											
Accomplishments/Planned Programs Subtotals								143.118	278.147	253.939	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SPAF: BA 01: GPSSPC: Navstar GPS Space	1.623	2.169	2.198	0.000	2.198	2.199	2.238	2.278	2.325	0.000	15.030
Remarks SPAF funding in this PE supports legacy SAASM efforts.											
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 competitive market driven approach. This strategy establishes the signal compatibility and security criteria along with a process for evaluating components to enable rapid movement from development to fielding. The pillars of this effort are: (a) establishing time certain and low risk development; (b) bounding requirements to leverage mature technology to the maximum extent possible; (c) focusing on the development of form factors based on well-defined standards to support lead platform integration; and (d) implementing a proactive, collaborative MGUE platform integration activity to mitigate risk and reduce cost for DoD force structure modernization.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1203164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)
<p>The MGUE program awarded three sole source contracts for the Increment 1 Technology Development Phase effort in September 2012, as follow-on efforts to the competitively awarded Modernized User Equipment (MUE) contracts awarded in June 2006. The effort spans the Technology Maturation and Risk Reduction Phase through design and includes integration and test of M-Code receivers into Service-nominated lead platforms. This effort also includes the security and compatibility certification of GPS receiver cards as a part of the Integration effort. The Service lead platforms will select from the available vendors to integrate and perform operational testing with funding from the MGUE program. This supports compliance with Public Law 111-383, section 913.</p> <p>MGUE Increment 2 is in the Materiel Solutions Analysis phase. The MGUE program is developing an acquisition strategy to expand upon the competitive, market driven approach utilized in Increment 1 while leveraging the core M-Code technology developed in Increment 1. MGUE Increment 2 addresses long-term producibility of M-Code integrated circuits far into the future. MGUE Increment 2 develops M-Code receiver solutions suitable for integration into additional platforms, including a space receiver, precision guided munitions receiver, and a handheld device.</p> <p>-----JSSMO-----</p> <p>Modifications to existing receivers designs will occur via Engineering Change Proposals (ECPs)/Task Orders on existing USAF contracts. There is associated procurement funding by aircraft platforms tied to this development activity.</p> <p>-----</p>		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1203164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)				Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MGUE Increment 1 Technology Development (Rockwell)	C/CPIF	Rockwell Collins : Cedar Rapids, IA	72.593	16.403	Jan 2016	29.200	Jan 2017	35.500		0.000		35.500	48.169	201.865	-
MGUE Increment 1 Technology Development (Raytheon)	C/CPIF	Raytheon : El Segundo, CA	71.457	22.134	Jan 2016	30.035	Jan 2017	18.600		0.000		18.600	26.405	168.631	-
MGUE Increment 1 Technology Development (L3)	C/CPIF	L3 : Anaheim, CA	46.847	10.505	Jan 2016	20.391	Jan 2017	27.400		0.000		27.400	17.962	123.105	-
MGUE Increment 1 Pre- Tech Development	C/CPAF	Various : Various	16.482	2.858	Jan 2016	7.940	Jan 2017	8.150	Jan 2018	0.000		8.150	24.170	59.600	-
MGUE Increment 1 MGUE Demonstrations	C/CPFF	TBD : TBD	24.000	0.000		0.000		0.000		0.000		0.000	0.000	24.000	-
MGUE Increment 1 Platform Integration	C/CPAF	Various : Various	16.513	55.313	Jan 2016	83.089	Jan 2017	96.622	Jan 2018	0.000		96.622	141.740	393.277	-
MGUE Increment 1 Compatibility Certification	C/CPAF	Various : Various	6.548	6.000	Jan 2016	0.000	Jan 2017	0.000	Jan 2018	0.000		0.000	0.000	12.548	-
MGUE Increment 1 Information Assurance	C/CPAF	Various : Various	10.080	2.875	Jan 2016	4.270	Jan 2017	4.370	Jan 2018	0.000		4.370	11.000	32.595	-
MGUE Increment 1 Security Certification	C/CPAF	Various : Various	16.591	10.095	Jan 2016	2.946	Jan 2017	3.026	Jan 2018	0.000		3.026	7.220	39.878	-
MGUE Increment 2	C/TBD	Various : Various	0.000	0.000		4.250	Jul 2017	1.500	Jan 2018	0.000		1.500	376.106	381.856	-
MGUE Technical Mission Analysis	MIPR	Various : El Segundo, CA	2.733	9.384	Oct 2015	12.890	Oct 2016	13.000	Oct 2017	0.000		13.000	42.770	80.777	-
MGUE Increment 1 Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	14.382	0.000		17.110	Nov 2016	17.540	Nov 2018	0.000		17.540	55.240	104.272	-
JSSMO EGI-M 1	SS/CPFF	Honeywell : Clearwater, FL	0.000	0.000		7.586	Dec 2016	0.000		0.000		0.000	0.000	7.586	-
JSSMO EGI-M 2	SS/CPFF	Northrop Grumman : Woodland Hills, CA	0.000	0.000		13.718	Dec 2016	0.000		0.000		0.000	0.000	13.718	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1203164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)				Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JSSMO MAGR 2K-M	SS/CPFF	Raytheon : El Segundo, CA	0.000	0.000		8.574	Dec 2016	0.000		0.000		0.000	0.000	8.574	-
JSSMO DAGR	SS/CPFF	Rockwell Collins : Des Moines, IA	0.000	0.000		3.728	Dec 2016	0.000		0.000		0.000	0.000	3.728	-
JSSMO GRA	TBD	Not specified. : TBD	0.000	0.000		2.928	Dec 2016	0.000		0.000		0.000	0.000	2.928	-
JSSMO Strat Planning	TBD	Not specified. : TBD	0.000	0.000		0.746	Apr 2017	0.000		0.000		0.000	0.000	0.746	-
Subtotal			298.226	135.567		249.401		225.708		0.000		225.708	750.782	1,659.684	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MGUE Increment 1 Test and Evaluation (1)	C/CPAF	SPAWAR : San Diego, CA	8.904	1.229	Jan 2016	7.450	Jan 2017	7.870	Jan 2018	0.000		7.870	6.330	31.783	-
Subtotal			8.904	1.229		7.450		7.870		0.000		7.870	6.330	31.783	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MGUE Increment 1 and 2 FFRDC	Various	Aerospace : El Segundo, CA	23.243	4.340	Dec 2015	6.420	Oct 2016	5.867	Dec 2017	0.000		5.867	17.333	57.203	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1203164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)				Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP					
Management Services (\$ in Millions)															
				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MGUE Increment 1 and 2 FFRDC 2	Various	MITRE : El Segundo, CA	7.072	0.383	Dec 2015	1.460	Dec 2016	1.360	Dec 2017	0.000		1.360	4.280	14.555	-
MGUE Increment 1 and 2 A&AS	Various	Various : Various	17.020	1.219	Dec 2015	13.076	Dec 2016	12.815	Dec 2017	0.000		12.815	26.103	70.233	-
MGUE Increment 1 and 2 Other Support	Various	Various : Various	0.279	0.380	Dec 2015	0.340	Dec 2016	0.319	Dec 2017	0.000		0.319	0.980	2.298	-
Subtotal			47.614	6.322		21.296		20.361		0.000		20.361	48.696	144.289	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			354.744	143.118		278.147		253.939		0.000		253.939	805.808	1,835.756	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 1203164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)		Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP	

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MGUE Increment 1 Security Certification																												
MGUE Increment 1 Developmental Test																												
MGUE Increment 1 Milestone B																												
MGUE Increment 1 All Lead Platforms Operational Test																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1203164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)	Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MGUE Increment 1 Security Certification	1	2016	2	2019
MGUE Increment 1 Developmental Test	3	2016	4	2019
MGUE Increment 1 Milestone B	2	2017	2	2017
MGUE Increment 1 All Lead Platforms Operational Test	1	2019	1	2022

Note

JSSMO efforts transfer to PE 0604201F beginning in FY18.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 1203710F I EO/IR Weather Systems							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	10.000	0.000	10.000	0.000	0.000	0.000	0.000	Continuing	Continuing
643730: EO/IR Weather System Dev	-	0.000	0.000	10.000	0.000	10.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 04 PE 1203710F, project 643730, Weather System Follow-On Electro-Optical/Infrared (EO/IR), is a new start.
This program, BA 04 PE 1203710F, project 643730, Weather System Follow-On Geostationary (WSF-G), is a new start.

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 (JROC).

Based on completion of the Space-Based Environmental Monitoring (SBEM) JROC Memo 033-16, capabilities will be developed to satisfy weather Gap 1 (Cloud Characterization) and Gap 2 (Theater Weather Imagery). 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) Residual WSF Geostationary Operational Environmental Satellite (GOES) (WSF-G) relocation planning and engineering assessment;
- 3) Timely weather collection of WSF-E Program of Record;
- 4) Explore and/or utilize the use of commercially available data.

Secondary investments may be supported to address weather gaps identified in the SBEM AoA and validated by the JROC.

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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 1203710F I EO/IR Weather Systems				
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		0.000	0.000	0.000	0.000	0.000
Current President's Budget		0.000	0.000	10.000	0.000	10.000
Total Adjustments		0.000	0.000	10.000	0.000	10.000
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	0.000	10.000	0.000	10.000
Change Summary Explanation						
FY2018: +10M to initiate Weather System Follow On Electro-Optical/Infrared programs.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Weather System Follow-On Electro-Optical/Infrared (EO/IR)				0.000	0.000	9.500
Description: WSF EO/IR (WSF-E) acquisition will follow standard SMC satellite acquisition processes. The Air Force intends to pursue a full and open competition with industry aimed at procuring the most affordable and capable WSF-E system to meet both capability gaps 1 (cloud characterization) & 2 (theater weather imagery). Includes program office and other related support activities that may include, but are not limited to studies, technical analysis, and risk reduction activities etc.						
FY 2016 Accomplishments: N/A						
FY 2017 Plans: N/A						
FY 2018 Plans: Risk reduction, pre-acquisition activities and Request for Proposal (RFP) for WSF-E. Continue to address secondary weather gaps identified in the Meteorological and Oceanographic (METOC) Initial Capabilities Document (ICD).						
Title: Weather System Follow-On Geostationary (WSF-G)				0.000	0.000	0.500
Description: Residual Geostationary Operational Environmental Satellite (GOES)Relocation is a Department of Defense(DoD) weather mitigation plan to address Space-based Environmental Monitoring (SBEM) Weather Gaps 1 (Cloud						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017									
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 1203710F / <i>EO/IR Weather Systems</i>										
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018							
Characterization) and Gap 2 (Theater Weather Imagery) requirements over the Indian Ocean region. The requirements have been validated by the Joint Requirements Oversight Council (JROC) Memo 033-16. The program will leverage a spare National Oceanic and Atmospheric Agency (NOAA) on-orbit geostationary asset for the DoD use, in order to provide timely and reliable high-quality electro-optical/infrared (EO/IR) remote sensing capability that will address the critical weather data needs over the Central Command (CENTCOM) Area of Responsibility (AoR). Includes program office and other related support activities that may include, but are not limited to studies, technical analysis, and risk reduction activities etc. Continue to address secondary weather gaps identified in the Meteorological and Oceanographic (METOC) Initial Capabilities Document (ICD). FY 2016 Accomplishments: N/A FY 2017 Plans: N/A FY 2018 Plans: Risk reduction, pre-acquisition activities and Request for Proposal (RFP) release for WSF-G.											
Accomplishments/Planned Programs Subtotals		0.000	0.000	10.000							
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
E. Acquisition Strategy The acquisition strategy for WSF-E and WSF-G is based on validated SBEM AoA and Joint Requirements Oversight Council (JROC Memo 033-16) and subsequent acquisition strategy development activities that will be conducted in FY18.											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1203710F / EO/IR Weather Systems				Project (Number/Name) 643730 / EO/IR Weather System Dev					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Pre-Acquisition Activities	Various	Various : Various	-	0.000		0.000		9.000	Feb 2018	0.000		9.000	Continuing	Continuing	-
Subtotal			-	0.000		0.000		9.000		0.000		9.000	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Other Support	Various	Various : Various	-	0.000		0.000		1.000	Oct 2017	0.000		1.000	Continuing	Continuing	-
Subtotal			-	0.000		0.000		1.000		0.000		1.000	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		0.000		10.000		0.000		10.000	-	-	-
Remarks															

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1203710F / EO/IR Weather Systems	Project (Number/Name) 643730 / EO/IR Weather System Dev

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
WSF pre-acquisition activities	1	2018	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 1206422F I Weather System Follow-on							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	146.931	46.307	118.953	112.088	0.000	112.088	153.391	101.921	36.907	37.662	297.300	1,051.460
644289: Weather Satellite Follow-On	146.931	46.307	118.953	112.088	0.000	112.088	153.391	101.921	36.907	37.662	297.300	1,051.460
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 488												
Note In FY2018, PE 0604422F, Weather Satellite Follow-On efforts were transferred to PE 1206422F, Weather Satellite Follow-On due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206422F.												
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 (JROC). Based on the completed 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 Gap 3 Ocean Surface Vector Winds (OSVW), Gap 8 Tropical Cyclone Intensity (TCI), and Gap 11 Low Earth Orbit (LEO) Energetic Charged Particles (LEO ECP). Gap 3 OSVW and Gap 8 TCI require a space-based microwave sensor to provide polarimetric ocean surface wind direction and speed required for naval sea operations, as well as fighter sortie generations and marine amphibious operations. Gap 11 LEO ECP requires in situ ECP sensor for space situational awareness. The earliest possible launch options are being integrated in the design for critical gaps. DoD established WSF as a Pre-Major Defense Acquisition Program (MDAP) with the Air force as the lead component. Based on the SBEM AoA results, the WSF initial thrusts will be to enable: 1) DoD use of data collected by civil, international and other DoD space systems; 2) Timely weather collection over broad oceans in support of maneuvering forces; 3) Space weather capabilities to characterize operational orbits, space situational awareness, and the ionosphere. Secondary investments may be supported to address weather gaps identified in the Meteorological and Oceanographic (METOC) Initial Capability Document (ICD). This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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 1206422F I Weather System Follow-on				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	56.044	118.953	151.650	0.000	151.650	
Current President's Budget	46.307	118.953	112.088	0.000	112.088	
Total Adjustments	-9.737	0.000	-39.562	0.000	-39.562	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	-5.873	0.000				
• SBIR/STTR Transfer	-3.864	0.000				
• Other Adjustments	0.000	0.000	-39.562	0.000	-39.562	
Change Summary Explanation						
FY2016: -\$5.873M transferred for higher Air Force priorities.						
FY2018: -\$40.000M reduction due to availability of prior year execution balances; +\$0.438M inflation adjustment						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: WSF Microwave System (SV1-2)				17.235	90.200	92.743
Description: WSF Microwave System (SV 1-2): the Air Force intends to pursue a full and open competition with industry aimed at procuring the most affordable and capable WSF Microwave System (WSF-M) to meet all three capability gaps.						
WSF-M SV-2 will be an option to exercise, should AF wish to replenish WSF constellation post-SV-1. SV-2 will be functionally equivalent to SV-1. The WSF-M SV-1 projected Initial Launch Capability (ILC) is FY22.						
Secondary investments may also be considered to address weather gaps identified in the Meteorological and Oceanographic (METOC) Initial Capabilities Document (ICD).						
FY 2016 Accomplishments:						
In FY16, the Service Acquisition Executive (SAE) signed the WSF-M Acquisition Strategy Document (ASD) on 18 Oct 16. Per FY16 NDAA Sec 825 language, WSF-M was designated an ACAT IC program as of 01 Oct 16 (i.e., FY17) with the AF SAE as the MDA. WSF-M released a draft Development Request for Proposal (dDev RFP) to industry for comments in Sep 2016. Continued program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.						
FY 2017 Plans:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 1206422F / <i>Weather System Follow-on</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Complete WSF-M dRFP Release Decision DAB and release RFP to industry. Complete special studies to address secondary weather gaps. Complete WSF-M source selection and contract award. Modify existing ground segment and begin planning and transition to new ground system as required. Stand up contractor personnel, purchase long-lead items for WSF-M and start development/procurement effort for payload algorithms. Compete launch service contract. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
FY 2018 Plans: Will complete WSF-M system Preliminary Design Review (PDR) and enter WSF-M Milestone B with all required acquisition documentation. Will complete WSF-M ground system Telemetry, Tracking & Commanding (TT&C) development. Will fund program support activities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
Title: COWVR Tech Demo Description: Air Force priority is to deliver an interim materiel solution to mitigate projected WindSat mission End of Life (EOL). In order to achieve this goal, Space and Missile Systems Center/Remote Sensing Systems Directorate (SMC/RS) is working with the Operationally Responsive Space (ORS) office to launch Compact Ocean Surface Wind Vector Radiometer (COWVR) technical demonstration payload, which would provide residual operational capability to address the immediate Gap 3 requirements, once on-orbit checkout is successfully completed. FY 2016 Accomplishments: Delivered COWVR to ORS office for integration with the Modular Space Vehicle (MSV) bus enabling the ORS-6 mission to be on track for projected Nov 17 launch. Continued program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. FY 2017 Plans: Combine efforts with ORS to launch COWVR Tech Demo as ORS-6 mission. FY 2018 Plans: Will complete COWVR calibration/validation and initiate steps to transition sensor to Navy operation.		26.330	23.363	6.765
Title: WSF ECP Description: WSF ECP will fulfill the Space-based Environmental Monitoring (SBEM) Weather Gap 11 and address the Secretary of the Air Force (SECAF) policy which directs each USAF Satellite Office to plan for and integrate ECP sensors on all pre-Milestone B new satellite acquisitions. To accomplish this requirement, the ECP sensor will be integrated on the WSF-M satellite. FY 2016 Accomplishments:		2.742	5.390	12.580

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 1206422F / <i>Weather System Follow-on</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Provided funding to Air Force Research Lab (AFRL) to mature Compact Environmental Sensor (CEASE-III) design as Gov't reference architecture for future industry ECP sensor competition; completed CEASE-III System Readiness Review (SRR).</p> <p>FY 2017 Plans: Complete WSF-M dRFP and release to industry and initiate source selection. Complete special studies to address secondary weather gaps. Modify existing ground segment and begin planning and transition to new ground system as required.</p> <p>FY 2018 Plans: Will complete source selection and award contract. Will stand up contractor personnel, purchase long-lead items for WSF-M and start development/procurement effort for payload algorithms. Will compete launch service contract. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p>				
Accomplishments/Planned Programs Subtotals		46.307	118.953	112.088
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
E. Acquisition Strategy				
<p>DoD established WSF as a pre-MDAP. The acquisition strategy for WSF is based on validated SBEM AoA results from FY14 and subsequent acquisition strategy development activities that were conducted in FY15. The WSF acquisition strategy focuses on streamlined acquisition process for providing materiel solutions to OSWV, TCI & LEO ECP, as validated by the JROC; deliver microwave sensing solution to address DoD needs for OSWV and TCI capabilities and deliver space environment sensing solution to address LEO ECP capabilities for on-orbit attributions and anomaly resolutions. Impending WindSat mission EOL required WSF to approach the program acquisition in two phases; Phase I to address imminent OSWV/TCI needs via COWVR tech demo option, while Phase II involves a more robust set of capabilities for WSF-M.</p> <p>In Phase I, the AF intends to deliver an interim materiel solution to address the immediate OSWV and TCI needs to mitigate WindSat EOL. In order to achieve this goal in a timely manner, WSF program plans on utilizing Jet Propulsion Lab (JPL)-developed COWVR sensor for integration with ORS office's Modular Space Vehicle (MSV) spacecraft as the ORS-6 mission. ORS office will lead contractual actions to procure the space vehicle, the launch service and reserve commercial ride-share spot for projected 2017 ILC. Once COWVR sensor is launched and completes on-orbit checkout, the payload is expected to provide partial residual operational capabilities until WSF-M system is implemented.</p> <p>In Phase II, the program intends to procure a more robust WSF-M system, capable of meeting all three weather capability gaps, in a full and open competition environment, in order to reduce overall program cost. There will be one WSF-M to be procured, with option for a second system. WSF-M first system (SV-1) ILC is FY2022 to mitigate any potential weather coverage gaps. WSF-M SV-2 ILC is currently projected for FY2027. The WSF-M SV-2 will be functionally equivalent to SV-1.</p>				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 1206422F I Weather System Follow-on	
<p>The WSF ECP sensor development will leverage current AFRL sensor and hazard assessment technology to accelerate availability of ECP sensor for integration on WSF-M and other planned AF satellite acquisitions. The AF intends to transition AFRL’s technology to industry for production via competitive award. Two Tech Demo ECP sensors are projected to be delivered and ready for satellite integration by FY2020. Post-Tech Demo ECP phase, each respective program offices will be responsible for the procurement/integration and sustainment of the sensors required to meet the SecAF’s Space Situational Awareness (SSA) policy.</p> <p>Complete Broad Agency Announcement (BAA) proposal evaluation and negotiations for SBEM EO/IR.</p> <p>F. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206422F / Weather System Follow-on				Project (Number/Name) 644289 / Weather Satellite Follow-On					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ORS COWVR Technology Demonstration	Various	Various : Various	10.500	19.710	Jan 2016	32.649	Jan 2017	12.008	Jan 2018	0.000		12.008	1.028	75.895	-
WSF Microwave System (SV1-2)	TBD	TBD : TBD	0.000	0.000		45.816	Sep 2017	66.553	Sep 2018	0.000		66.553	426.145	538.514	426.145
WSF ECP (Gap 11)	MIPR	Kirtland AFB : Albuquerque, NM	0.300	0.916	Jan 2016	6.084	Apr 2017	12.839	Apr 2018	0.000		12.839	0.600	20.739	-
Enterprise Systems Engineering & Integration	C/CPAF	The Analytical Science Corp : El Segundo, CA	0.000	0.535	Dec 2016	9.039	Dec 2016	3.131	Dec 2017	0.000		3.131	17.360	30.065	-
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	4.334	2.240	Oct 2016	4.909	Oct 2017	5.721	Oct 2018	0.000		5.721	51.820	69.024	-
BAA	TBD	TBD : TBD	0.000	0.000		2.000		0.000		0.000		0.000	0.000	2.000	-
Pre-Acquisition Activities	Various	Various : Various	103.432	18.272	Aug 2017	4.971	Jul 2017	0.438	Jan 2018	0.000		0.438	0.000	127.113	-
Subtotal			118.566	41.673		105.468		100.690		0.000		100.690	496.953	863.350	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Concepts and Planning	TBD	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	8.000	8.000	-
Requirements/Engineering Analysis Support	RO	Defense Information Technical Center : El Segundo, CA	1.500	0.043		0.000		0.000		0.000		0.000	0.000	1.543	-
Engineering Risk Reduction Studies	Various	Various : Various	1.171	0.000		0.000		0.000		0.000		0.000	0.000	1.171	-
Subtotal			2.671	0.043		0.000		0.000		0.000		0.000	8.000	10.714	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4							R-1 Program Element (Number/Name) PE 1206422F / Weather System Follow-on				Project (Number/Name) 644289 / Weather Satellite Follow-On				
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Aerospace Corp : Los Angeles, CA	14.109	1.744	Oct 2015	5.459	Oct 2016	4.959	Oct 2017	0.000		4.959	13.030	39.301	-
Other Support	Various	Various : TBD	4.456	0.156	Nov 2015	2.169	Nov 2016	3.042	Nov 2017	0.000		3.042	13.480	23.303	-
A&AS	Various	Various : TBD	7.129	2.691	Nov 2015	5.857	Nov 2016	3.397	Nov 2018	0.000		3.397	16.627	35.701	-
Subtotal			25.694	4.591		13.485		11.398		0.000		11.398	43.137	98.305	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			146.931	46.307		118.953		112.088		0.000		112.088	548.090	972.369	-
Remarks															

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

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206422F / <i>Weather System Follow-on</i>	Project (Number/Name) 644289 / <i>Weather Satellite Follow-On</i>
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	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Energetic Charged Particles (ECP) Critical Design Review (CDR)																												
ORS COWVR Technology Demonstration Integration																												
ORS COWVR Technology Demonstration Launch																												
ORS COWVR Technology Demonstration Operations																												
WSF Microwave System Development RFP Release																												
WSF Microwave System Contract Award																												
WSF Microwave System Preliminary Design Review																												
WSF Microwave System Milestone B																												
WSF Microwave System CDR																												
WSF Microwave System Integration and Test																												
WSF ECP RFP Release																												
WSF ECP ATP																												
WSF Delta PDR																												
WSF CDR																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206422F / <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
Energetic Charged Particles (ECP) Critical Design Review (CDR)	3	2017	3	2017
ORS COWVR Technology Demonstration Integration	2	2017	1	2018
ORS COWVR Technology Demonstration Launch	2	2018	2	2018
ORS COWVR Technology Demonstration Operations	2	2018	2	2020
WSF Microwave System Development RFP Release	2	2017	2	2017
WSF Microwave System Contract Award	1	2018	1	2018
WSF Microwave System Preliminary Design Review	1	2019	1	2019
WSF Microwave System Milestone B	2	2019	2	2019
WSF Microwave System CDR	3	2019	3	2019
WSF Microwave System Integration and Test	3	2022	3	2022
WSF ECP RFP Release	1	2017	1	2017
WSF ECP ATP	3	2017	3	2017
WSF Delta PDR	2	2019	2	2019
WSF CDR	1	2020	1	2020

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity					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 1206425F / <i>Space Situation Awareness Systems</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	10.901	34.764	0.000	34.764	39.634	0.000	0.000	0.000	Continuing	Continuing
640290: <i>Deep Space Advanced Radar Concept</i>	-	0.000	10.901	34.764	0.000	34.764	39.634	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Deep Space Advanced Radar Concept (DARC) will leverage ongoing defense science and technology efforts to mature radar concepts and technologies to develop and evaluate prototypes that demonstrate increased sensitivity, capacity, search rates, and scalability to detect, track and maintain custody of objects in deep space orbit. This effort will analyze and select the most promising technologies to move forward into system development and /or operations. DARC will augment the Space Surveillance Network (SSN) as an additional sensor with increased capacity and capability for deep space object custody at Geosynchronous Earth Orbit (GEO). The DARC effort will coordinate with the Joint Space Operations Center (JSpOC) Mission System (JMS) program to ensure integration with enterprise data fusion and dissemination activities to support space battle management and command and control (BMC2).

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	9.901	34.664	0.000	34.664
Current President's Budget	0.000	10.901	34.764	0.000	34.764
Total Adjustments	0.000	1.000	0.100	0.000	0.100
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	1.000	0.100	0.000	0.100

Change Summary Explanation

FY2017: \$1.000M FY17 RAA for DARC.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 1206425F / Space Situation Awareness Systems				Project (Number/Name) 640290 / Deep Space Advanced Radar Concept			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
640290: Deep Space Advanced Radar Concept	-	0.000	10.901	34.764	0.000	34.764	39.634	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0604425F, BA 04, Space Situational Awareness Systems efforts were transferred to PE 1206425F, BA 04, Space Situational Awareness Systems due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206425F BA 04.

A. Mission Description and Budget Item Justification

Deep Space Advanced Radar Concept (DARC) will leverage ongoing defense science and technology efforts to mature radar concepts and technologies to develop and evaluate prototypes that demonstrate increased sensitivity, capacity, search rates, and scalability to detect, track and maintain custody of objects in deep space orbit. This effort will analyze and select the most promising technologies to move forward into system development and /or operations. DARC will augment the Space Surveillance Network (SSN) as an additional sensor with increased capacity and capability for deep space object custody at Geosynchronous Earth Orbit (GEO). The DARC effort will coordinate with the JSpOC Mission System (JMS) program to ensure integration with enterprise data fusion and dissemination activities to support space battle management and command and control (BMC2). CY17 DARC was a new start.

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

	FY 2016	FY 2017	FY 2018
Title: DARC Technology maturation and prototype development	-	10.901	34.764
Description: Leverage ongoing defense science and technology efforts to mature radar concepts and technologies to develop and evaluate prototypes that demonstrate increased sensitivity, capacity, search rates, and scalability to detect, track and maintain custody of objects in deep space orbit. Provides technical support to oversee the design, development (PDR,CDR) and launch BAA of the DARC prototype.			
FY 2017 Plans: Identify and evaluate potential candidate radar concepts and technologies. Provide technical support to oversee design, development (Preliminary Design Review and Critical Design Review) and launch Broad Area Announcement (BAA) of the DARC prototype. Develop relevant technologies and conduct initial proof of concept demonstrations to inform future radar prototyping efforts.			
FY 2018 Plans: One of three DARC prototype developers will be selected, through a pre-established set of down-select criteria, to build their complete Critical Design Review for their proposed DARC prototype design. FY 2018 funds will support the purchase of prototype antenna apertures, preparations to bed down receiver and transmitter assets at the prototype development site, AFRL oversight of			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 640290 / <i>Deep Space Advanced Radar Concept</i>			

B. Accomplishments/Planned Programs (\$ in Millions)							FY 2016	FY 2017	FY 2018
the prototype build-out, infrastructure for the DARC prototype installation, and software development to facilitate the phase/timing of the DARC receive and transmit elements. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.									
Accomplishments/Planned Programs Subtotals							-	10.901	34.764

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
D. Acquisition Strategy											
Project utilizes existing DoD engineering and study contracts and activities to conduct science and technology development and data analysis activities. Preliminary/ critical design effort, commence upon FY17 CRA end/New start approval. Broad agency announcement forms DARC Integrated SE Team. Following PDR & CDR down selects, prototype build, test & determination will occur.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>						Project (Number/Name) 640290 / <i>Deep Space Advanced Radar Concept</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Concept Definition, Prototype Development and Analysis	Various	Various : Various	-	0.000		7.913	Mar 2017	27.650	Oct 2017	0.000		27.650	Continuing	Continuing	-
Subtotal			-	0.000		7.913		27.650		0.000		27.650	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prototype System and Sustainment Analyses	MIPR	AFRL : Albuquerque, NM	-	0.000		2.150	Mar 2017	4.000	Oct 2017	0.000		4.000	Continuing	Continuing	-
Subtotal			-	0.000		2.150		4.000		0.000		4.000	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS	Various	Various : Various	-	0.000		0.484	Mar 2017	1.400	Oct 2017	0.000		1.400	Continuing	Continuing	-
FFRDC	SS/FP	MITRE Corp : Colorado Springs, CO	-	0.000		0.329	Mar 2017	1.664	Oct 2017	0.000		1.664	Continuing	Continuing	-
Other Support	Various	SMC/SYG : Colorado Springs, CO	-	0.000		0.025	Mar 2017	0.050	Oct 2017	0.000		0.050	Continuing	Continuing	-
Subtotal			-	0.000		0.838		3.114		0.000		3.114	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force										Date: May 2017			
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>					Project (Number/Name) 640290 / <i>Deep Space Advanced Radar Concept</i>			
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		10.901		34.764		0.000		34.764	-	-	-
Remarks													

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 640290 / <i>Deep Space Advanced Radar Concept</i>	

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Concept Validation																												
Prototype Development																												
Operational Demonstrations																												
Final Report																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 640290 / <i>Deep Space Advanced Radar Concept</i>	

Schedule Details

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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 1206434F I Midterm Polar MILSATCOM System							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	63.092	0.000	63.092	189.075	220.570	218.901	195.412	Continuing	Continuing
643720: EPS Recapitalization	-	0.000	0.000	63.092	0.000	63.092	189.075	220.570	218.901	195.412	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2018, Project 657104, MILSATCOM SMI, funds were transferred from PE 1205431F, Advanced EHF MILSATCOM (SPACE), in order to transition from MILSATCOM Space Modernization Initiative to a stand alone program.

A. Mission Description and Budget Item Justification

The Midterm Polar System (MPS) will provide continuous, protected, Low Probability of Intercept (LPI)/Low Probability of Detection (LPD) communications to tactical warfighters in the North Polar region in benign and contested environments. MPS will develop and acquire 1) two Extremely High Frequency (EHF) payloads, using Advanced EHF's eXtended Data Rate (XDR) waveform, on dedicated or hosted spacecraft, 2) upgrades/modifications to the existing Enhanced Polar System (EPS) Control and Planning Segment (CAPS) to provide command and control and XDR mission planning capability, and 3) upgrades/modifications to the existing EPS gateway to provide connectivity between polar and midlatitude users through the Global information Grid.

The MPS program is timed to prevent a gap in Arctic MILSATCOM coverage after EPS end of life. To ensure polar MILSATCOM continuity beyond FY25, the DoD will begin funding activities to bridge the gap between the current EPS program and future protected systems being planned for the late 2020s. The DoD is currently examining both "free-flier" and payload hosting options. The scope of potential hosts to be considered will include the US government, international partners, and commercial systems. MPS will reuse EPS Gateway and ground control elements to the greatest extent feasible.

To meet the warfighter requirements for protected tactical polar MILSATCOM, RDT&E funding is required to continue program office and other related support activities that may include, but are not limited to studies, technical analysis, architectural development, acquisition strategy development, system requirements and system trades analysis, risk reduction activities, technology maturation, System Engineering, Integration and Test (SEIT) of all polar MILSATCOM segments and hosted payloads.

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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 1206434F I Midterm Polar MILSATCOM System				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	0.000	0.000	0.000	0.000	0.000	
Current President's Budget	0.000	0.000	63.092	0.000	63.092	
Total Adjustments	0.000	0.000	63.092	0.000	63.092	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	0.000	63.092	0.000	63.092	
Change Summary Explanation						
+\$63.092M, funds transferred from PE 1206431F, BPAC 657104 for Midterm Polar MILSATCOM effort.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Acquisition Strategy Development and Source Selection				0.000	0.000	35.931
Description: Conduct market research to inform the development of an acquisition strategy. Develop acquisition strategy and Request for Proposal. Release RFP to industry, conduct source selection, and award the development contract.						
FY 2016 Accomplishments: N/A						
FY 2017 Plans: N/A						
FY 2018 Plans: Develop acquisition strategy and associated documentation required for MPS milestone decisions to comply with statutory and regulatory requirements. Develop Request for Proposal (RFP). Release Midterm Polar RFP to industry and conduct source selection. Award development contract and provide design and development oversight. Begin program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.						
Title: Technical Baseline and Architectural Engineering				0.000	0.000	27.161
Description: Develop Midterm Polar technical baseline and architectural engineering.						
FY 2016 Accomplishments:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force							Date: May 2017				
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>				R-1 Program Element (Number/Name) PE 1206434F <i>I Midterm Polar MILSATCOM System</i>							
C. Accomplishments/Planned Programs (\$ in Millions)							FY 2016	FY 2017	FY 2018		
N/A											
FY 2017 Plans:											
N/A											
FY 2018 Plans: Develop technical baseline and system requirements. Conduct studies to identify necessary upgrades/modifications to the EPS CAPS and EPS Gateway segment; execute risk reduction efforts and upgrades/modifications to sustain/modify these segments for MPS. Purchase long lead parts to drive down schedule risk. Conduct system architecture and trade analyses. Begin program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.											
Accomplishments/Planned Programs Subtotals							0.000	0.000	63.092		
D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE:BA05:PE 1206432F: <i>Polar MILSATCOM (Space)</i>	71.867	50.815	33.644	0.000	33.644	0.000	0.000	0.000	0.000	0.00	1,335.851
Remarks											
E. Acquisition Strategy Conduct market research to identify industry capabilities and acquisition concepts. This information will inform the development of a program acquisition strategy that will provide the lowest risk and best value to the government. The acquisition strategy will also incorporate lessons learned from the EPS program and other recent space acquisition programs.											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206434F / Midterm Polar MILSATCOM System						Project (Number/Name) 643720 / EPS Recapitalization			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Mid-term Polar Tactical SV 1-2	TBD	TBD : TBD	-	0.000		0.000		22.968	Jul 2018	0.000		22.968	Continuing	Continuing	-
Long Lead Parts	Various	Various : TBD	-	0.000		0.000		10.000	Dec 2017	0.000		10.000	Continuing	Continuing	-
Gateway Upgrades	Various	Various : TBD	-	0.000		0.000		5.000	Apr 2018	0.000		5.000	Continuing	Continuing	-
Control and Planning Segment pgrades	TBD	Northrop Grumman Information Systems : Redondo Beach, CA	-	0.000		0.000		10.000	Apr 2018	0.000		10.000	Continuing	Continuing	-
Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	-	0.000		0.000		2.161	Jan 2018	0.000		2.161	Continuing	Continuing	-
Enterprise SE&I	C/CPAF	LinQuest : Los Angeles, CA	-	0.000		0.000		5.704	Jan 2018	0.000		5.704	Continuing	Continuing	-
Subtotal			-	0.000		0.000		55.833		0.000		55.833	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Various : TBD	-	0.000		0.000		2.162	Jan 2018	0.000		2.162	Continuing	Continuing	

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017		
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206434F / <i>Midterm Polar MILSATCOM System</i>				Project (Number/Name) 643720 / <i>EPS Recapitalization</i>				

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Other Support	Various	Various : TBD	-	0.000		0.000		0.050	Jan 2018	0.000		0.050	Continuing	Continuing	-
A&AS	Various	Various : TBD	-	0.000		0.000		5.047	Jan 2018	0.000		5.047	Continuing	Continuing	-
Subtotal			-	0.000		0.000		7.259		0.000		7.259	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		0.000		63.092		0.000		63.092	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 1206434F / <i>Midterm Polar MILSATCOM System</i>			Project (Number/Name) 643720 / <i>EPS Recapitalization</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Risk Reduction Activities																												
Ground Segments Study																												
Long Lead Parts																												
Market Research																												
Release Request for Proposal (RFP)																												
Source Selection																												
CAPS & Gateway Modifications																												
Contract Award																												
Preliminary Design Review (PDR)																												
Critical Design Review (CDR)																												
Space Segment Design																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206434F / <i>Midterm Polar MILSATCOM System</i>	Project (Number/Name) 643720 / <i>EPS Recapitalization</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Risk Reduction Activities	1	2018	1	2019
Ground Segments Study	1	2018	1	2019
Long Lead Parts	1	2018	4	2019
Market Research	1	2018	1	2018
Release Request for Proposal (RFP)	2	2018	2	2018
Source Selection	3	2018	4	2018
CAPS & Gateway Modifications	3	2018	4	2021
Contract Award	4	2018	4	2018
Preliminary Design Review (PDR)	2	2020	2	2020
Critical Design Review (CDR)	2	2021	2	2021
Space Segment Design	4	2018	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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 1206438F I Space Control Technology							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	3.955	7.534	7.842	7.800	15.642	7.988	8.191	8.482	8.655	Continuing	Continuing
642611: Technology Insertion Planning and Analysis	-	3.955	7.534	7.842	7.800	15.642	7.988	8.191	8.482	8.655	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0603438F, Space Control Technology efforts were transferred to PE 1206438F, Space Control Technology due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206438F.

A. Mission Description and Budget Item Justification

This project supports a range of activities including technology planning, development, demonstrations and prototyping, and testing, as well as modeling, simulations and exercises to support development of tactics and procedures for a responsive and resilient Space Control mission area. This includes technology development and prototyping for Defensive Counterspace (DCS) and Offensive Counterspace (OCS). Specifically supported are OCS activities which include disruption, denial, or degradation (and associated Electronic Support) of adversary space systems which may be used 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.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	4.057	7.534	7.819	0.000	7.819
Current President's Budget	3.955	7.534	7.842	7.800	15.642
Total Adjustments	-0.102	0.000	0.023	7.800	7.823
• Congressional General Reductions	-0.102	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.023	7.800	7.823

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1206438F I Space Control Technology				
Change Summary Explanation \$7.8M of OCO funding for development, testing, training and integration of advanced capabilities in support of JRAC 2-year timeline. Closes out final commitments for Joint Urgent Operational Need.						
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Space Control Technology		3.955	7.534	7.842	7.800	15.642
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 2016 Accomplishments: Continued integration and testing of Multi-Mission Processor (MMP) Increment 2 architecture into programs of record. Rapidly developed and tested Quick Reaction Capability (QRC) for Joint Rapid Acquisition Council (JRAC)-validated JUON; trained integrated operations/development team to meet stringent deployment timelines.						
FY 2017 Plans: Expand development and testing of advanced prototype, Signal Processing Lab and QRC capabilities. Test MMP Increment 2 Government Referenced Architecture (GRA) across multiple programs of record and their mission-specific capabilities. Execute robust test on program of record, to include CONUS and OCONUS test activities spanning full range of system capabilities and integration of MMP Increment 2. Conduct prototype development and testing of GRA Increment 3, to include integration, testing and transition of advanced QRC. Accelerate Strategic Portfolio Review (SPR) initiatives. If requested, develop, test, train, field and sustain quick reaction capabilities.						
FY 2018 Base Plans: Develop and test advanced prototypes. Expand Signal Processing Lab integration to include industry outreach. Develop, test, train, field and transition advanced QRC capabilities based on COCOM requirements. Integrate relevant GRA Increment 3 technologies. Execute initial testing, to include CONUS and OCONUS activities. Accelerate Strategic Portfolio Review initiatives. As requested, develop, test, train, field and sustain quick reaction capabilities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.						
FY 2018 OCO Plans:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017							
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)			R-1 Program Element (Number/Name) PE 1206438F I Space Control Technology								
C. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018 Base						
FY18 OCO funds will be used to sustain JUON CC-0550 equipment deployed in support of ongoing operations and perform pre-planned product improvement (P3I) for that equipment. It will also be used to complete RDT&E activities to finalize development, testing and training on remaining capability needs associated with JUON CC-0550.											
Accomplishments/Planned Programs Subtotals			3.955	7.534	7.842						
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• None: None	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Remarks											
E. Acquisition Strategy											
All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible. Program consists of numerous small projects.											
F. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206438F / Space Control Technology				Project (Number/Name) 642611 / Technology Insertion Planning and Analysis					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Counterspace Technology Prototyping/Rapid Reaction Development	Various	Various : Various	-	3.548	Jan 2016	6.399	Jan 2017	6.605	Jan 2018	0.000		6.605	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace : El Segundo, CA	-	0.000		0.712	Oct 2016	0.730	Oct 2017	0.000		0.730	Continuing	Continuing	-
OCO Funding for JUON Updates	Various	Various : Various	-	0.000		0.000		0.000		7.800		7.800	Continuing	Continuing	-
Subtotal			-	3.548		7.111		7.335		7.800		15.135	-	-	-
Remarks N/A															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Support	Various	Space and Missile Systems Center : El Segundo, CA	-	0.202	Jan 2016	0.000		0.000		0.000		0.000	0.000	0.202	-
Subtotal			-	0.202		0.000		0.000		0.000		0.000	0.000	0.202	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017		
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206438F / <i>Space Control Technology</i>				Project (Number/Name) 642611 / <i>Technology Insertion Planning and Analysis</i>				

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS	Various	SMC : El Segundo, CA	-	0.205	Jan 2016	0.423	Jan 2017	0.507	Jan 2018	0.000		0.507	Continuing	Continuing	-
Subtotal			-	0.205		0.423		0.507		0.000		0.507	-	-	-

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	3.955	7.534	7.842	7.800	15.642	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 1206438F / <i>Space Control Technology</i>			Project (Number/Name) 642611 / <i>Technology Insertion Planning and Analysis</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Rapid Prototyping																												
Signal Processing Lab MMP(D) Increment 2																												
Signal Processing Lab GRA (dev) Increment 3																												
Signal Processing Lab GRA (dev) Increment 4																												
Signal Processing Lab GRA (dev) Increment 5																												
Counterspace Systems Developmental Test (plan/execute/report)																												
Capability Integration (Lab)																												
Capability tests (execute/report)																												
Ongoing capability DT planning/execution																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206438F / <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	2016	4	2021
Signal Processing Lab MMP(D) Increment 2	1	2016	1	2017
Signal Processing Lab GRA (dev) Increment 3	4	2016	2	2019
Signal Processing Lab GRA (dev) Increment 4	1	2019	4	2021
Signal Processing Lab GRA (dev) Increment 5	3	2021	4	2022
Counterspace Systems Developmental Test (plan/execute/report)	1	2016	3	2017
Capability Integration (Lab)	1	2016	4	2022
Capability tests (execute/report)	1	2016	4	2022
Ongoing capability DT planning/execution	1	2016	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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 1206730F I Space Security and Defense Program							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	30.771	32.399	41.385	0.000	41.385	45.884	46.801	47.571	48.595	Continuing	Continuing
64A025: Space Protection Program	-	30.771	32.399	41.385	0.000	41.385	45.884	46.801	47.571	48.595	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0603830F, Space Security and Defense Program efforts were transferred to PE 1206730F, Space Security and Defense Program due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206730F.

A. Mission Description and Budget Item Justification

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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 1206730F I Space Security and Defense Program				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	30.771	32.399	31.481	0.000	31.481	
Current President's Budget	30.771	32.399	41.385	0.000	41.385	
Total Adjustments	0.000	0.000	9.904	0.000	9.904	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	0.000	9.904	0.000	9.904	
Change Summary Explanation						
FY2018: +\$9.904M to increase analytic capability						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Threat Mitigation Project and Activities				25.957	0.000	0.000
Description: Entails the prioritized, project-specific technical efforts and activities supporting SSDP mission objectives. Includes associated program support/infrastructure and operating costs to sustain a coherent program effort and adhere to the legal requirements of executing a program-specific baseline.						
FY 2016 Accomplishments:						
FY2016 projects/activities addressed high-priority space protection issues utilizing existing processes/methodology within specific mission areas including Operations, Satellite Communication (SATCOM), Position-Navigation and Timing (PNT), Missile Warning (MW), Cyber/Non-Kinetic, Space Situational Awareness (SSA), Indications and Warning (I&W), and Intelligence - Surveillance - Reconnaissance (ISR). FY2016 projects responded to 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. Experimentation and CONOPS development feeding JICSpOC activities, Advanced Space Combat Tactics, Counter Network Exploitation Analysis, WGS Defense Exploration were priorities in FY2016.						
FY 2017 Plans:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 1206730F <i>I Space Security and Defense Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
For FY2017 these activities have moved to the "Space Protection & Survivability" line to better reflect program evolution and the emphasis on integrating across enterprise level efforts, experimentation and Prototyping, and mission area specific solution development. FY 2018 Plans: N/A				
Title: Strategic Protection Activities and Products Description: Encompasses the program's strategic efforts to develop and support protection-related policy, influence and advocate for protection requirements, analyze impacts of various policy recommendations on mitigation options, and inform/assist policy-makers on opportunities to leverage policy actions to enhance the space protection posture across the NSS Enterprise. FY 2016 Accomplishments: FY16 efforts directly supported follow-on assessments identified in the FY15 Space Strategic Portfolio Review (SPR) results. Impacted policy across a broad range of DoD, IC and Civil space operations. Continued strategic protection and policy integration efforts across all facets of the NSS Enterprise. Provided technical assistance, advice and strategic solution support to enterprise stakeholders. Furthered investigation of specific tactics, technics and procedures (TTP) as well as specific cyber and materiel solutions to emergent capability needs. FY 2017 Plans: For FY2017 these activities have moved to the "Space Protection & Survivability" line to better reflect program evolution and the emphasis on integrating across enterprise level efforts, experimentation and Prototyping, and mission area specific solution development. FY 2018 Plans: N/A		3.939	0.000	0.000
Title: SATCOM Resiliency Enhancement Description: Incremental effort to enhance the ground-based software and associated operating/processing procedures used to plan WGS operations. Will leverage current system capabilities and planned software updates to improve code that will make a manually-intensive build cycle more automated/responsive. FY 2016 Accomplishments: FY2016 activities implemented Wideband Global Satcom (WGS) ground based planning enhancements as well as continued development and validation of revised techniques to support fully operationalizing the enhancement by FY2017. In order to ensure operational effectiveness, the enhancements were tested and injected into a variety of relevant exercises. The program worked to		0.875	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 1206730F <i>I Space Security and Defense Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
tie-in the functions of the new software more-directly with key decision-makers and considered implementation of added features to further enhance the accuracy and effectiveness of the system to account for variables not identified/known during the original development efforts.				
FY 2017 Plans: For FY2017 these activities have moved to the “Space Protection & Survivability” line to better reflect program evolution and the emphasis on integrating across enterprise level efforts, experimentation and Prototyping, and mission area specific solution development.				
FY 2018 Plans: N/A				
Title: Space Protection and Survivability		0.000	32.399	41.385
Description: SSDP organizes, plans, and executes specific projects in three focus areas: Enterprise Capabilities & Solutions; Mission Area Protection Concepts & Architectures; and Operational Tactics, Experiments & Prototypes. Enterprise Capabilities & Solutions projects focus on identifying and advocating for NSS enterprise-level protection requirements and architecture updates/modifications, informing/assisting policy-makers and analyzing policy to enhance the space protection posture across the NSS Enterprise. Mission Area Protection Concepts & Architectures projects constitute protect and defend (P&D) efforts focused on specific mission areas and/or systems. These projects entail the specific technical efforts, activities and engagements supporting capability and architecture development in mission areas such as Space Control, Battle Management Command and Control (BMC2), Satellite Communication (SATCOM), Position-Navigation and Timing (PNT), Missile Warning (MW), Space Situational Awareness (SSA), Indications and Warning (I&W), and Intelligence – Surveillance - Reconnaissance (ISR). Finally, Operational Tactics, Experiments & Prototypes projects leverage operators, experimentation and prototyping to develop, refine, document and demonstrate Tactics, Techniques and Procedures (TTPs), Concepts of Operation (CONOPS), improved operational capabilities, and associated BMC2 functions. Projects may leave behind a residual operational capability. Additionally, these projects will support development of TTPs and CONOPS for protection solutions developed by SSDP partners across the NSS Enterprise. Projects in all three areas will include cyber and non-kinetic solutions for protecting specific capabilities and the NSS Enterprise.				
FY 2016 Accomplishments: The other SSDP Major Thrusts transition into this Major Thrust in FY2017.				
FY 2017 Plans: FY2017 projects will focus on high-priority DoD & IC space protect and defend (P&D) considerations such as the Space Strategic Portfolio Review (SPR) and AFSPC Space Enterprise Vision (SEV) while being flexible and responsive to the evolving protection needs and priorities throughout the NSS Enterprise. Individual projects, both in house and in coordination with our mission partners, will work to validate candidate solutions through various means, such as technical analysis, Modeling & Simulation				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 1206730F <i>I Space Security and Defense Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>(M&S), and operator engagement. Projects will: Pursue new P&D solutions, develop CONOPS for both programmed and proposed systems, use M&S resources to mature and shape CONOPS, document architectures and inform programmatic decisions, and utilize experiment results along with M&S recommendations to influence NSS Enterprise requirement and architecture choices. Projects will include prototyping and experimenting with BMC2, SSA and Space Control concepts, planned capabilities and TTPs. Projects will be executed in SSDP facilities, mission partner facilities, and often in coordination with the Joint Space Operations Center (JSpOC), Joint Interagency Combined Space Operations Center (JICSpOC), and National Reconnaissance Operations Center (NROC). Projects will incorporate objectives to demonstrate DoD/IC space protection coordination as well as explore data fusion including the integration of commercial tools & services. SSDP will: Continue independent review and assessment for programmatic planning and architectures covering DoD, IC and Civil space operations; will engage on strategic protection and policy integration efforts across all facets of the NSS Enterprise; and will work with the NSS community to incorporate P&D requirements into policy and guidance to drive future program development and execution. M&S resources will be used to conduct architecture trades at both the enterprise and system level to identify the right mix of systems to meet NSS requirements and examine...</p> <p>FY 2018 Plans: FY2018 projects will focus on high-priority DoD & IC space protect and defend (P&D) considerations and DoD strategic evaluations on future space investments while remaining flexible and responsive to address evolving protection needs and priorities throughout the NSS Enterprise. SSDP will also further the integration of DoD & IC space protection efforts through the delivery and integration of targeted analysis, policy recommendations, and initiatives. Individual projects, both in house and in coordination with mission partners, will concentrate on validating candidate solutions through technical engineering-based analysis, modeling & simulation (M&S), and operator engagement. SSDP will pursue definitive protection solutions encompassing countermeasures, inherently resilient architectures, data fusion, and CONOPS; employing its tailored, organic M&S resources to mature and refine CONOPS, deliver conceptual protocols, evaluate architectures, assess the integration of commercial tools & services, and accomplish various Joint Space Tactics and Doctrine Forum (JSTDF) objectives. Results will inform system trades, programmatic decisions, experiment planning/design, prototyping proposals, and influence NSS Enterprise requirement and architecture choices. SSDP will additionally define and, where appropriate, execute distinctive prototypes and experiments in offensive and defensive space control (OSC & DSC) to include the Space Situational Awareness (SSA) and Battle Management Command & Control (BMC2) mission areas. The program will execute these projects, prototypes, and experiments in SSDP facilities and/or mission partner facilities; often in coordination with key space operational centers to ensure full applicability and integration with evolving operational environments and threats. Increased FY2018 funding will enable development of higher-fidelity M&S tools necessary to tie campaign level modeling to the physics-based models developed in FY2017 and earlier.</p>				
Accomplishments/Planned Programs Subtotals		30.771	32.399	41.385

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 1206730F / <i>Space Security and Defense Program</i>						
D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• NA: NA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000
Remarks 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.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206730F / Space Security and Defense Program						Project (Number/Name) 64A025 / Space Protection Program			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Threat Mitigation Projects and Activities	Various	Various : Various	-	23.401	Nov 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Strategic Protection Activities and Products	Various	Various : Various	-	3.600	Nov 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
SATCOM Resiliency Enhancement	Various	Various : Various	-	0.875	Nov 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Space Protection and Survivability	Various	Various : Various	-	0.000		29.321	Nov 2016	37.057	Nov 2017	0.000		37.057	Continuing	Continuing	-
Subtotal				-	27.876		29.321			37.057		0.000		37.057	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal				-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal				-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Support and Infrastructure (Gov't PMA)	Various	Various : Various	-	0.999	Nov 2015	1.062	Nov 2016	1.587	Nov 2017	0.000		1.587	Continuing	Continuing	-
Oversight, Advisory and other Technical Support (Contractor PMA)	Various	Various : Various	-	1.896	Nov 2015	2.016	Nov 2016	2.741	Nov 2017	0.000		2.741	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017		
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206730F / <i>Space Security and Defense Program</i>				Project (Number/Name) 64A025 / <i>Space Protection Program</i>				

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	2.895		3.078		4.328		0.000		4.328	-	-	-

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	30.771	32.399	41.385	0.000	41.385	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017									
Appropriation/Budget Activity										R-1 Program Element (Number/Name)									
3600 / 4										PE 1206730F / Space Security and Defense Program									
										Project (Number/Name)									
										64A025 / Space Protection Program									

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Enterprise Capabilities and Solutions																												
Mission Area Protection Concepts and Architectures																												
Operational Tactics, Experiments and Prototypes																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206730F / <i>Space Security and Defense Program</i>	Project (Number/Name) 64A025 / <i>Space Protection Program</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Enterprise Capabilities and Solutions	1	2016	4	2022
Mission Area Protection Concepts and Architectures	1	2016	4	2022
Operational Tactics, Experiments and Prototypes	1	2016	4	2022

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 1206760F / <i>Protected Tactical Enterprise Service (PTES)</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	18.150	0.000	18.150	77.021	115.292	114.511	154.058	Continuing	Continuing
643726: <i>PTES</i>	-	0.000	0.000	18.150	0.000	18.150	77.021	115.292	114.511	154.058	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2018, Project 657104, MILSATCOM SMI, funds were transferred from PE 1206431F, Advanced EHF MILSATCOM (SPACE), in order to transition from MILSATCOM Space Modernization Initiative to a stand alone program.

A. Mission Description and Budget Item Justification

Develop the Protected Tactical Enterprise Service (PTES) ground system to provide worldwide, anti-jam, Low Probability of Intercept (LPI) communications for tactical warfighters. PTES will utilize the Protected Tactical Waveform (PTW) to provide anti-jam communications via military and commercial satellite systems for tactical users in all Services. Initially, PTES will utilize the Wideband Global SATCOM (WGS) system and be expanded later to include commercial satellites.

The PTES program is developing a mission management system (MMS), a key management system (KMS) and hub system to enable PTW via transponded WGS satellites, with future extension to commercial SATCOM. PTW modems for user terminals are being developed by the Protected Tactical Service Field Demonstration (PTSFD) and will be separately acquired by each Service and by international partners.

PTES addresses the gap in protected communications capability identified in the Joint Space Communications Layer (JSCL) Initial Capabilities Document (ICD), the Protected Satellite Communications Services (PSCS) Analysis of Alternatives (AoA) and the PSCS AoA Follow-on for Resiliency (PAFR). The PSCS AoA confirmed the validity of tactical user requirements for protected communications. Specific gaps identified that are pertinent to PTES are: protection and connectivity to mobile users operating in a contested environment, and wideband coverage and capacity in concentrated theaters. There is a projected shortfall (i.e. 60-75%) in the needed capacity for protected tactical communications in a contested environment. This gap is especially acute for small, mobile terminals. Secondly, there is a projected shortfall (i.e. 25-40%) in wideband coverage and capacity.

To meet the warfighter requirements for protected tactical MILSATCOM and the capability gaps identified in these studies, RDT&E funding is required for architectural development, acquisition strategy development, system requirements and system trades analysis, and engineering, manufacturing, developing, testing and evaluating PTES systems and segments.

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 environment.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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 1206760F I Protected Tactical Enterprise Service (PTES)				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	0.000	0.000	0.000	0.000	0.000	
Current President's Budget	0.000	0.000	18.150	0.000	18.150	
Total Adjustments	0.000	0.000	18.150	0.000	18.150	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	0.000	18.150	0.000	18.150	
Change Summary Explanation						
+\$18.150M, transferred from MILSATCOM SMI (PE 1206431F, Project 657104) to the PTES program.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Acquisition Strategy Development				0.000	0.000	7.246
Description: The JSCL ICD and PSCS AoA defined the need for a more resilient, protected tactical architecture with increased capacity and bandwidth. In accordance with these requirements, the PTES program will develop an acquisition strategy to meet the required capabilities within an acceptable cost and schedule.						
FY 2016 Accomplishments:						
N/A						
FY 2017 Plans:						
See PE 1206431F, BPAC 657104						
FY 2018 Plans:						
Mature acquisition strategy. Develop documentation required for statutory and regulatory documentation to achieve DoD 5000.02 milestones. Evaluate results of PTSFD testing and incorporate lessons learned.						
Title: Source Selection & Contract Award				0.000	0.000	10.904
Description: Competitively award a single contract to develop and field PTES, including declaration of Initial Operational Capability (IOC) and Final Operational Capability (FOC). The contractor will be responsible for developing all PTES segments and performing all system integration, including end-to-end tests of the complete PTES system.						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 1206760F <i>I Protected Tactical Enterprise Service (PTES)</i>						
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018	
FY 2016 Accomplishments: N/A FY 2017 Plans: See PE 1206431F, BPAC 657104 FY 2018 Plans: Conduct source selection and award contract for development of PTES. Plan for Integrated Baseline Review with PTES contractor. Continue program office and other related support activities that may include, but are not limited to, studies, technical analysis, etc.											
Accomplishments/Planned Programs Subtotals								0.000	0.000	18.150	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E: BA05: PE 1206431F: <i>Advanced EHF MILSATCOM (SPACE)</i>	0.000	19.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.800
Remarks											
E. Acquisition Strategy The objective of PTES is to provide an operational anti-jam communications capability via WGS using PTW. The PTES acquisition approach is to competitively award a single contract to develop and field PTES, including declaration of IOC and FOC. The contractor will be responsible for developing all PTES segments (MMS, KMS, and Hub) and performing all system integration, including end-to-end tests of the complete PTES system. The 46th Test Squadron is planned to be the PTES Developmental Test organization and AFOTEC is planned to be the Operational Test organization.											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206760F / Protected Tactical Enterprise Service (PTES)				Project (Number/Name) 643726 / PTES					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Protected Tactical Enterprise Service	TBD	TBD : TBD	-	0.000		0.000		7.246	Jul 2018	0.000		7.246	Continuing	Continuing	-
Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	-	0.000		0.000		3.467	Jan 2018	0.000		3.467	Continuing	Continuing	-
Enterprise SE&I	C/CPAF	LinQuest : Los Angeles, CA	-	0.000		0.000		4.339	Jan 2018	0.000		4.339	Continuing	Continuing	-
Subtotal			-	0.000		0.000		15.052		0.000		15.052	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Various : TBD	-	0.000		0.000		1.546	Jan 2018	0.000		1.546	Continuing	Continuing	-
Other Support	Various	Various : TBD	-	0.000		0.000		0.100	Jan 2018	0.000		0.100	Continuing	Continuing	-
A&AS	Various	Various : TBD	-	0.000		0.000		1.452	Jan 2018	0.000		1.452	Continuing	Continuing	-
Subtotal			-	0.000		0.000		3.098		0.000		3.098	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force											Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 1206760F / Protected Tactical Enterprise Service (PTES)					Project (Number/Name) 643726 / PTES			
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		0.000		18.150		0.000		18.150	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017			
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 1206760F / <i>Protected Tactical Enterprise Service (PTES)</i>					Project (Number/Name) 643726 / PTES			

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Conduct Source Selection																												
Award Development Contract																												
Mission Management System Design																												
Key Management System Design																												
Milestone B Decision																												
IOC Build																												
Begin Developmental/Operational Testing																												
Milestone C Decision																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206760F / <i>Protected Tactical Enterprise Service (PTES)</i>	Project (Number/Name) 643726 / PTES	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Conduct Source Selection	1	2018	4	2018
Award Development Contract	4	2018	4	2018
Mission Management System Design	1	2019	4	2020
Key Management System Design	1	2019	4	2020
Milestone B Decision	2	2020	2	2020
IOC Build	4	2020	4	2021
Begin Developmental/Operational Testing	4	2021	4	2022
Milestone C Decision	3	2022	3	2022

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 1206761F / <i>Protected Tactical Service (PTS)</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	24.201	0.000	24.201	176.070	140.064	7.001	69.174	Continuing	Continuing
643728: <i>Protected Tactical SATCOM</i>	-	0.000	0.000	24.201	0.000	24.201	176.070	140.064	7.001	69.174	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 04 PE 1206761F, project 643728, Acquisition Strategy Development, is a new start.
This program, BA 04 PE 1206761F, project 643728, Technical Baseline and Architectural Engineering, is a new start.

A. Mission Description and Budget Item Justification

Protected Tactical SATCOM (PTS) will provide worldwide, beyond line of sight, Anti-Jam (AJ), Low Probability of Intercept communications to tactical warfighters in both benign and contested environments. The centerpiece of the PTS system is a new, more resilient Protected Tactical Waveform (PTW), designed to mitigate the effects of advanced jamming in Anti-Access/Area Denial environments.

The DoD will be implementing PTW to ensure delivery of protected tactical SATCOM to the joint and coalition warfighters in contested, degraded environments. The Protected Tactical Service Field Demonstration (PTSFD) is paving the way for the operationalization of PTW by developing production-representative PTW modems that can be used by the Services to upgrade their currently fielded terminals. In conjunction, the Protected Tactical Enterprise Service (PTES) program is developing a mission management, key management and hub system to enable PTW via transponded Wideband Global SATCOM (WGS) satellites, with future extension to commercial SATCOM. PTS will leverage the mission management and key management systems developed under the PTES program. PTS, with its on-board payload processing and antenna design, will bring advanced anti-jam capability and increased capacity. The system will also employ interfaces consistent with the Space Enterprise Visions evolving Space Warfighter Construct (SWC) and Enterprise Ground Services; thereby enhancing mission assurance, resiliency, and interoperability.

PTS is intended to address the protected tactical MILSATCOM capability gaps identified in the Joint Space Communications Layer Initial Capabilities Document (JSCL ICD), the Protected Satellite Communications Services (PSCS) Analysis of Alternatives (AoA), and in the PSCS AoA Follow-on for Resiliency (PAFR). To meet the warfighter requirements for protected tactical MILSATCOM and the capability gaps identified in these studies, RDT&E funding is required for architectural development, acquisition strategy development, system requirements and system trades analysis, technology maturation, risk reduction activities, system concept development, prototyping and engineering, manufacturing, developing, testing and evaluating of PTS systems and segments.

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 as high fidelity and realistic operating environment.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1206761F I Protected Tactical Service (PTS)					
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget		0.000	0.000	0.000	0.000	0.000	
Current President's Budget		0.000	0.000	24.201	0.000	24.201	
Total Adjustments		0.000	0.000	24.201	0.000	24.201	
• Congressional General Reductions		0.000	0.000				
• Congressional Directed Reductions		0.000	0.000				
• Congressional Rescissions		0.000	0.000				
• Congressional Adds		0.000	0.000				
• Congressional Directed Transfers		0.000	0.000				
• Reprogrammings		0.000	0.000				
• SBIR/STTR Transfer		0.000	0.000				
• Other Adjustments		0.000	0.000	24.201	0.000	24.201	
Change Summary Explanation +\$24.201M, for PTS new start.							
C. Accomplishments/Planned Programs (\$ in Millions)					FY 2016	FY 2017	FY 2018
Title: Acquisition Strategy Development					0.000	0.000	14.828
Description: The PSCS AoA, PAFR study, and Space Enterprise Vision study further defined the need for a more resilient, protected tactical space architecture with increased capacity. In accordance with these system concept and architecture studies, the PTS program is developing its acquisition strategy to include hostable payloads.							
FY 2016 Accomplishments: N/A							
FY 2017 Plans: N/A							
FY 2018 Plans: Mature competitive acquisition strategy. Develop documentation necessary to comply with statutory and regulatory requirements to achieve DoD 5000.02 milestones. Plan to finish acquisition strategy and complete DoD acquisition approval. Release Risk Reduction Request for Proposal (RFP). Plan to conduct source selection for one or more contractors for risk reduction and prototyping of the PTS system. Begin program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.							
Title: Technical Baseline and Architectural Engineering					0.000	0.000	9.373

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 1206761F I Protected Tactical Service (PTS)							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Description: Develop the PTS technical baseline and architectural engineering required for the PTS space and ground segments.												
FY 2016 Accomplishments: N/A												
FY 2017 Plans: N/A												
FY 2018 Plans: Develop technical baseline and system requirements. Conduct system architecture and trade analyses, conduct risk reduction activities.												
Accomplishments/Planned Programs Subtotals										0.000	0.000	24.201
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDT&E: BA04: PE 1206855F: PSCS Aggregated	0.000	0.000	16.000	0.000	16.000	214.885	348.648	549.424	930.623	Continuing	Continuing	
Remarks												
E. Acquisition Strategy The PTS team is developing a flexible acquisition strategy informed by market research to identify industry capabilities and acquisition concepts. This strategy will have an early emphasis on payload development and hosting opportunities and will incorporate lessons learned from MILSTAR, AEHF, PTES and commercial SATCOM practices.												
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206761F / Protected Tactical Service (PTS)				Project (Number/Name) 643728 / Protected Tactical SATCOM					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Protected Tactical SATCOM TMRR	TBD	Not specified. : TBD	-	0.000		0.000		8.235	Jan 2018	0.000		8.235	Continuing	Continuing	-
Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	-	0.000		0.000		4.891	Jan 2018	0.000		4.891	Continuing	Continuing	-
Enterprise SE&I	C/CPAF	LinQuest : Los Angeles, CA	-	0.000		0.000		6.624	Jan 2018	0.000		6.624	Continuing	Continuing	-
Subtotal			-	0.000		0.000		19.750		0.000		19.750	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Various : TBD	-	0.000		0.000		2.465	Jan 2018	0.000		2.465	Continuing	Continuing	-
Other Support	Various	Various : TBD	-	0.000		0.000		0.050	Jan 2018	0.000		0.050	Continuing	Continuing	-
A&AS	Various	Various : TBD	-	0.000		0.000		1.936	Jan 2018	0.000		1.936	Continuing	Continuing	-
Subtotal			-	0.000		0.000		4.451		0.000		4.451	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force										Date: May 2017			
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 1206761F / <i>Protected Tactical Service (PTS)</i>					Project (Number/Name) 643728 / <i>Protected Tactical SATCOM</i>			
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		0.000		24.201		0.000		24.201	-	-	-
Remarks													

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 1206761F / <i>Protected Tactical Service (PTS)</i>			Project (Number/Name) 643728 / <i>Protected Tactical SATCOM</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Hostable Payload Materiel Development Decision (MDD)																												
Initiate System Definition																												
Release Risk Reduction Request for Proposal																												
Technology Maturation and Risk Reduction (TMRR) Source Selection																												
TMRR Contract Award																												
TMRR Phase																												
Pathfinder Preliminary Design Review (PDR)																												
Pathfinder Critical Design Review (CDR)																												
Milestone B Decision																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206761F / Protected Tactical Service (PTS)	Project (Number/Name) 643728 / Protected Tactical SATCOM	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Hostable Payload Materiel Development Decision (MDD)	1	2018	1	2018
Initiate System Definition	1	2018	3	2018
Release Risk Reduction Request for Proposal	2	2018	2	2018
Technology Maturation and Risk Reduction (TMRR) Source Selection	3	2018	4	2018
TMRR Contract Award	4	2018	4	2018
TMRR Phase	4	2018	4	2021
Pathfinder Preliminary Design Review (PDR)	4	2019	4	2019
Pathfinder Critical Design Review (CDR)	3	2020	3	2020
Milestone B Decision	3	2021	3	2021

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 1206855F / <i>Protected SATCOM Services (PSCS) - Aggregated</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	16.000	0.000	16.000	214.885	348.648	549.424	930.623	Continuing	Continuing
643725: <i>Evolved Strategic SATCOM (ESS)</i>	-	0.000	0.000	16.000	0.000	16.000	214.885	348.648	549.424	930.623	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2018, Project 657104, MILSATCOM SMI, funds were transferred from PE 1206431F, Advanced EHF MILSATCOM (SPACE), in order to transition from MILSATCOM Space Modernization Initiative to a stand alone program.

A. Mission Description and Budget Item Justification

The Protected Satellite Communications Services (PSCS) Analysis of Alternatives (AoA) evaluated alternative space and control segment architectures, along with the associated user segments, to address the required protected satellite communications capabilities in the nuclear, contested, and benign operating environments. The PSCS AoA Follow-on for Resiliency (PAFR) Study and Space Enterprise Vision (SEV) Strategic Tiger Team further defined the need for strategic space resiliency. To meet the requirements for strategic communications and capability gaps identified in these studies, the Evolved Strategic SATCOM (ESS) system will provide space and mission control segments for worldwide and polar DoD strategic, secure, jam-resistant, nuclear-survivable communications for ground, sea, and air assets. It will include on-board resilience features and the capability to integrate a hosted Protected Tactical Waveform (PTW) payload. PTW is a waveform designed to mitigate the effects of advanced jamming in Anti-Access/Area Denial environments. PTW will ensure delivery of protected tactical SATCOM to the joint and coalition warfighters in these contested, degraded environments.

ESS supports strategic mission requirements such as Presidential and National Voice Conferencing (PNVC), Nuclear Command and Control (NC2) strategic networks, terminal report back, and Emergency Action Message (EAM) dissemination. The program provides the National Command Authority (NCA) and Combatant Commanders with highly-reliable, secure MILSATCOM to execute the Single Integrated Operational Plan (SIOP), and command and control strategic forces at all levels of conflict. ESS will support 2030 strategic demand in all operational environments (nuclear, contested, and benign). It will be backwards compatible with the eXtended Data Rate (XDR) waveform and AEHF (Advanced Extremely High Frequency) satellite RF crosslinks (XL), as needed, to interface with existing AEHF space vehicles and support communication protocols associated with strategic communication services. The space vehicles will be designed to accommodate a hosted PTW payload. The ESS system will also satisfy emerging requirements and capabilities for enhanced resilience by accommodating on-board resilience payload(s), providing maneuver capability, and incorporating improved cybersecurity.

RDT&E funding is required for continued program office and other related support activities that may include, but are not limited to: architectural development, acquisition strategy development, system requirements and system trades analysis, technology maturation, risk reduction activities, system concept development, prototyping, engineering, manufacturing, developing, testing and evaluating of the ESS systems and segments.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1206855F I Protected SATCOM Services (PSCS) - Aggregated				
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		0.000	0.000	0.000	0.000	0.000
Current President's Budget		0.000	0.000	16.000	0.000	16.000
Total Adjustments		0.000	0.000	16.000	0.000	16.000
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	0.000	16.000	0.000	16.000
Change Summary Explanation						
+\$16.000M, funds transferred from PE 1206431F, BPAC 657104 for the PSCS Aggregated effort.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Acquisition Strategy Development				0.000	0.000	10.938
Description: The PSCS AoA, PAFR Study, and SEV further defined the need for space resiliency. In accordance with these system concept studies and various architectures, ESS is planning market research to inform acquisition strategy development.						
FY 2016 Accomplishments: See PE 1206431, BPAC 657104						
FY 2017 Plans: See PE 1206431, BPAC 657104						
FY 2018 Plans: Mature acquisition strategy. Develop documentation necessary to comply with statutory and regulatory requirements to achieve DoD 5000.02 milestones. Partner with Industry for Technology Maturation and Risk Reduction (TMRR) contract activities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.						
Title: Technical Baseline and Architectural Engineering				0.000	0.000	5.062

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 1206855F I Protected SATCOM Services (PSCS) - Aggregated							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Description: ESS will support 2030 strategic demand in all operational environments (nuclear, contested, and benign), as well as supporting tactical user demands through a hostable PTW payload. As such, continued development of the technical baseline and further architecture engineering is required. FY 2016 Accomplishments: See PE 1206431, BPAC 657104 FY 2017 Plans: See PE 1206431, BPAC 657104 FY 2018 Plans: Expand technical baseline development and system requirements, previously funded under the MILSATCOM Space Modernization Initiative (PE 0605431F BPAC 657104), to include the integration of a PTW payload. Conduct system architecture development within parameters of the SEV recommendations and the evolving Space Warfighter Construct (SWC). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.												
Accomplishments/Planned Programs Subtotals										0.000	0.000	16.000
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDT&E: BA05: PE 1206431F: Advanced EHF MILSATCOM (Space)	14.323	36.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	50.323	
• RDT&E: BA04: PE 1206761F: Protected Tactical Service (PTS)	0.000	0.000	24.201	0.000	24.201	176.070	140.064	7.001	69.174	Continuing	Continuing	
Remarks												
E. Acquisition Strategy												
The current cost estimates for ESS assume a full-and-open competition. Federally Funded Research Development Center (FFRDC) studies and University Affiliated Research Center (UARC) studies will assist to refine required capabilities and develop recommended architectural options prior to Milestone A in FY19.												
F. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206855F / <i>Protected SATCOM Services (PSCS) - Aggregated</i>						Project (Number/Name) 643725 / <i>Evolved Strategic SATCOM (ESS)</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TMRR Preparation	TBD	Not specified. : TBD	-	0.000		0.000		4.766	Jan 2018	0.000		4.766	Continuing	Continuing	-
Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	-	0.000		0.000		1.714	Jan 2018	0.000		1.714	Continuing	Continuing	-
Enterprise SE&I	C/CPAF	Linquest : Los Angeles, CA	-	0.000		0.000		4.762	Jan 2018	0.000		4.762	Continuing	Continuing	-
Subtotal			-	0.000		0.000		11.242		0.000		11.242	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Various : TBD	-	0.000		0.000		3.428	Jan 2018	0.000		3.428	Continuing	Continuing	-
Other Support	Various	Various : TBD	-	0.000		0.000		0.050	Jan 2018	0.000		0.050	Continuing	Continuing	-
A&AS	Various	Various : TBD	-	0.000		0.000		1.280	Jan 2018	0.000		1.280	Continuing	Continuing	-
Subtotal			-	0.000		0.000		4.758		0.000		4.758	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force											Date: May 2017		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 1206855F / Protected SATCOM Services (PSCS) - Aggregated					Project (Number/Name) 643725 / Evolved Strategic SATCOM (ESS)			
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		0.000		16.000		0.000		16.000	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017									
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 1206855F / Protected SATCOM Services (PSCS) - Aggregated					Project (Number/Name) 643725 / Evolved Strategic SATCOM (ESS)									

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Release Technology Maturation and Risk Reduction (TMRR) Request for Proposal (RFP)																												
Source Selection																												
Milestone A Decision																												
Contract Award																												
Preliminary Design Review (PDR)																												
Milestone B Decision																												
TMRR Phase																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206855F / <i>Protected SATCOM Services (PSCS) - Aggregated</i>	Project (Number/Name) 643725 / <i>Evolved Strategic SATCOM (ESS)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Release Technology Maturation and Risk Reduction (TMRR) Request for Proposal (RFP)	3	2018	3	2018
Source Selection	3	2018	2	2019
Milestone A Decision	1	2019	1	2019
Contract Award	2	2019	2	2019
Preliminary Design Review (PDR)	4	2020	4	2020
Milestone B Decision	3	2021	3	2021
TMRR Phase	2	2019	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity					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 1206857F / <i>Operationally Responsive Space</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	22.123	17.921	87.577	0.000	87.577	82.805	43.063	9.112	8.890	Continuing	Continuing
64A020: <i>AF Funded ORSSats</i>	-	22.123	17.921	87.577	0.000	87.577	82.805	43.063	9.112	8.890	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0604857F, Operationally Responsive Space efforts were transferred to PE 1206857F, Operationally Responsive Space due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206857F.

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 (ORS) projects are 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.

ORS-1, launched 29 Jun 2011 to respond to U.S. Central Command's urgent need, validated by USSTRATCOM, to provide intelligence, surveillance, and reconnaissance (ISR) for theater warfighters out-lived its two year design life by over three years, but has finally ended. The ORS Office is responding to another USSTRATCOM validated urgent need for an interim capability addressing weather gap 1 (cloud characterization) and gap 2 (theater weather imagery) with ORS-8. If requested, the ORS Office is ready to develop, test, train, and equip urgent needs of the warfighter.

ORS projects provide a broad range of capabilities directly supporting warfighter needs. Potential missions include communications; data exfiltration; blue/friendly force situational awareness; maritime domain awareness; positioning, navigation, and timing; weather; missile warning; and battlefield ISR. The highest priorities of the ORS Office are development and launch of the ORS-5 USSTRATCOM validated urgent need for space situational awareness, development and launch of the ORS-6 Compact Ocean Wind Vector Radiometer (COWVR) technology demonstration, and the low cost automated manufacturing initiative, ORS-7. 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.

Additional ORS Office efforts include maturing enabling elements which are transitioned as appropriate across the National Space Enterprise and allows the ORS Office to meet the USSTRATCOM specified responsiveness timelines and the 2007 NDAA goal (\$40M satellites/\$20M launches). This includes authenticating commercial space parts, confirming automated assembly lines, validating digital mission assurance processes, developing a modular open system architecture employing plug and play standards, and providing assembly, integration & test in the Rapid Response Space Works. It also includes integrating with the Multi-Mission Satellite Operations

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force			Date: May 2017			
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 1206857F I Operationally Responsive Space				
Center (MMSOC) and Enterprise Ground Service (EGS) to proliferate common satellite command and control. Additional developments include visionary, tailored, and future Space/Cyber projects to special operations forces (SOF).						
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		18.437	7.921	8.253	0.000	8.253
Current President's Budget		22.123	17.921	87.577	0.000	87.577
Total Adjustments		3.686	10.000	79.324	0.000	79.324
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		3.686	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	10.000	79.324	0.000	79.324
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: 64A020: AF Funded ORSSats						
Congressional Add: Operational Capabilities, Development, and Integration						
Congressional Add: Rapid Assembly, Integration, & Test (Tier-2)						
Congressional Add: ORS Development (1)						
Congressional Add: ORS: Cross Cutting						
Congressional Add Subtotals for Project: 64A020						
Congressional Add Totals for all Projects						
Change Summary Explanation						
FY2016: +\$0.943M Added to complete ORS-4						
FY2016: +\$2.743M Added to help fund ORS-6						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1206857F I Operationally Responsive Space		
FY2017: +\$10.000M is required to address emergency warfighting readiness requirements. Funding is for the ORS-8 solution to the USSTRATCOM validated urgent need for an interim capability addressing weather gap 1 (cloud characterization) and gap 2 (theater weather imagery). FY2018: +\$79.300M added for ORS-8				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Title: ORS Development		5.316	12.000	79.300
Description: Rapidly exploit and infuse space technological or operational innovations to increase U.S. advantage.				
FY 2016 Accomplishments: Completed ORS-6 (COWVR) Systems Requirements Review (SRR) and Interim Design review #1. Closed out ORS-4 anomaly investigation. Completed proof of concept for Responsive Manufacturing. Prepared ORS-5 ground support in readiness for FY17 launch.				
FY 2017 Plans: Continue preparation of ORS-5 ground support in readiness for FY17 launch. Develop ORS-8 as the interim capability addressing weather gap 1 (cloud characterization) and gap 2 (theater weather imagery).				
FY 2018 Plans: Continue to develop ORS-8 as an end-to-end program as an interim capability to provide continuous un-cued EO/IR environmental cloud data at the dawn/dusk terminator region to address weather gap-1 (cloud characterization) and support weather gap-2 (theater weather imagery). If requested, develop, test, train, and equip urgent needs of the warfighter.				
Title: ORS: Cross Cutting		4.807	5.921	8.277
Description: Provide systems engineering and program management support across all the ORS activities. Perform modeling, simulation, analysis, and assess alternative concepts and requirements. Support response to USSTRATCOM tasking and future mission development to meet Joint Force Commander (JFC) and warfighter needs.				
FY 2016 Accomplishments: Continued ORS-1 Mission Operations and Lessons Learned studies. Continued ongoing systems engineering support of future mission development. Refined ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Led, participated in, and supported, as appropriate, the solidification of space doctrine.				
FY 2017 Plans: Complete ORS-1 Mission Operations and Lessons Learned studies. Continue ongoing systems engineering support of future mission development to support Joint Force Commander (JFC) need #7, as directed by USSTRATCOM to assess the feasibility of three mission areas as the next JFC urgent need (JFC-7). USSTRATCOM and the ORS Executive Committee approved the urgent need to cover weather gaps 1 (cloud characterization) and 2 (theater weather imagery) with ORS-8. Refine ORS				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1206857F I Operationally Responsive Space		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Lead, participate in, and support, as appropriate, the solidification of space doctrine. FY 2018 Plans: Continue ongoing systems engineering support of future mission development. Refine ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Lead, participate in, and support, as appropriate, the solidification of space doctrine. Continue to support Combatant Commands. Investigate options and implement technology, procedures, and concepts for reducing costs and shortening satellite deployment times. Execute approved ORS-8 program in support of JFC need #7. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
Accomplishments/Planned Programs Subtotals		10.123	17.921	87.577
		FY 2016	FY 2017	
Congressional Add: Operational Capabilities, Development, and Integration FY 2016 Accomplishments: Executed urgent needs as identified by USSTRATCOM by assessing the feasibility of three mission areas to support JFC need #7. Continued to support Service war games; re-started support to Combatant Command exercises. Integrated ORS capabilities and concepts, including resiliency, into operations plans of the combatant commands, tactics, techniques and procedures of the military departments, and exercises, demonstrations, and war games.		0.135	-	
Congressional Add: Rapid Assembly, Integration, & Test (Tier-2) FY 2016 Accomplishments: Completed Proof of concept for Responsive Manufacturing and 6-Unit sized cubesats (ORS-7), to include development of factory environment, integration with Digital Assurance architecture, transportation and factory flow requirements, standard, high-definition, and machine readable camera requirements. It also includes the proof of concept for Responsive Space Satellites (RSPSats).		2.340	-	
Congressional Add: ORS Development (1) FY 2016 Accomplishments: Continued ORS-5 space vehicle system integration and testing. Continued Responsive Space Parts/Spacecraft Design. Continued Digital Assurance integration to Spacecraft object build and flight software iteration.		5.553	-	
Congressional Add: ORS: Cross Cutting FY 2016 Accomplishments: Continued ORS-1 Mission Operations and Lessons Learned studies. Continue ongoing systems engineering support of future mission development. Refined ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Led, participated in, and supported, as appropriate, the		3.972	-	

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 1206857F <i>I Operationally Responsive Space</i>
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	FY 2016	FY 2017
solidification of space doctrine.		
Congressional Adds Subtotals	12.000	-

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA04: 1206422F: <i>Weather System Follow-On</i>	46.307	118.953	112.088	0.000	112.088	153.391	101.921	36.907	37.662	Continuing	Continuing

Remarks

E. Acquisition Strategy

Expediently award contracts through ORS Office or partner organizations.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 1206857F / <i>Operationally Responsive Space</i>				Project (Number/Name) 64A020 / <i>AF Funded ORSSats</i>					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Capabilities, Development, and Integration	Various	Various : Various	-	0.135	Dec 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Rapid AI&T	C/CPFF	Millennium Engineering : Albuquerque, NM	-	0.909	Dec 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
ORS-6 (COWVR)	C/CPFF	Millennium Engineering : Albuquerque, NM	-	2.744	Jul 2016	0.000		0.000		0.000		0.000	Continuing	Continuing	-
ORS-5 Acquisition	SS/CPFF	MIT/LL : Boston, MA	-	3.886	Feb 2016	2.000	Oct 2016	0.000		0.000		0.000	Continuing	Continuing	-
ORS-5 Launch	C/FPIF	Orbital : Chandler, AZ	-	2.785	Dec 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
ORS-8 (Weather gaps 1&2)	TBD	TBD : TBD	-	0.000		10.000	Aug 2017	79.300	Oct 2017	0.000		79.300	Continuing	Continuing	-
MSV Modular Bus/Open Manufacturing (ORS-7)	C/CPFF	Raytheon : Tucson, AZ	-	2.340	Mar 2016	0.000		0.000		0.000		0.000	Continuing	Continuing	500.000
Responsive Launch Capability (ORS-4)	SS/CPFF	U. of HI : Honolulu, HI	-	0.546	Oct 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
ORS Enterprise System Engineering and Integration	C/T&M	GSA : San Antonio, TX	-	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	-
Technical Mission Analysis	PO	Aerospace : Albuquerque, NM	-	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	13.345		12.000		79.300		0.000		79.300	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017			
Appropriation/Budget Activity 3600 / 4							R-1 Program Element (Number/Name) PE 1206857F / <i>Operationally Responsive Space</i>					Project (Number/Name) 64A020 / <i>AF Funded ORSSats</i>				

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advisory & Assistance Services	Various	Various : Various	-	7.112	Dec 2015	4.421	Dec 2016	6.577	Dec 2017	0.000		6.577	Continuing	Continuing	-
FFRDC	Various	Various : Various	-	1.666	Dec 2015	1.500	Dec 2016	1.700	Dec 2017	0.000		1.700	Continuing	Continuing	-
Subtotal			-	8.778		5.921		8.277		0.000		8.277	-	-	-

			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	22.123		17.921		87.577		0.000		87.577	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 1206857F / <i>Operationally Responsive Space</i>			Project (Number/Name) 64A020 / <i>AF Funded ORSSats</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Operational Capabilities Development and Integration																												
ORS-1 (CENTCOM Urgent Need)																												
Rapid AI&T (RRSW)																												
ORS-6 (COWVR)																												
ORS-5 Acquisition and Launch																												
ORS-5 Space Situational Awareness Operations																												
ORS-8 Weather gaps 1&2																												
MSV Modular Bus/Open Manufacturing (ORS-7)																												
ORS-4 Super Strydi																												
Cross-Cutting Activities: Modeling, Sim, Analysis; JFC Needs																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 1206857F / <i>Operationally Responsive Space</i>	Project (Number/Name) 64A020 / <i>AF Funded ORSSats</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Operational Capabilities Development and Integration	1	2016	4	2017
ORS-1 (CENTCOM Urgent Need)	1	2016	1	2017
Rapid AI&T (RRSW)	1	2016	4	2016
ORS-6 (COWVR)	1	2016	4	2020
ORS-5 Acquisition and Launch	1	2016	3	2017
ORS-5 Space Situational Awareness Operations	4	2017	3	2019
ORS-8 Weather gaps 1&2	2	2017	4	2022
MSV Modular Bus/Open Manufacturing (ORS-7)	1	2016	3	2018
ORS-4 Super Strypi	1	2016	2	2016
Cross-Cutting Activities: Modeling, Sim, Analysis; JFC Needs	1	2016	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604200F I Future Advanced Weapon Analysis & Programs							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	5.100	0.000	5.100	0.000	0.000	0.000	0.000	Continuing	Continuing
653133: Armament Subsystems	-	0.000	0.000	5.100	0.000	5.100	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This program, BA 05 PE 0604200F, project 653133, 2030AS Weapons, is a new start.												
A. Mission Description and Budget Item Justification The Air Force Life Cycle Management Center, Armament Systems Development Division is conducting market research for a Next Generation Strike Weapon Analysis of Alternatives. Armament Systems Development seeks to better characterize the technological, manufacturing, and business capabilities of the industrial base to develop and produce a material solution to address this operational objective.												
BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.												
B. Program Change Summary (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Previous President's Budget				0.000	0.000	0.000	0.000	0.000				
Current President's Budget				0.000	0.000	5.100	0.000	5.100				
Total Adjustments				0.000	0.000	5.100	0.000	5.100				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				0.000	0.000							
• SBIR/STTR Transfer				0.000	0.000							
• Other Adjustments				0.000	0.000	5.100	0.000	5.100				
C. Accomplishments/Planned Programs (\$ in Millions)							FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Title: 2030AS Weapons							0.000	0.000	5.100	0.000	5.100	

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604200F I Future Advanced Weapon Analysis & Programs				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: The 2030+ Air Dominance Weapon Systems candidate concepts will develop, refine and integrate technologies into evolving threat scenarios and environments. Studies that refine system concepts and operational/system architectures to include family of systems and system of systems are required in support of the strategic choices. Technical risk reduction activities will be conducted to include experimentation, integration and building demonstrative prototypes.</p> <p>Includes A&AS, travel, supplies, other government costs, AF top down bills, civilian pay and program costs to support the Air Superiority 2030 AoA.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: N/A</p> <p>FY 2018 Base Plans: The 2030+ Air Dominance Weapon Systems candidate concepts will develop, refine and integrate technologies into evolving threat scenarios and environments. Studies that refine system concepts and operational/system architectures to include family of systems and system of systems are required in support of the strategic choices. Technical risk reduction activities will be conducted to include experimentation, integration and building demonstrative prototypes.</p> <p>FY 2018 OCO Plans: N/A</p>						
Accomplishments/Planned Programs Subtotals		0.000	0.000	5.100	0.000	5.100
D. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
E. Acquisition Strategy Acquisition Strategy is competitive prototyping through the MS-B EMD phase						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604200F / Future Advanced Weapon Analysis & Programs	
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604201F I Integrated Avionics Planning and Development							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	101.203	0.000	101.203	58.971	16.908	0.000	0.000	Continuing	Continuing
651030: GPS Receiver Development	-	0.000	0.000	101.203	0.000	101.203	58.971	16.908	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, specific efforts initiated under PE 0305164F, NAVSTAR Global Positioning System (User Equipment) (Space), Project 643833, Military Global Positioning System User Equipment were transferred to PE 0604201F, Integrated Avionics Planning & Development, Project 651030, Aircraft Receiver Development, to realign resources with the execution responsibilities supporting aircraft weapon system platforms along with increased transparency to stakeholders.

A. Mission Description and Budget Item Justification

Positioning, Navigation and Timing (PNT) solutions are critical to defense operations by enabling delivery of precision fires, safe aerial navigation and time coordination across multiple platforms and subsystems. PNT must be maintained in the face of emerging and continuously evolving electronic and cyber threats, requiring increased system resiliency and rapid adaptability similar to that historically required of electronic warfare systems. Evolving threats will drive upgrades such as Global Positioning System (GPS) receiver modernization, development of standard navigational system formats/interfaces, increased use of open system architecture design principles, incorporation of alternative navigation sources into navigational solutions, advanced anti-jam antennas, and precision clock improvements to maintain current force capabilities.

Efforts transferred from PE 0305164F and now conducted under PE 0604201F, Project 651030 to include Embedded GPS/Inertial Navigation System (INS) Modernization (EGI-M), Miniaturized Airborne GPS Receiver 2000 Modernization (MAGR 2K-M), Defense Advanced GPS Receiver (DAGR), Resilient EGI (R-EGI) development, anti-jam antenna development, Situational Awareness devices and other advanced PNT solutions. Activities also include, but are not limited to, both current program planning and execution and future program planning. Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues.

This program is in Budget Activity 5, Engineering and Manufacturing Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year. Production funding for modernized airborne receivers is not covered in this PE and will be requested by using platform when necessary.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604201F I Integrated Avionics Planning and Development				
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		0.000	0.000	0.000	0.000	0.000
Current President's Budget		0.000	0.000	101.203	0.000	101.203
Total Adjustments		0.000	0.000	101.203	0.000	101.203
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	0.000	101.203	0.000	101.203
Change Summary Explanation In FY2018 increase a result of specific efforts transferred to PE 0604201F, Integrated Avionics Planning & Development, Project 651030, Aircraft Receiver Development from PE 0305164F, NAVSTAR Global Positioning System (User Equipment) (Space), Project 643833, Military Global Positioning System User Equipment						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Embedded GPS/INS - Modernized (EGI-M)				0.000	0.000	66.300
Description: Upgrades EGI design to enhance resiliency against existing and emerging navigational warfare threats, incorporating design features (such as interface standardization and software modularity) to reduce DoD cost and timelines to respond to any newly identified threats. Incorporates M-Code and potential ADS-B compliance capability into EGI receivers while addressing parts obsolescence, reducing configuration count from 260+ to approximately 16.						
FY 2016 Accomplishments: N/A						
FY 2017 Plans: N/A						
FY 2018 Plans: Conduct the EGI-M Preliminary Design Review, complete Milestone B and award the EMD contracts. Conduct the Critical Design Review and initiate box level vendor testing.						
Title: MAGR 2K-M				0.000	0.000	23.850

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604201F / <i>Integrated Avionics Planning and Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Description: Increases MAGR-2K resiliency against existing and emerging navigational warfare threats while reducing cost and timelines to respond to newly identified threats. Incorporates M-Code capability into MAGR 2K receivers while addressing parts obsolescence and providing a pathway to ADS-B Out implementation. Performs appropriate trade studies and incorporates additional resiliency features, such as alternate navigation inputs, where cost effective. FY 2016 Accomplishments: N/A FY 2017 Plans: N/A FY 2018 Plans: Conduct MAGR 2K-M CDR, complete box level bench testing, conduct environmental testing and initiate performance testing. Provide test articles platform testing and integration.				
Title: DAGR Description: Improves DAGR receiver by improving resiliency and meeting threat evolution. Integrates software and hardware capability enhancements into DAGR receivers, providing improved resistance to current and emerging operational threats for navigational capability for ground personnel and vehicles. FY 2016 Accomplishments: N/A FY 2017 Plans: N/A FY 2018 Plans: Initiate trade studies to further define requirements and award development contract.		0.000	0.000	3.653
Title: Resilient EGI (R-EGI) Description: Design and develop improved EGI resiliency to counter navigational warfare threats through transition of science and technology efforts to EGI-M. Establish a Government Reference Architecture (GRA) embodying open systems architecture concepts and enabling future resilient PNT DoD systems. Provide upgrade paths to flow new technologies into EGI-M hardware and software wherever practical. FY 2016 Accomplishments:		0.000	0.000	7.400

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604201F I Integrated Avionics Planning and Development							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
N/A												
FY 2017 Plans:												
N/A												
FY 2018 Plans:												
Begin development of hardware standards and software navigation/communication protocols. Develop simulation capability and implement prototyping to include ability to demonstrate and test capabilities prior to development. Develop programmatic plans with insertion points for potential hardware and software upgrades to EGI-M.												
Accomplishments/Planned Programs Subtotals										0.000	0.000	101.203
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA 04: PE	0.000	20.166	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
0305164F: Navstar GPS												
Remarks												
In FY2018, PE 0305164F, NAVSTAR Global Positioning System (User Equipment) (Space), Project 643833, Military Global Positioning System User Equipment specific efforts are being transferred to PE 0604201F, Integrated Avionics Planning & Development, Project 651030, Aircraft Receiver Development for transparency and to realign resources with execution responsibilities that support various aircraft weapon system platforms.												
E. Acquisition Strategy												
Modifications to existing receivers designs will occur via Engineering Change Proposals (ECPs)/Task Orders on existing USAF contracts. The GRA and open standards associated with R-EGI will be developed in cooperation with an industry consortium.												
F. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604201F / Integrated Avionics Planning and Development						Project (Number/Name) 651030 / GPS Receiver Development			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EGI-M	SS/CPFF	Honeywell : Clearwater, FL	-	0.000		0.000		25.775	Jan 2018	0.000		25.775	Continuing	Continuing	-
EGI - M	SS/CPFF	Northrop Grumman : Woodland Hills, CA	-	0.000		0.000		30.375	Jan 2018	0.000		30.375	Continuing	Continuing	-
MAGR-2K-M	SS/CPFF	Raytheon : El Segundo, CA	-	0.000		0.000		20.000	Dec 2017	0.000		20.000	Continuing	Continuing	-
DAGR	SS/CPFF	Rockwell Collins : Des Moines, IA	-	0.000		0.000		3.653	Jul 2018	0.000		3.653	Continuing	Continuing	-
R-EGI	TBD	TBD : TBD	-	0.000		0.000		7.400	May 2018	0.000		7.400	Continuing	Continuing	-
Subtotal			-	0.000		0.000		87.203		0.000		87.203	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EGI-M FFRDC	Various	MITRE : TBD	-	0.000		0.000		4.100	Oct 2017	0.000		4.100	Continuing	Continuing	-
EGI-M Lab	PO	ISF : TBD	-	0.000		0.000		1.100	Jan 2018	0.000		1.100	Continuing	Continuing	-
Subtotal			-	0.000		0.000		5.200		0.000		5.200	-	-	
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EGI-M	Various	Various : TBD	-	0.000		0.000		1.100	Jan 2018	0.000		1.100	Continuing	Continuing	-
Subtotal			-	0.000		0.000		1.100		0.000		1.100	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017		
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604201F / <i>Integrated Avionics Planning and Development</i>				Project (Number/Name) 651030 / <i>GPS Receiver Development</i>				

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Strategic Planning/PMA	TBD	TBD : TBD	-	0.000		0.000		7.700	Nov 2017	0.000		7.700	Continuing	Continuing	-
Subtotal			-	0.000		0.000		7.700		0.000		7.700	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		0.000		101.203		0.000		101.203	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604201F / <i>Integrated Avionics Planning and Development</i>	Project (Number/Name) 651030 / <i>GPS Receiver Development</i>	

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EGI-M TMRR																												
EGI EMD																												
MAGR-2K-M EMD																												
MAGR-2K-M Testing																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604201F / <i>Integrated Avionics Planning and Development</i>	Project (Number/Name) 651030 / <i>GPS Receiver Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EGI-M TMRR	1	2016	2	2018
EGI EMD	1	2018	4	2019
MAGR-2K-M EMD	4	2016	4	2020
MAGR-2K-M Testing	2	2016	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	3.009	0.000	3.009	3.001	4.002	4.500	4.511	Continuing	Continuing
654236: <i>Engineering Analysis</i>	-	0.000	0.000	3.009	0.000	3.009	3.001	4.002	4.500	4.511	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0604222F, project 654236, Engineering Analysis, is a new start.

A. Mission Description and Budget Item Justification

The Air Force Nuclear Weapons Center, Kirtland AFB, NM, is the executing agency for this program. The Air Force is tasked with maintaining and providing technical expertise on all AF nuclear weapons and weapon systems and with developing and maintaining counter-chemical, biological, radiological, and nuclear (C-CBRN) capabilities. This program provides resources for technical and programmatic activities which includes performing independent analyses on all AF nuclear weapons systems activities including weapons development and sustainment; interoperability; compatibility; safety, security, and reliability; Air Force legacy nuclear stockpile management/retirement; nuclear certification and nuclear certification management.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	3.009	0.000	3.009
Total Adjustments	0.000	0.000	3.009	0.000	3.009
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	3.009	0.000	3.009

Change Summary Explanation

FY18 increase of \$3.009M for engineering analysis

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604222F I Nuclear Weapons Support						
C. Accomplishments/Planned Programs (\$ in Millions)						FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Title: Engineering Analysis						0.000	0.000	3.009	0.000	3.009	
Description: Provide the technical oversight of all Air Force (AF)nuclear weapons, delivery systems, and support systems. Provide the engineering and technical management expertise required in critical areas of nuclear weapons safety, security, reliability, operations, modernization, testing, certification, and counter proliferation.											
FY 2016 Accomplishments: N/A											
FY 2017 Plans: N/A											
FY 2018 Base Plans: Analyze and document nuclear weapons issues related to risk assessment, data collection, model development, model validation,weapon effectiveness and nuclear stockpile planning and requirements assessment.											
FY 2018 OCO Plans: N/A											
Accomplishments/Planned Programs Subtotals						0.000	0.000	3.009	0.000	3.009	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
E. Acquisition Strategy											
Cost Plus Award Fee (CPAF)and Military Interdepartmental Purchase Request (MIPR) will be used to obtain technical analyses and technical support for safety, operations, and counter proliferation assessments. Supporting activities are contracted separately using contract strategies deemed most appropriate to the effort. All contract will be openly competed.											
F. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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

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>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.813	12.476	2.241	0.000	2.241	1.924	2.082	2.118	2.161	Continuing	Continuing
653891: <i>Adv Infrared Counter Measures(Aircm)</i>	-	0.813	12.476	2.241	0.000	2.241	1.924	2.082	2.118	2.161	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)).

The Miniature Air Launched Decoy (MALD) and Jammer (MALD-J) configurations are key enablers supporting Air Force Global Strike, Global Response, Space and C4ISR, and Air and Space Expeditionary Force Concepts of Operation. MALD is a low cost, powered, expendable decoy designed to represent the kinematics and radar signature characteristics of various combat aircraft. The MALD will be employed from various aircraft platforms to stimulate, saturate, and deceive integrated air defense systems (IADS) thus increasing the survivability of strike aircraft. FY 18 and FY 19 funding will be used to fund critical program development activities to include M Code. This effort will develop and integrate advanced precision, navigation, and timing (PNT) capabilities (e.g. GPS, non-GPS, optical, passive, active, etc.) on MALD-J.

BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 0604270F I Electronic Warfare Development			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.843	12.476	20.435	0.000	20.435
Current President's Budget	0.813	12.476	2.241	0.000	2.241
Total Adjustments	-0.030	0.000	-18.194	0.000	-18.194
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-0.030	0.000	-18.194	0.000	-18.194
Change Summary Explanation					
M-code receiver funding (\$18.194M) planned for MALD integration was removed.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604270F / <i>Electronic Warfare Development</i>				Project (Number/Name) 653891 / <i>Adv Infrared Counter Measures(Aircm)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
653891: <i>Adv Infrared Counter Measures(Aircm)</i>	-	0.813	12.476	2.241	0.000	2.241	1.924	2.082	2.118	2.161	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 surface-to-air and air-to-air missiles. These missiles may employ sophisticated next-generation Electro-Optics (EO), Infrared (IR), Radio Frequency (RF), dual-mode (i.e. IR and RF), or multi-mode seekers. AIRCM will provide advanced expendable countermeasures and/or techniques that will be functionally compatible with existing dispenser systems and employed across multiple USAF weapons systems. This also explicitly includes any and all flare, chaff, decoy, and associated components 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 activities such as joint services or NATO test groups.

BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Countermeasure Testing	0.813	2.476	2.241	0.000	2.241
Description: IR flare testing and qualification on aircraft					
FY 2016 Accomplishments: Activities included testing and qualification of IR flare cocktails on various aircraft.					
FY 2017 Plans: Activities include testing and qualification of IR flare cocktails on various aircraft.					
N/A					
FY 2018 Base Plans: Activities include testing and qualification of expendable countermeasure cocktails on various aircraft.					
FY 2018 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017							
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604270F / <i>Electronic Warfare Development</i>		Project (Number/Name) 653891 / <i>Adv Infrared Counter Measures(Aircm)</i>							
B. Accomplishments/Planned Programs (\$ in Millions)											
	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total						
N/A											
Title: Military Code (M code) receiver Description: The development and integration of a GPS receiver capable of receiving a Military Code (M code). FY 2016 Accomplishments: N/A FY 2017 Plans: Prototype development/component level testing. FY 2018 Base Plans: N/A FY 2018 OCO Plans: N/A	0.000	10.000	0.000	0.000	0.000						
Accomplishments/Planned Programs Subtotals	0.813	12.476	2.241	0.000	2.241						
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PAAF: BA01: Line Item # 356010: <i>Flares</i>	121.606	115.706	124.850	0.000	124.850	107.482	93.042	106.905	146.033	Continuing	Continuing
Remarks Qualified flares, if not in AF inventory, will be procured under program 0208030F War Reserve Munitions, Flares.											
D. Acquisition Strategy N/A											
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	49.495	82.380	38.250	0.000	38.250	100.028	46.839	42.914	35.171	Continuing	Continuing
655050: <i>TDL System Integration</i>	-	26.482	34.990	35.585	0.000	35.585	63.313	46.839	42.914	35.171	Continuing	Continuing
655262: <i>Family of Gateways</i>	-	23.013	47.390	2.665	0.000	2.665	36.715	0.000	0.000	0.000	Continuing	Continuing

Note

This program, BA 05 PE 0604281F, project 655050, SFF/DACAS Modernization and System-of-Systems (SoS) Enterprise Integration, is a new start.
This program, BA 05 PE 0604281F, project 655050, Applique Technologies for TDLs, is a new start.
This program, BA 05 PE 0604281F, project 655050, Cognitive Enterprise Development and Baselining, is a new start.

A. Mission Description and Budget Item Justification

The Tactical Data Networks Enterprise (TDNE) develops, enhances and fields Tactical Data Links (TDL), advanced waveforms, radios, network management tools, and associated hardware and software that comprise the Joint Aerial Layer Network (JALN). This will be accomplished by upgrading currently fielded communications and TDL systems and by developing and fielding more advanced systems in the future. Also addresses warfighter urgent demands through the establishment of Quick Reaction Capabilities (QRC) and Enterprise activities as directed by JALN council. TDNE supports the development, fielding and training of aerial layer networking capabilities across multiple core functions including air superiority, ground precision attack, command and control, space operations, intelligence, surveillance and reconnaissance (ISR), and personal recovery. These activities provide the Joint Forces Air Component Commander with networks to build a common operating picture of the battlespace. TDNE executes quick reaction response capability requests by the warfighter and support activities (including ramp-up) associated with the Joint Aerial Layer Network (JALN) Enterprise activities as directed by the JALN Council. This program ensures the continued enhanced interoperability of Air Force and joint/coalition/NATO 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.

TDL System Integration will provide for the study (acquisitions current and proposed), analysis, enhancement, development, integration, demonstration, test, and evaluation of Tactical Data Links (TDLs) as a subset of the broader aerial layer networks. TDLs are used in both peace time and combat environments to exchange information such as character-oriented and fixed-formatted messages, data, radar tracks, target information, platform status, imagery, free-text messaging and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when training or fighting under rapidly changing operational conditions. TDLs increase mission effectiveness by providing enhanced air domain situational awareness, positive combat identification of aircraft in the network, fusion/correlation of on- and off-board sensor data, digital sharing of machine-to-machine target and threat information, thereby, enabling time critical targeting and other mission assignment tasking. TDLs are used by all service theater command and control (C2) elements, weapons platforms, and sensors. TDLs include, but are not limited to: Link 16, Link 11, Situational Awareness Data Link (SADL), Variable Message Format (VMF), Intra-Flight Data Link (IFDL), and other Advanced TDL Link technologies, such as Tactical Targeting Network Technology (TTNT), Common Data Link (CDL), and Multifunction Advanced Data Link (MADL). TDLs typically include both a waveform specification as well as the standards for exchanging messages.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)				
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 0604281F I Tactical Data Networks Enterprise				
Family of Gateways provides for the study (acquisitions current and proposed), analysis, enhancement, development, integration, costing, demonstration, test, and evaluation efforts that will allow joint combat forces to exchange information quickly and accurately by bridging discrete airborne, terrestrial, maritime, and space-based C4ISR networks producing operational effects not possible within individual networks. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend the connectivity range, consolidate data from multiple networks into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and fuse/correlate data from multiple sources to improve accuracy. Gateway functions also provide application hosting, shared data storage, on-demand information access, smart data forwarding, and system monitoring and network management. Further, this project supports 5th-to-4th Generation communications capabilities, 5th-to-5th Generation efforts and future TDL communications development. Additionally, Family of Gateways will support to enhance existing TDL performance, through upgrades and engineering analysis of system designs. Efforts in this project include waveform, ground, and rapid acquisition activities supporting Air Force requirements for communications bridging across multiple platforms, sources and communication domains.						
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		59.996	82.380	74.628	0.000	74.628
Current President's Budget		49.495	82.380	38.250	0.000	38.250
Total Adjustments		-10.501	0.000	-36.378	0.000	-36.378
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		-8.589	0.000			
• SBIR/STTR Transfer		-1.912	0.000			
• Other Adjustments		0.000	0.000	-36.378	0.000	-36.378
Change Summary Explanation						
FY 2016:						
-Project 655050/655262, -\$8.589M reprogrammed for higher Air Force priorities						
FY 2018:						
-Project 655050/655262, -\$52.278M reprogrammed for higher Air Force priorities						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604281F I Tactical Data Networks Enterprise	
-Project 655050, +\$15.9M for SFF/DACAS Modernization and SoS Enterprise; Applique Technologies for TDLs; and Cognitive Enterprise Development and Baselineing		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
655050: <i>TDL System Integration</i>	-	26.482	34.990	35.585	0.000	35.585	63.313	46.839	42.914	35.171	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0604281F, project 655050, SFF/DACAS Modernization and System-of-Systems (SoS) Enterprise Integration, is a new start.
This program, BA 05 PE 0604281F, project 655050, Applique Technologies for TDLs, is a new start.
This program, BA 05 PE 0604281F, project 655050, Cognitive Enterprise Development and Baselining, is a new start.

A. Mission Description and Budget Item Justification

TDL System Integration provides for the study, analysis, enhancement, development, integration, demonstration, joint/coalition/NATO interoperability exercises, costing, test, trials, and evaluation of Tactical Data Links (TDL) as a subset of the broader aerial layer network. TDLs are used in both peacetime and combat environments to exchange information such as character-oriented and fixed-formatted messages, data, radar tracks, target information, platform status, imagery, free-text messaging and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when training or fighting under rapidly changing operational conditions. TDLs increase mission effectiveness by providing enhanced air domain situational awareness, positive combat identification of aircraft in the network, fusion/correlation of on- and off-board sensor data, digital sharing of machine to machine target and threat information and, thereby, enabling time critical targeting and other mission assignment tasking. TDLs are used by all service, NATO, and coalition theater C2 elements, weapons platforms, and sensors.

The number of Air Force platforms hosting TDLs has expanded from C2 aircraft (E-3, E-8, E-11A, EQ-4B, etc.) to the fighter, bomber, intelligence, surveillance and reconnaissance (ISR), tanker, airlift and other tactical fleets (F-15, F-16, F-22A, Rivet Joint, B-1, B-2, B-52, KC-46, etc.), as well as precision guided munitions. Utilization of TDLs in joint and international environments requires the integration of terminals into host platforms and interoperability of TDL networks across all deployed joint/Coalition/NATO platforms. 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 reprogramming and cryptographic 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), joint/Coalition/NATO Interoperability, Link 16 enhancements, and development of a next generation waveform and/or advanced tactical data link. Funding will provide training, logistics development, testing and certification of individual TDL implementations to joint/allied standards, establishment of service-wide network management procedures/operations, and system wide enhancements/testing, demonstration and experimentation.

Integration:

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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>
<p>Integration activities include but are not limited to, Data Link Test Facility (DTF), Block Upgrade 2 (BU2) retrofit, Block Cycle 1 (BC1) retrofit , Air Force Participating Test Unit (AFPTU), Interoperable System Management and Requirements Transformation (iSMART), Joint Airborne Network Tactical Edge (JAN-TE), Network Centric Capability Assessment (NCCA), NATO interoperability, Coalition interoperability, TDL Planning, Analysis, and Monitoring (TDL PAM), integration analysis of C2 of JALN, Cursor on Target (CoT), Combat Cloud, 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/Coalition/NATO assets through efforts such as early systems engineering and use of the POET process for program requirements analysis and architectural design development/coordination of all TDN standards and management capabilities, configuration management, platform/system interoperability assessments, development of government reference architectures, integration of cyber technologies, interoperability certification testing, and flight testing, demonstration and experimentation.</p> <p>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 (TDN), including development of joint concepts for C2 of JALN, JALN Analysis of Alternatives (AoA) follow-on analysis, and JALN gateway planning.</p> <p>Activities will also include joint/Coalition/NATO Interoperability that provides program office system engineering to support Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, Crypto-Modernization, and Net Management.</p>		
B. Accomplishments/Planned Programs (\$ in Millions)		
Title: Tactical Data Networks (TDN) Integration		FY 2016
Description: TDN Integration activities include but are not limited to, Data Link Test Facility (DTF), Air Force Participating Test Unit (AFPTU), Network Centric Capability Assessment (NCCA), Joint/Coalition/NATO Interoperability, Joint Aerial Layer Network (JALN) Analysis of Alternatives (AoA) follow-on, JALN gateway planning, and TDL PAM.		FY 2017
FY 2016 Accomplishments:		FY 2018
<ul style="list-style-type: none"> -Managed the development, certification, developmental training, and logistics plans for individual TDL implementations to joint/allied standards -Provided management with the necessary engineering, technical, and administrative support needed to facilitate development -Provided support planning (e.g. TDL and Link 16 Modernization), testing, integration, and fielding of all MIDS LVT and MIDS JTRS current upgrade configurations -Provided support to TDL interoperability testing of development and fielded systems through the DTF -Provided support for DoD-mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL-capable Air Force platforms through AFPTU -Conducted Aerial layer network-focused studies and analysis that support data link enhancements -Conducted assessments, studies, analysis of tactical airborne network and network management gaps that were validated in existing requirements documents through the Network Centric Capability Assessments (NCCA) 		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
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 2016	FY 2017
<p>--Studies and analysis included, but were not limited to, supporting both current program planning and execution and future program planning efforts for TDN (e.g. development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), Combat Cloud, and JALN gateway planning)</p> <p>-Provided support to Coalition Interoperability and provides program office system engineering to support NATO C3I, Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, Crypto-Modernization, and Net Management</p> <p>-Provided support for the development of the TDL PAM acquisition effort</p> <p>FY 2017 Plans:</p> <p>-Manage the development, certification, developmental training, and logistics plans for individual TDL implementations to joint/allied standards,</p> <p>- Provide management with the necessary engineering, technical and administrative support needed to facilitate development</p> <p>- Plan for testing, integration, and associated training for all MIDS LVT and MIDS JTRS upgrade configuration</p> <p>-Provide support to TDL interoperability testing of development and fielded systems through the DTF</p> <p>-Provide support for DoD-mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL-capable Air Force platforms through the AFPTU</p> <p>-Conduct aerial layer network-focused studies and analysis that support data link enhancements</p> <p>-Assess tactical airborne network and network management gaps that are validated by existing requirements documents through the Network Centric Capability Assessments (NCCA)</p> <p>--Studies and analysis include, but are not limited to, supporting both current program planning and execution and future program planning efforts for TDN (e.g. development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), Combat Cloud, and JALN gateway planning)</p> <p>-Conduct Modeling and Simulation (M&S) analyses through the Air Force Modeling and Simulation Center (SIMAF)</p> <p>-Provide support to Coalition interoperability and provide program office system engineering to support NATO C3I, Foreign Military Sales (FMS) case development, FMS planning for technology refresh modifications, Crypto-Modernization and Net Management</p> <p>-Prepare the TDL PAM acquisition strategy and the RFP</p> <p>FY 2018 Plans:</p> <p>- Will continue to manage the development, certification, developmental training, and logistics plans for individual TDL implementations to joint/allied standards</p> <p>- Will continue to provide management with the necessary engineering, technical, and administrative support needed to facilitate development</p> <p>- Will continue to plan for testing, integration, and associated training for all MIDS LVT and MIDS JTRS upgrade configurations</p> <p>- Will continue to provide support to TDL interoperability testing of development and fielded systems through the DTF</p> <p>- Will continue support to DoD-mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL-capable Air Force platforms through the AFPTU</p>			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / Tactical Data Networks Enterprise	Project (Number/Name) 655050 / TDL System Integration		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none">- Will continue to conduct aerial layer network focused studies and analysis that support data link enhancements- Will continue to assess tactical airborne network and network management gaps that are validated in existing requirements documents through the Network Centric Capability Assessments (NCCA)- Studies and analysis will include, but will not be limited to, supporting both current program planning and execution and future program planning efforts for TDN (e.g. development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), Combat Cloud, and JALN gateway planning)- Will continue to provide support to Coalition interoperability and provide program office system engineering to support NATO C3I, Foreign Military Sales (FMS) case development, FMS planning for technology refresh modifications, Crypto-Modernization, and Net Management- Will provide support to the DTF and AFPTU with required hardware and software upgrades and license renewals, which provide development and interoperability support for new capabilities and technology growth				
<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 TDL systems with associated joint, allied, and Coalition systems. It includes configuration management of TDL Military Standards (MIL-STDs), TDL message development, interoperability test/certification, and TDL message standard implementation using interoperable System Management and Requirements Transformation (iSMART) for Link 11A/B, Link 16, Link 22, Variable Message Format (VMF), Integrated Broadcast Service (IBS), Intraflight Data Link (IFDL), Multifunction Advanced Data Link (MADL), and others.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none">-Provided the necessary engineering, technical, and administrative support required to add and/or update Air Force platform and system information exchange requirements-Ensured compatibility and interoperability of TDLs by funding required Air Force/Joint MIL-STD compliance and interoperability tests-Ensured compatibility and interoperability of TDLs by developing TDL messaging capability to address new or updated operational requirements <p>FY 2017 Plans:</p> <ul style="list-style-type: none">-Provide the necessary engineering, technical, and administrative support required to add and/or update Air Force platform and system information exchange requirements-Ensure compatibility and interoperability of TDLs by funding required Air Force/joint MIL-STD compliance and interoperability tests		6.850	6.924	7.068

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017		
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 2016	FY 2017	FY 2018
<p>-Ensure compatibility and interoperability of TDLs by developing TDL messaging capability to address new or updated operational requirements</p> <p>-Provide support to IFDL and MADL specific message translation development in support of the 5th-to-4th Generation Communications Capability</p> <p>FY 2018 Plans:</p> <p>-Will continue to provide the necessary engineering, technical, and administrative support required to add and/or update Air Force platform and system information exchange requirements</p> <p>-Will continue to ensure compatibility and interoperability of TDLs by funding required Air Force/joint MIL-STD compliance and interoperability tests</p> <p>-Will continue to ensure compatibility and interoperability of TDLs by developing TDL messaging capability to address new or updated operational requirements</p> <p>-Will continue to provide support to IFDL and MADL specific message translation development in support of the 5th-to-4th Generation Communications Capability</p>				
<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 and Computer (C4), Intelligence, Surveillance and Reconnaissance (ISR) systems. The CoT suite consists of the W3 base schema, 14 tailored sub-schema, and a set of 10 software plug-ins and translators that facilitate Machine-to-Machine (M2M) transmission of Command and Control (C2), ISR, and situational awareness data at reduced cost compared with traditional integration methods.</p> <p>FY 2016 Accomplishments:</p> <p>-Supported the development, test, configuration and accreditation of new Cursor on Target (CoT) apps/plugin/debuggers</p> <p>-Pursued the development of the CoT Standardization Agreement (STANAG) or commercial standard</p> <p>-Pursued website set-up and development that provided additional support (e.g., tutorial videos, FAQs, message board, sign-up, etc.)</p> <p>-Provided engineering, technical, and administrative support needed to facilitate development and support the annual CoT User Group meeting</p> <p>-Planned discussions for integration/testing of CoT in the DTF</p> <p>FY 2017 Plans:</p> <p>-Support the development, test, re-certification, and re-accreditation of new CoT apps/plugin/debuggers</p> <p>-Develop website set-up that will continue to provide additional support (e.g., tutorial videos, FAQs, message board, sign-up, etc.)</p> <p>FY 2018 Plans:</p>		1.574	1.585	1.621

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / Tactical Data Networks Enterprise	Project (Number/Name) 655050 / TDL System Integration		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<div>-Will continue to support development, test, re-certification and re-accreditation of new CoT apps/plugin-debuggers</div> <div>-Will pursue the development of the CoT MIL-STD in coordination with Air Force Standards Interoperability Board (AFSIB) and Joint Multi-Tactical Digital Information Link (Multi-TADIL) Standards Working Group (JMSWG)</div> <div>-Will continue to support the CoT website that will provide additional support (e.g., tutorial videos, FAQs, message board, sign-up, etc.)</div> <div>-Will pursue integration and testing of CoT in the DTF</div>				
<div>Title: 5th to 4th Generation Gateway</div> <div>Description: 5th-to-4th Generation Gateway facilitates track sharing and sensor data between 5th Generation and 4th Generation aircraft as well as Command and Control (C2) nodes. The capabilities developed under this effort enable interoperability between data formats, protocols, and communication mediums. Additionally, these capabilities extend the connectivity range, consolidate data from multiple networks, domains and sensors into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and correlate data from multiple sources to facilitate early detection and tracking while enabling collaborative targeting. The addition of multi-domain capabilities as a future requirement of 5th-to-4th Generation communications capabilities enable track sharing at the tactical edge for the timely destruction of ground and airborne target sets. These additional capabilities are a combat force multiplier that enhance total force synergy for target prosecution and weapons employment. The initial increment will provide the baseline 5th-to-4th communication capability upon which future requirements will build capability.</div> <div>FY 2016 Accomplishments:</div> <div>-Finalized the development of 5th-to-4th Generation Gateway increment 1 materiel solution Request for Proposal (RFP)</div> <div>-Provided support for development of 5th-to-4th Generation communications capabilities</div> <div>-Planned for future upgrades</div> <div>FY 2017 Plans:</div> <div>-Provide systems engineering support to the 5th-to-4th Generation Gateway program manager to support engineering studies and development of communication capabilities</div> <div>-Provide Modeling and Simulation (M&S) and analyses support to program manager for planning 5th-to-4th Generation GW communications capabilities</div> <div>FY 2018 Plans:</div> <div>(FY18 and future funding in project 655262)</div>		6.194	12.771	0.000
<div>Title: TDL Planning, Analysis, and Monitoring (TDL PAM)</div> <div>Description: This effort was previously captured in project 655050 under TDN Integration.</div>		-	-	1.952

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
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 2016	FY 2017
<p>The use of digital information in the modern battlespace has increased significantly with the technological advances in areas such as Net-Enabled Weapon (NEW) systems, sensor systems, and tactical communications capabilities. The number of subscribers to Multi-TDL Networks (MTNs) continues to increase, especially on Link 16, which dramatically increases the complexity and management of MTNs. This increasing MTNs complexity/capabilities requires an automated toolset to effectively manage in order to support data links objectives. A TDL Planning, Analysis, and Monitoring (TDL PAM) tool will enable the Joint Interface Control Officer (JICO) to effectively accomplish MTN management tasks including, but not limited to managing the TDL interfaces that build a common tactical picture; creating, editing, and analyzing operational tasking data links messages; remedying network conflicts and outages, and performing other TDL analyses to enhance TDL performance.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will develop TDL PAM pre-acquisition documentation to inform MDD and draft RFP - Will begin initial systems engineering to assess the integration of TDL PAM capability into the AOC weapon system JICC architecture - Will perform studies and analysis, risk reduction and prototype user evaluation exercises (e.g. Bold Quest) 			
<p>Title: SFF/DACAS Modernization and System-of-Systems (SoS) Enterprise Integration</p> <p>Description: This effort will support the development and demonstration of Small Form Factor (SFF) technologies that can support Digitally Assisted Close Air Support (DACAS) and other missions across the full spectrum of operating environments. This effort will consider System-of-Systems (SoS) engineering, technical analysis/performance, platform integration, and Tactics, Techniques, and Procedures (TTPs) to best utilize technologies and acquisition approaches for enterprise modernization.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> -Will engage Subject Matter Expert (SME) and stakeholder community to identify initial demonstration objectives and intended technical performance -Will perform market research and/or analyze alternative materiel solutions -Will baseline key candidate solutions -Will establish initial evaluation/analysis process for SoS interoperability/capability 		-	-
<p>Title: Applique Technologies for TDLs</p> <p>Description: This effort will develop and test low Size, Weight, and Power (SWaP) applique production kits to support TDL communications; it will incorporate proven techniques related to RF components, system interfaces, and platform integration. This effort will identify appropriate platforms, apertures, and interfaces and evaluate using representative flight environments and conditions.</p> <p>FY 2018 Plans:</p>		-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017		
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604281F / Tactical Data Networks Enterprise				Project (Number/Name) 655050 / TDL System Integration			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018
-Will complete low SWaP prototype and develop production kit -Will identify and vet candidate platform(s) -Will complete lab integration testing and relevant Modeling, Simulation, and Analysis (MS&A) -Will prepare for ground and flight test activities -Will identify and develop necessary test equipment and infrastructure											
Title: Cognitive Enterprise Development and Baselining Description: This effort will implement existing cognitive technologies into TDL terminals and investigate the integration of additional emerging technologies to improve communications reliability. Hardware, firmware, and software enhancements will accommodate these technologies. This effort will maintain a government-controlled technical baseline(s) to efficiently execute development and enhancements. Emerging technologies will be developed and evaluated for efficacy; recommendations will be identified for appropriate terminal fielding/upgrades to platforms and will be considered when evaluating enterprise TDL capabilities/gaps. FY 2018 Plans: -Will coordinate scope and schedule with terminal developers and stakeholders to establish technical baseline for future work -Will assess and mature emerging technologies in coordination with terminal developers and stakeholders									-	-	8.000
Accomplishments/Planned Programs Subtotals									26.482	34.990	35.585
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA07: PE 0207448F: C2/ISR TDL	1.629	1.515	1.754	0.000	1.754	1.751	1.783	1.814	1.852	Continuing	Continuing
• APAF: BA05: Line Item #F01500: F-15	2.837	0.000	0.844	0.000	0.844	46.903	53.211	40.167	20.933	Continuing	Continuing
• APAF: BA05: Line Item #F01600: F-16	3.200	6.447	0.000	0.000	0.000	6.755	8.371	8.525	8.695	Continuing	Continuing
• APAF: BA05: Line Item #B00200: B-2A	0.474	0.415	1.718	0.000	1.718	0.884	0.201	0.206	0.210	Continuing	Continuing
• APAF: BA05: Line Item #B01B00: B-1B	1.011	1.380	0.000	0.000	0.000	1.431	0.000	0.000	0.000	Continuing	Continuing
• OPAF: BA03: Line Item #834010: General Information Technology	0.002	1.842	0.312	0.000	0.312	0.177	0.180	1.698	1.701	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>				Project (Number/Name) 655050 / <i>TDL System Integration</i>			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
Remarks											
D. Acquisition Strategy											
The Airborne Networking Directorate provides for common development, integration, and interoperability across the entire airborne network and ensures that data links are procured and maintained as a joint, end-to-end command and control system. Platform acquisition strategies vary by program, but the majority of development and integration is normally accomplished by the weapon system prime contractor.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604281F / Tactical Data Networks Enterprise				Project (Number/Name) 655050 / TDL System Integration					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration	Various	Various : Various	-	1.101	Jan 2016	1.700	Jan 2017	3.642	Jan 2018	0.000		3.642	Continuing	Continuing	-
TDN Integration - TDL PAM	MIPR	Various : Various	-	0.500	Mar 2016	2.000	Mar 2017	0.000	Mar 2018	0.000		0.000	Continuing	Continuing	-
5th to 4th Generation Gateway	MIPR	Various : Various	-	6.194	Sep 2016	12.770	Sep 2017	0.000		0.000		0.000	Continuing	Continuing	-
SFF/DACAS Modernization and SoS Enterprise	MIPR	Various : Various	-	0.000		0.000		7.000	Mar 2018	0.000		7.000	Continuing	Continuing	-
Applique Technologies for TDLs	MIPR	Various : Various	-	0.000		0.000		0.900	Mar 2018	0.000		0.900	Continuing	Continuing	-
Cognitive Enterprise Developement and Baselining	MIPR	Various : Various	-	0.000		0.000		8.000	Mar 2018	0.000		8.000	Continuing	Continuing	-
Subtotal			-	7.795		16.470		19.542		0.000		19.542	-	-	-
Remarks															
FY18 new efforts: - SFF/DACAS Modernization & SoS Enterprise Integration - Applique Technologies for TDLs - Cognitive Enterprise Development and Baselining															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration - NCCA	C/T&M	MITRE : Bedford, MA	-	1.315	Dec 2015	1.400	Oct 2016	1.650	Oct 2017	0.000		1.650	Continuing	Continuing	-
Cursor on Target	C/T&M	MITRE : Bedford, MA	-	1.404	Dec 2015	1.300	Oct 2016	1.320	Oct 2017	0.000		1.320	Continuing	Continuing	-
Subtotal			-	2.719		2.700		2.970		0.000		2.970	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration- TDL PAM	MIPR	AFRL : Rome, NY	-	0.000		0.000		1.302	Feb 2018	0.000		1.302	Continuing	Continuing	-
TDN Integration - DTF	PO	46th Test Squadron : Eglin AFB, FL	-	1.000	Mar 2016	1.358	Feb 2017	1.358	Feb 2018	0.000		1.358	Continuing	Continuing	-
JINTACCS	C/FFP	Spectrum Comm Inc : Newport News, VA	-	2.171	Feb 2016	2.731	Feb 2017	6.700	Feb 2018	0.000		6.700	Continuing	Continuing	-
TDN Integration - AFPTU	MIPR	Various : Various	-	1.369	Mar 2016	0.000	Jun 2017	0.000		0.000		0.000	Continuing	Continuing	-
TDN Integration--JALN AoA	MIPR	Various : Various	-	3.554	Mar 2016	5.379	Mar 2017	0.000	Mar 2018	0.000		0.000	Continuing	Continuing	-
Cursor on Target	PO	46 TS : TBD	-	0.000	Nov 2016	0.000	Nov 2017	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	8.094		9.468		9.360		0.000		9.360	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TDN Integration PMA - A&AS support - NCCA, Coalition Interoperability, JALN AoA	C/CPAF	Various : Various	-	0.500	May 2016	1.300	Jan 2017	0.500	Jan 2018	0.000		0.500	Continuing	Continuing	
Cursor on Target PMA - A&AS support	C/CPAF	Various : Various	-	0.171	May 2016	0.211	Dec 2016	0.296	Jan 2018	0.000		0.296	Continuing	Continuing	-
TDN Integration PMA - FFRDC support - NCCA	C/T&M	MITRE : Bedford, MA	-	0.160	Dec 2015	1.700	Oct 2016	0.500	Oct 2017	0.000		0.500	Continuing	Continuing	-
TDN Integration PMA - FFRDC support - Coalition Interoperability, JALN AoA	C/T&M	MITRE : Bedford, MA	-	5.590	Jan 2016	1.841	Oct 2016	0.619	Oct 2017	0.000		0.619	Continuing	Continuing	-
TDN Integration PMA - Travel, Government Purchase Cards, etc...DTF, NCCA, Coalition	Various	Various : Various	-	1.127	Jan 2016	0.900	Jan 2017	0.750	Jan 2018	0.000		0.750	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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>			
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Interoperability, AFPTU, JALN AoA															
JINTACCS PMA - Travel, Government Purchase Cards, etc...	Various	Various : Various	-	0.025	Jan 2016	0.100	Jan 2017	0.348	Jan 2018	0.000		0.348	Continuing	Continuing	-
Cursor on Target PMA - Travel, Government Purchase Cards, etc...	Various	Various : Various	-	0.301	Dec 2015	0.300	Dec 2016	0.050	Dec 2017	0.000		0.050	Continuing	Continuing	-
TDL PAM development program	C/CPAF	Various : Various	-	0.000	Jun 2016	0.000	Jun 2017	0.650	Jan 2018	0.000		0.650	Continuing	Continuing	-
Subtotal			-	7.874		6.352		3.713		0.000		3.713	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	26.482		34.990		35.585		0.000		35.585	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017
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 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TDN Integration																												
JINTACCS																												
Cursor on Target (CoT)																												
5th to 4th Generation Gateway - Development																												
5th to 4th Development/Production Contract Award (Nov 2018)																												
5th to 4th Milestone C (Feb 2020)																												
TDL Planning, Analysis, and Monitoring (TDL PAM)																												
SFF/DACAS Modernization and SoS Enterprise Integration																												
Applique Technologies for TDLs																												
Cognitive Enterprise Development and Baselining																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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	2016	4	2022
JINTACCS	1	2016	4	2022
Cursor on Target (CoT)	1	2016	4	2022
5th to 4th Generation Gateway - Development	1	2016	2	2020
5th to 4th Development/Production Contract Award (Nov 2018)	1	2018	1	2018
5th to 4th Milestone C (Feb 2020)	2	2020	2	2020
TDL Planning, Analysis, and Monitoring (TDL PAM)	1	2018	4	2022
SFF/DACAS Modernization and SoS Enterprise Integration	1	2018	4	2022
Applique Technologies for TDLs	1	2018	4	2022
Cognitive Enterprise Development and Baselining	1	2018	4	2022

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
655262: <i>Family of Gateways</i>	-	23.013	47.390	2.665	0.000	2.665	36.715	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Family of Gateways provides for the study (acquisitions current and proposed), analysis, enhancement, development, integration, costing, demonstration, test, and evaluation efforts that will allow joint combat forces to exchange information quickly and accurately by bridging discrete airborne, terrestrial, maritime, and space-based C4ISR networks producing operational effects not possible within individual networks. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend the connectivity range, consolidate data from multiple networks into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and fuse/correlate data from multiple sources to improve accuracy. Gateway functions also provide application hosting, shared data storage, on-demand information access, smart data forwarding, and system monitoring and network management. Further, this project supports 5th-to-4th Generation communications capabilities, 5th-to-5th Generation efforts and future TDL communications development. Additionally, Family of Gateways will support to enhance existing TDL performance, through upgrades and engineering analysis of system designs. Efforts in this project include waveform, ground, and rapid acquisition activities supporting Air Force requirements for communications bridging across multiple platforms, sources and communication domains.

Activities also include studies, analysis, demonstrations and experiments to support both current program planning/execution and future program planning efforts for Family of Gateways.

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

	FY 2016	FY 2017	FY 2018
Title: 5th-to-4th Generation Gateway	23.013	47.390	2.665
Description: 5th-to-4th Generation Gateway facilitate sharing track and sensor data between 5th Generation and 4th Generation aircraft as well as Command and Control (C2) nodes. The capabilities developed under this effort enable interoperability between data formats, protocols, and communication mediums. Additionally, these capabilities extend the connectivity range, consolidate data from multiple networks, domains and sensors into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and correlate data from multiple sources to facilitate early detection and tracking while enabling collaborative targeting. The addition of multi-domain capabilities as a future requirement of 5th-to-4th Generation communications capability enables track sharing at the tactical edge for the timely destruction of ground and airborne target sets. These additional capabilities are a combat force multiplier that enhance total force synergy for target prosecution and weapons employment. The initial increment will provide the baseline 5th-to-4th communication capability upon which future requirements will build capability.			
FY 2016 Accomplishments:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604281F / Tactical Data Networks Enterprise				Project (Number/Name) 655262 / Family of Gateways			
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018	
<ul style="list-style-type: none"> - Developed 5th-to-4th communications testing capabilities -- Enhanced SIMAF capabilities to represent 5th generation platform in relevant modeling/simulation environments -- Enhanced 46 TS lab to enable 5th generation waveform testing - Executed various risk reduction activities at PEO direction <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> -Develop the 5th-to-4th Generation GW / communications capabilities -Engage in field experiments with waveform and network connectivity in both live fly and laboratory demonstrations -Engage in targeted projects and experiments to improve the reliability and effectiveness of the Link 16 waveform <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> -Will continue to develop the 5th-to-4th Generation GW / communications capabilities -Will upgrade the 46 TS facility to MADL capability and conduct Link-16 NDL development demo 											
Accomplishments/Planned Programs Subtotals								23.013	47.390	2.665	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA07: PE 0207448F: C2ISR TDL	1.629	1.515	1.754	0.000	1.754	1.751	1.783	1.814	1.852	Continuing	Continuing
• APAF: BA05: Line Item #F01500: F-15	2.837	0.000	0.844	0.000	0.844	46.903	53.211	40.167	20.933	Continuing	Continuing
• APAF: BA05: Line Item #F01600: F-16	3.200	6.447	0.000	0.000	0.000	6.755	8.371	8.525	8.695	Continuing	Continuing
• APAF: BA05: Line Item #B00200: B-2A	0.474	0.415	1.718	0.000	1.718	0.884	0.201	0.206	0.210	Continuing	Continuing
• APAF: BA05: Line Item #B01B00: B-1B	1.011	1.380	0.000	0.000	0.000	1.431	0.000	0.000	0.000	Continuing	Continuing
• OPAF: BA03: Line Item #834010: General Information Technology	0.002	1.842	0.312	0.000	0.312	0.177	0.180	1.698	1.701	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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>
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. Contract approaches vary by program.		
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604287F I Physical Security Equipment							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	5.973	35.458	19.739	0.000	19.739	9.492	9.773	10.142	10.350	Continuing	Continuing
655120: Physical Security Equipment - SD ED	-	5.973	35.458	19.739	0.000	19.739	9.492	9.773	10.142	10.350	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Integrated Base Defense Security Systems (IBDSS) provides improvements and enhancements, demonstrates, and tests Physical Security Equipment (PSE) systems to include Force Protection. This program supports the protection of tactical, fixed, and nuclear weapons systems, AF personnel and AF facilities. The PSE program is organized to provide PSE RDT&E for Air Force specific needs but as a complement to, and in conjunction with, the PSE RDT&E programs funded by the DOD Physical Security Enterprise and Analysis Group (PSEAG). As such this program will obtain, demonstrate, and test PSE in the same manner and to the same standards and architecture as PSEAG-funded projects to ensure interoperability with PSEAG-developed PSE. In support of PSE, this RDT&E program includes spectrum planning for radio frequency (RF), communication security (cyber), and information assurance requirements. This Program Element also includes funding for Force Protection Commercial Off The Shelf (FP COTS) market research, evaluation and testing. The FP COTS testing applies to all available technologies (delay, denial, detection, assessment, communication display, access control, power, mobility, and defeat effects) which are considered effective for AF physical security use. This program supports the maintenance and test support at Site C 3 and the Cold Weather Test Site (CWTS), as annotated in DoD Directive 3200.11, listing the 46th Test Wing (TW) as a Major Range and Test facility, conducting developmental and operational testing as the primary mission. Force Protection programs are inherently subject to rapid changes in the operational environment and will retain sufficient Program flexibility to meet changes in location, scope and capability in order to protect Air Force people, facilities and warfighting assets.

Counter Small Unmanned Aerial Systems (Cs-UAS) Joint Emergent Operational Need (JEON) is a rapid acquisition and deployment capability existing of full kill (detect, track, assess and defeat with various capabilities (fixed, mobile, portable and hand-held.) It is a layered system-of-systems using COTS technologies, integrated via GOTS C2 system.

Counter Small Unmanned Aerial Systems (Cs-UAS) Joint Urgent Operational Need (JUON) supports EUCOM JUON to protect specific strategic assets in overseas theaters of operation from the evolution of small unmanned aerial systems based on low cost, extensive proliferation, and availability in the commercial marketplace. This is Overseas Contingency Operations (OCO) funding.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
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 I Physical Security Equipment				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	5.973	8.458	9.212	0.000	9.212	
Current President's Budget	5.973	35.458	19.739	0.000	19.739	
Total Adjustments	0.000	27.000	10.527	0.000	10.527	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	27.000	10.527	0.000	10.527	
Change Summary Explanation						
The FY17 Request for Additional Appropriations (RAA) increase of \$27M is to support the Counter Small Unmanned Aerial Systems (Cs-UAS) JEON for \$16M and Cs-UAS JUON for \$11M.						
The FY18 funding increase of \$10.5M is to support the Cs-UAS JEON.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Integrated Base Defense Security Systems (IBDSS)				5.973	1.468	-
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 2016 Accomplishments:						
Continued with Force Protection Commercial Off The Shelf (COTS) market research, evaluation and testing to address capability gaps and obsolescence. This included 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 included delay/denial/detection/assessment/communication display/access control/power equipment & systems for IBDSS projects.						
Continued with previously integrated or modified COTS efforts to improve IBDSS physical security equipment:						
- Balanced Magnetic Switch sensor (BMS)						
- Command, control, Detection, Equipment (CCDE) Spec Development						
- Ceiling/Wall Mount Sensors (Volumetric)						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604287F <i>I Physical Security Equipment</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Fence Sensors - Infrared Perimeter Intrusion Detection - Internal Sensors - Next Generation WISTI/LRTI equivalents - Qualification and integration of Ground Based Radars - Wide area Infrared System for Persistent Surveillance (WISP) demonstration - 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 <p>FY 2017 Plans: Includes, but not limited to continuing 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 with previously integrated or modified COTS efforts to improve IBDSS physical security equipment:</p> <ul style="list-style-type: none"> - Market research: <ul style="list-style-type: none"> -- Cameras for obscured views -- Counter Small Unmanned Aerial System (CsUAS) -- Waterside Security -- Narrow Width Intrusion Detection Sensors -- Explosion Proof/intrinsically Safe Sensor -- Rollup Door Floor Mount Balanced Magnetic Switch Sensor -- Replacement for Long Range Passive Infrared Sensors (PIR) -- Nuclear vault Door -Additional DT&E on Annunciators - Continue Tactical Automated Security System (TASS)(also known as Tactical Security System) efforts including improvements to the annunciator. - Conduct RTES Independent Validation and Verification (IV&V) and safety reviews with NNMSB and applicable safety agencies to assure OSS&E of developed systems 				
Title: IBDSS-1		-	6.990	9.239

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604287F I Physical Security Equipment		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Description: IBDSS (Integrated Base Defense Security Systems) qualifies, demonstrates, and tests Physical Security Equipment (PSE) systems to include Force Protection. This continuing effort was previously named Physical Security Equipment.				
FY 2017 Plans: Includes, but not limited to continuing 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.				
Will continue previous integrated or modified COTS efforts to improve IBDSS physical security equipment: - Continue Tactical Automated Security System (TASS)(also known as Tactical Security System) efforts including improvements to the annunciator. - Integrate and test: -- Counter Small Unmanned Aerial System (CsUAS) -- Waterside Security -- Ground Based Radars (GBRs) -- Narrow Width Intrusion Detection Sensors -- Explosion Proof/intrinsically Safe Sensor -- Rollup Door Floor Mount Balanced Magnetic Switch Sensor -- Replacement for Long Range Passive Infrared Sensors - 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; imp ...				
FY 2018 Plans: Includes, but not limited to continuing 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.				
Continue with previous integrated or modified COTS efforts to improve IBDSS physical security equipment:				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Purchasing and installing Video Analytics - Re-compete Command, Control, Detection, Equipment (CCDE)effort - Test and integrate Ground Base Radars (GBRs) - Continue Tactical Automated Security System (TASS)(also known as Tactical Security System) - Market research replacement for Long Range Passive Infrared Radar (PIR) - Purchase and installing Cameras for obscured views - 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. 				
Title: Counter Small Unmanned Aerial Systems (Cs-UAS) Joint Emergent Operational Need (JEON) Description: Counter Small Unmanned Aerial Systems (Cs-UAS) Joint Emergent Operational Need (JEON) is a rapid acquisition and deployment capability existing of full kill (detect, track, assess and defeat with various capabilities (fixed, mobile, portable and hand-held.) It is a layered system-of-systems using COTS technologies, integrated via GOTS C2 system. FY 2017 Plans: Continue Communication and Control (C2) and Fixed-Site DT/OT FY 2018 Plans: Complete Communication and Control (C2) and Fixed-Site DT/OT.		-	16.000	10.500
Title: Counter Small Unmanned Aerial Systems (Cs-UAS) Joint Urgent Operational Need (JUON) Description: Counter Small Unmanned Aerial Systems (Cs-UAS) Joint Emergent Operational Need (JEON) is a rapid acquisition and deployment capability existing of full kill (detect, track, assess and defeat with various capabilities (fixed, mobile, portable and hand-held.) It is a layered system-of-systems using COTS technologies, integrated via GOTS C2 system. FY 2017 Plans: Begins integration of Cs-UAS component to achieve System of System (SoS) threshold and objective requirements <ul style="list-style-type: none"> - Research, demo and test new or updated component that better meet user needs and system performance specifications - Radar integration and testing to ensure performance meet COCOM and USAF requirement - Electronic Warfare sub system integration and testing to ensure OSS&E authorities are met with not unintended electronic/frequency fratricide 		-	11.000	-

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604287F I Physical Security Equipment							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Continued development and integration of Cs-UAS Command and Control, to include but not limited to the adaptation of existing C2 systems and networking of Cs-UAS systems into the larger USAF C2 construct at the tactical and operational level - Develop and integrate Cs-UAS capabilities into a Force Protection, integrated Defense Common Operations Picture (COP) - Research, develop, test & integrate ground based kinetic and non-kinetic defeat modalities to Cs-UAS - Research, development, test and ion friendly "blue force" small unmanned aerial systems" to detect, track, ID and defeat red force/enemy UAVs - Fund technical subject matter expertise to perform RDT&E supporting Cs-UAS - Build and manage a systems integration lab (SIL) at an AF test site to be determined 												
Accomplishments/Planned Programs Subtotals										5.973	35.458	19.739
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• OPAF: BA03: Line Item #29: Base Physical Security Systems	75.849	230.982	166.437	0.000	166.437	92.679	76.406	50.241	0.000	Continuing	Continuing	
Remarks												
E. Acquisition Strategy <p>AFSFC and Force Protection program office investigates requirements to include new and/or obsolete items. COTS sub-systems, equipment and components are competitively acquired from industry after thorough market research. Equipment for testing is purchased via competitive selection processes via direct purchase orders. For security systems COTS that are required to be qualified for nuclear security environments where industry COTS sources may not be mature, consideration is given to replacement of new items or modification of COTS through the competitive selection procedure as well.</p> <p>Counter Small Unmanned Aerial Systems (Cs-UAS) Joint Emergent Operational Need (JEON). The Force Protection program office is acquiring COTS sub-systems and equipment for DT/OT as well as minor development of an existing C2 System for integration.</p> <p>Counter Small Unmanned Aerial Systems (Cs-UAS) Joint Urgent Operational Need (JUON). The Force Protection program office is acquiring COTS sub-systems and equipment in support of EUCOM JUON for DT/OT as well as minor development of an existing C2 System for integration.</p> <p>Delivery Orders on Indefinite Delivery/Indefinite Quantity contract vehicles or other approved purchase methods are utilized to acquire equipment.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604287F <i>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.		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Base Defense Security Systems (IBDSS)	Various	Various : Various	-	5.506		1.468		0.000		0.000		0.000	Continuing	Continuing	-
Integrated Base Defense Security Systems (IBDSS-1)	Various	Various : Various	-	0.000		4.832		5.801		0.000		5.801	Continuing	Continuing	-
Counter Small Unmanned Aerial Systems (CsUAS) Joint Emergent Operational Need (JEON)	Various	Various : Various	-	0.000		16.000		9.747		0.000		9.747	Continuing	Continuing	-
Counter Small Unmanned Aerial Systems (CsUAS) Joint Urgent Operational Need (JUON)	Various	Various : Various	-	0.000		11.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	5.506		33.300		15.548		0.000		15.548	-	-	-

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Base Defense Security Systems (IBDSS)	Various	Various : Various	-	0.467		0.000		0.000		0.000		0.000	Continuing	Continuing	-
Integrated Base Defense Security Systems (IBDSS-1)	Various	Various : Various	-	0.000		0.857		0.857		0.000		0.857	Continuing	Continuing	-
Subtotal			-	0.467		0.857		0.857		0.000		0.857	-	-	-

Remarks

The support funding is planned at the above amounts. If the support contracts are less, the available funds will be transitioned to the Product Development line.

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

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration and Test	PO	TAC-3 : TBD	-	0.000		1.301		2.581		0.000		2.581	Continuing	Continuing	-
Demonstration and Test: (CsUAS)	MIPR	Not specified. : TBD	-	0.000		0.000		0.753		0.000		0.753	Continuing	Continuing	-
Subtotal			-	0.000		1.301		3.334		0.000		3.334	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	5.973	35.458	19.739	0.000	19.739	-	-	-

Remarks
 Various delivery orders will be awarded throughout the fiscal year for numerous projects.

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017									
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>					Project (Number/Name) 655120 / <i>Physical Security Equipment - SD ED</i>									

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Integrated Base Defense Security Systems (IBDSS)																												
Integrated Base Defense Security Systems (IBDSS-1)																												
Counter Small Unmanned Aerial Systems (CsUAS) Joint Emergent Operational Need (JEON) C2 and Fixed Site																												
Counter Small Unmanned Aerial Systems (CsUAS) Joint Urgent Operational Need (JUON) C2 and Fixed Site																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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
Integrated Base Defense Security Systems (IBDSS)	1	2017	4	2018
Integrated Base Defense Security Systems (IBDSS-1)	1	2018	4	2019
Counter Small Unmanned Aerial Systems (CsUAS) Joint Emergent Operational Need (JEON) C2 and Fixed Site	1	2018	3	2018
Counter Small Unmanned Aerial Systems (CsUAS) Joint Urgent Operational Need (JUON) C2 and Fixed Site	3	2017	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604329F I Small Diameter Bomb (SDB) - EMD							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	1,032.472	27.950	54.838	38.979	0.000	38.979	73.709	31.477	17.442	27.626	0.000	1,304.493
655191: SDB Increment II	1,032.472	27.950	54.838	38.979	0.000	38.979	73.709	31.477	17.442	27.626	0.000	1,304.493
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 439												
Note *Totals include funding from PRCP Program Number 439, SDB II												
A. Mission Description and Budget Item Justification Small Diameter Bomb Increment II (SDB II) is a joint interest United States Air Force (USAF) and Department of Navy (DoN) ACAT ID program, with the Air Force (AF) as the lead service. SDB II provides the warfighter the capability to attack mobile targets from stand-off, through weather. SDB II addresses the following warfighter requirements: attack moving and stationary targets, adverse weather operations, multiple kills per pass, multiple ordnance carriage, precision munitions capability, reduced munitions footprint, increased weapons effectiveness, minimized potential for collateral damage, reduced susceptibility of munitions to countermeasures and provides a network enabled weapon capability via Link-16 and Ultra High Frequency (UHF) Weapon Data Link. The threshold aircraft for the AF is the F-15E, and the threshold aircraft for the (DoN) are the F-35B and F-35C. Objective aircraft include the F-22, F-16, F-35A, B-2, A-10, MQ-9, B-1, B-52, AC-130 and the F/A-18E/F. SDB II will be compatible with the BRU-61 (Bomb Rack Unit) miniature munitions carriage, the Joint Miniature Munitions BRU, the CNU-660/E carriage system, the Common Munitions BIT/Reprogramming Equipment (CMBRE), and the Joint Mission Planning System (JMPS). The SDB II program will develop and field a single weapon storage container (USAF) and a dual weapon container (DoN). SDB II completed a 42-month competitive Risk Reduction phase in October 2009 and entered the Milestone B Engineering and Manufacturing Development (EMD) phase in August 2010. A Fixed Price Incentive Firm EMD contract was awarded on 09 August 2010. The SDB II Program received Milestone C approval to enter Low Rate Initial Production (LRIP) on 3 June 2015. A Fixed Price Incentive Firm Contract for Lot 1 production of 144 weapons was awarded on 12 June 2015, Lot 2 production contract option for 250 weapons was exercised on 8 September 2016, and Lot 3 production contract option for 312 weapons was exercised on 27 January 2017. An updated Milestone C Acquisition Program Baseline is complete. SDB II is a key component of the Air Force's Global Strike Task Force CONOPs and Global Precision Attack Core Function. This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting Engineering and Manufacturing Development tasks aimed at meeting validated requirements prior to full-rate production.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	29.083	54.838	47.369	0.000	47.369
Current President's Budget	27.950	54.838	38.979	0.000	38.979
Total Adjustments	-1.133	0.000	-8.390	0.000	-8.390
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.133	0.000			
• Other Adjustments	0.000	0.000	-8.390	0.000	-8.390
Change Summary Explanation FY18 decrease for higher AF priorities.					
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SDB II Development	11.517	24.128	20.010	0.000	20.010
Description: Development of SDB II to deliver the capability described in the SDB II Capability Development Document (CDD), in lieu of Capability Production Document (CPD) as specified in the government approved SDB II System Performance Specification (SPS) for production, deployment, and sustainment. Upgrades to SDB II hardware and software to meet emerging threats (i.e., M-Code, GPS, Cryptographic Modernization, advanced guidance, navigation and control). Development of the SDB II design to ensure exportability, cyber security, and program protection, and address obsolescence issues and affordability opportunities.					
FY 2016 Accomplishments: Continued Guided Test Vehicle (GTV), Captive Flight Test (CFT), Live Fire Test and Evaluation (LFT&E) program for Normal Attack (NA) Mode, Coordinate Attack (CA) Mode and Laser Illuminated Attack (LIA) Mode. Executed F-15E captive cueing missions to better understand on- and off-board tactical targeting sources. Continued the Developmental Testing (DT) Captive Carry Reliability Test (CCRT) program. Completed detailed planning and began Government Confidence Test (GCT) program, which consists of 28 government-directed GTV test shots. GCT is part of the DT program and will complete prior to dedicated Multiservice Operational Test and Evaluation (MOT&E).					

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604329F I Small Diameter Bomb (SDB) - EMD				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continued planning for the Operational Test Readiness Review (OTRR) that must be completed prior to the start of the dedicated MOT&E. Continued Operational Flight Program (OFP) update and qualification efforts for the BRU-61 carriage. Continued Advanced Joint Effectiveness Model (AJEM) lethality modeling and testing. Continued collaboration with National Security Agency (NSA) on weapon data link key management software. Continued collaboration with Joint Interoperability Test Command (JITC) on interoperability testing. Continued integration of SDB II with Command and Control Infrastructure, including Air and Space Operations Center (AOC) and integration with Joint Terminal Attack Controller (JTAC) kits. Continued mission planning support during DT. Completed studies and initial risk reduction efforts to upgrade SDB II hardware and software to meet emerging threats, to maintain compatibility with external systems, ensured exportability and program protection, and addressed obsolescence issues and affordability opportunities.						
FY 2017 Plans: Complete GTV, LFT&E, CFT, and continue CCRT DT programs. Conduct the OTRR and gain approval to begin MOT&E which consists of 45 GTV and 10 LFT&E test shots on the F-15E platform. Continue OFP update and qualification efforts for the BRU-61. Continue AJEM lethality modeling and testing. Continue collaboration with NSA on weapon data link key management software. Continue collaboration with JITC on interoperability testing. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with JTAC kits. Continue mission planning support during DT and Operational Test (OT). Continue upgrade of SDB II hardware and software to meet emerging threats to maintain compatibility with external systems (i.e., M-Code, Cryptographic Modernization, advanced guidance, navigation and control, ensure exportability and program protection, and address obsolescence issues and affordability opportunities).						
FY 2018 Base Plans: Begin MOT&E on the F-15E platform. Continue OFP update and qualification efforts for the BRU-61. Continue AJEM lethality modeling and testing. Continue collaboration with NSA on weapon data link key management software. Continue collaboration with JITC on interoperability testing. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with JTAC kits. Continue mission planning support during OT. Continue design, development and integration to upgrade SDB II hardware and software to meet emerging threats and to maintain compatibility with external systems (i.e., M-Code, Cryptographic Modernization, advanced guidance, navigation and control, ensure exportability, cyber security, and program protection, and address obsolescence issues and affordability opportunities).						
FY 2018 OCO Plans:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604329F I Small Diameter Bomb (SDB) - EMD				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A						
Title: SDB II Integration and Qualification Testing		16.433	6.959	2.169	0.000	2.169
Description: F-15E Aircraft Integration incorporates tests and targets, Modeling and Simulation (M&S), target lethality, data link and mission planning. Develop F-15E OFP upgrades 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.						
FY 2016 Accomplishments: Continued to conduct ground and flight testing and target procurement to support testing. Continued OFP update and qualification efforts. Continued GTV, LFT&E, CFT, and CCRT Developmental Testing for NA, CA, and LIA modes. Continued to update F-15E OFP for NA, CA, and LIA modes. Began GCT program. Began updates to F-15E training devices. Continued mission planning support during DT.						
Continued AJEM lethality modeling and testing. Continued collaboration with NSA on weapon data link key management software. Continued collaboration with JITC on interoperability testing. Continued integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits. Continued mission planning support during DT. Continued development activities to upgrade SDB II hardware and software to meet emerging threats, maintain compatibility with external systems, ensured exportability and program protection, and addressed obsolescence issues and affordability opportunities.						
FY 2017 Plans: Complete GTV, LFT&E, CFT, and CCRT for NA, CA, and LIA modes. Conduct the OTRR and gain approval to begin MOT&E which consists of 45 GTV and 10 LFT&E test shots on the F-15E platform. Continue update to F-15E training devices. Continue qualification efforts for the BRU-61. Continue AJEM lethality modeling and testing. Continue collaboration with NSA on weapon data link key management software. Continue collaboration with JITC on interoperability testing. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits. Continue mission planning support during DT/OT. Continue development activities to upgrade SDB II hardware and software to meet emerging threats, maintain compatibility with external systems (i.e., M-Code, Cryptographic Modernization, advanced guidance, navigation						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604329F I Small Diameter Bomb (SDB) - EMD				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and control, ensure exportability and program protection, and address obsolescence issues and affordability opportunities). FY 2018 Base Plans: Begin MOT&E on the F-15E platform. Continue OFP update and qualification efforts for the BRU-61. Continue AJEM lethality modeling and testing. Continue collaboration with NSA on weapon data link key management software. Continue collaboration with JITC on interoperability testing. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with JTAC kits. Continue mission planning support during OT. Continue design, development and integration to upgrade SDB II hardware and software to meet emerging threats and to maintain compatibility with external systems (i.e., M-Code, Cryptographic Modernization, advanced guidance, navigation and control, ensure exportability, cyber security, and program protection, and address obsolescence issues and affordability opportunities). FY 2018 OCO Plans: N/A						
Title: SDB II M-Code Description: M-code provides an enhanced anti-jam capability and secures access to military GPS signals. M-code will provide the ability to operate in increasing adversarial A2/AD jamming environment with increased accuracy, better signal acquisition, and advanced security. FY 2016 Accomplishments: (External Funding) Completed trade studies to evaluate SDB II performance against emerging threats. Upgraded modeling and simulation capability to evaluate M-Code and enhanced anti-jam performance trade space for SDB II operational scenarios. Assessed multiple solutions to provide optimum performance at an affordable cost to complete the SDB II mission while satisfying the Congressional mandate at earliest opportunity. FY 2017 Plans: Complete Systems Requirements Review (SRR) and preliminary design activities for Raytheon Family of Systems M-Code/enhanced anti-jam receiver. Complete SRR and early design activities for engineering changes required for the SDB II system to integrate the receiver and enhanced anti-jam capabilities. Continue to upgrade modeling and simulation capability to evaluate M-Code and enhanced anti-jam performance for		0.000	23.751	16.800	0.000	16.800

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604329F I Small Diameter Bomb (SDB) - EMD						
C. Accomplishments/Planned Programs (\$ in Millions)						FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
SDB II operational scenarios. Update mission planning and threshold aircraft OFPs to ensure aircraft to weapon integration and transmission of the appropriate M-Code initialization data and crypto keys.											
FY 2018 Base Plans: Continue activities to provide SDB II with M-Code capabilities for improved anti-jam and secure access to military GPS signals. M-Code activities include, but are not limited to, trade studies; development and implementation of an acquisition strategy; and design, development, integration and testing of M-Code and enhanced anti-jam components. Complete Critical Design and prototype development for M-Code and enhanced anti-jam receiver. Continue design, test and qualification of engineering changes to the SDB II system to integrate the new M-Code receiver. Update mission planning and threshold aircraft OFPs to ensure aircraft to weapon integration and transmission of the appropriate M-Code initialization data and crypto keys.											
FY 2018 OCO Plans: N/A											
Accomplishments/Planned Programs Subtotals						27.950	54.838	38.979	0.000	38.979	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # SDB000: Small Diameter Bomb	135.117	260.161	266.030	90.920	356.950	72.506	143.935	336.512	310.853	893.676	3,367.613
• RDT&E: BA05: PE 0604329N: Small Diameter Bomb	28.403	37.605	57.637	0.000	57.637	72.866	71.020	56.442	42.572	3.432	458.484
• WPN: BA05: Line Item # 223800: Small Diameter Bomb	0.000	0.000	20.968	0.000	20.968	92.148	121.619	117.743	120.101	301.856	774.435
Remarks											
Navy RDT&E funds include F-35B and F-35C Integration and Support Cost											
FY16 MPAF BA05 Line Item #SDB000 includes \$2.52M Overseas Contingency Operations (OCO) for SDB I.											
FY17 MPAF BA05 Line Item #SDB000 includes \$167.8M Overseas Contingency Operation (OCO) for SDB I.											
FY18 MPAF BA05 Line Item #SDB000 includes \$90.920M Overseas Contingency Operation (OCO) for SDB I.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604329F <i>I Small Diameter Bomb (SDB) - EMD</i>
E. Acquisition Strategy <p>The SDB II Engineering and Manufacturing Development (EMD) contract was awarded using competitive procedures. At the completion of the 42-month Risk Reduction phase in October 2009, one contractor was selected in April 2010 and awarded the EMD contract in August 2010. The EMD contract is a Fixed-Price Incentive Firm (FPIF) contract with priced production options for the first five production lots. SDB II production Lots 1-3 are FPIF. Production Lots 4-5 are fixed price not-to-exceed pricing with an economic price adjustment clause for labor and materials. The Government is buying the SDB II based on the contractor System Performance Specification (SPS) which has been approved by the Government. The contractor is accountable for system performance as defined in the SPS and a system warranty as defined in the EMD contract and follow-on production contracts. Accordingly, the contractor is accountable to the Government for the design of the weapon system, as well as the planning and execution of the Development Test & Evaluation (DT&E) program to verify system performance. The Government formally arranges and funds the use of Government flight test support for DT&E.</p>		
F. Performance Metrics <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604329F / Small Diameter Bomb (SDB) - EMD				Project (Number/Name) 655191 / SDB Increment II					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Risk Reduction Contract 1	C/CPFF	Boeing : St. Louis, MO	151.922	0.000		0.000		0.000		0.000		0.000	0.000	151.922	151.922
Risk Reduction Contract 2	C/CPFF	Raytheon : Tucson, AZ	150.800	0.000		0.000		0.000		0.000		0.000	0.000	150.800	150.800
EMD Contract	C/FPIF	Raytheon : Tucson, AZ	459.843	0.326	May 2016	0.000		0.000		0.000		0.000	0.000	460.169	460.169
Technical Support Contract	SS/ Various	Raytheon : Tucson, AZ	54.988	13.361	Mar 2016	23.471	Dec 2016	10.235	Dec 2017	0.000		10.235	12.665	114.720	114.719
M Code Development	C/Various	Not specified. : TBD	0.000	0.000		23.701	Jun 2017	16.800	Jan 2018	0.000		16.800	84.636	125.137	125.137
MPACT High Pressure Air Compressor System	SS/FFP	Boeing : St. Charles, MO	3.175	0.000		0.000		0.000		0.000		0.000	0.000	3.175	3.175
F-15E Integration and Test Support	SS/ Various	Boeing : St. Louis, MO	43.328	2.628	Apr 2016	0.829	Jan 2017	1.113	Jun 2018	0.000		1.113	1.760	49.658	49.658
BRU-61/A Integration and Test Support	SS/ Various	Boeing : St. Charles, MO	8.529	0.000	Jan 1901	0.484	Apr 2017	0.000		0.000		0.000	0.000	9.013	9.013
Mission Planning	Various	Various : Various	5.173	0.458	Jul 2016	0.222	Jan 2017	0.000		0.000		0.000	0.000	5.853	5.853
Data Link Integration & Support	Various	Various : Various	2.934	0.070	Apr 2016	0.000	Dec 2016	0.000	Mar 2018	0.000		0.000	0.000	3.004	3.004
System Performance & Lethality	Various	Various : Various	37.220	1.168	Jul 2016	0.577	Nov 2016	0.334	Nov 2017	0.000		0.334	0.311	39.610	39.610
Other Product Development	Various	Various : Various	10.959	0.626	Jul 2016	0.171	Nov 2016	6.326	Mar 2018	0.000		6.326	46.827	64.909	64.909
Subtotal			928.871	18.637		49.455		34.808		0.000		34.808	146.199	1,177.970	1,177.969
Remarks															
EMD contract is budgeted to the contract ceiling price \$509.9M.															
The EMD Target Value is AF funding only. This represents the total liability for the AF (target cost plus ceiling). The contract's target value including Navy funding is \$450.827M. The target price is \$509.9M. This includes AF and Navy ceiling.															

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604329F / Small Diameter Bomb (SDB) - EMD				Project (Number/Name) 655191 / SDB Increment II					
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Other Government Costs	Various	Various : Various	4.536	0.478	Oct 2016	0.484	Apr 2017	1.104	Apr 2018	0.000		1.104	1.572	8.174	8.181
Subtotal			4.536	0.478		0.484		1.104		0.000		1.104	1.572	8.174	8.181
Remarks None.															
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DT&E: 96th Test Wing	PO	96th Test Wing : Eglin AFB, FL	25.386	4.157	Nov 2015	1.652	Apr 2017	0.000		0.000		0.000	1.412	32.607	32.608
DT&E: UTTR, WSMR	Various	Various : Various	8.405	2.634	Nov 2015	1.296	Feb 2017	0.000		0.000		0.000	0.000	12.335	12.335
Targets	PO	Various : Various	25.048	0.200	Jan 2016	0.165	Feb 2017	0.907	Jan 2018	0.000		0.907	0.031	26.351	26.351
Other Test Support	Various	Various : Various	9.122	0.142	Dec 2015	0.772	Dec 2016	1.294	Dec 2017	0.000		1.294	0.638	11.968	11.967
Subtotal			67.961	7.133		3.885		2.201		0.000		2.201	2.081	83.261	83.261
Remarks UTTR: Utah Test and Training Range WSMR: White Sands Missile Range															
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EPASS	Various	Various : Eglin AFB, FL	20.544	1.434	Jun 2016	0.900	Jun 2017	0.750	Jun 2018	0.000		0.750	0.000	23.628	23.628
Program Management Administration (PMA)	Various	Various : Eglin AFB, FL	10.560	0.268	Oct 2015	0.114	Oct 2016	0.116	Oct 2017	0.000		0.116	0.402	11.460	11.460
Subtotal			31.104	1.702		1.014		0.866		0.000		0.866	0.402	35.088	35.088

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017		
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks EPASS: Engineering, Professional & Administrative Support Services															
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			1,032.472	27.950		54.838		38.979		0.000		38.979	150.254	1,304.493	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																Date: May 2017			
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 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
F-15 Integration Developmental/Operational Testing																												
SDB II M-Code																												
Government Confidence Testing																												
Operational Testing																												
F-15E Required Assets Available																												
SDB II Integration on Threshold F-35B/C																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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	2016	4	2018
SDB II M-Code	3	2017	4	2020
Government Confidence Testing	1	2017	4	2017
Operational Testing	1	2018	4	2018
F-15E Required Assets Available	1	2019	1	2019
SDB II Integration on Threshold F-35B/C	3	2018	2	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	PE 0604421F / <i>Counterspace Systems</i>											
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	24.134	41.919	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
65A001: <i>Counter Satellite Communications System</i>	-	14.615	28.862	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
65A005: <i>Offensive Counterspace (OCS) C2</i>	-	7.737	3.961	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
65A013: <i>BOUNTY HUNTER</i>	-	1.782	1.996	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
65A024: <i>RAIDRS Block 20</i>	-	0.000	7.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

In FY2018, PE 0604421F, Counterspace Systems efforts were transferred to PE 1206421F, Counterspace Systems due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206421F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	24.134	41.919	0.000	0.000	0.000
Total Adjustments	24.134	41.919	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	24.134	41.919	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604421F / Counterspace Systems				Project (Number/Name) 65A001 / Counter Satellite Communications System			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A001: Counter Satellite Communications System	-	14.615	28.862	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A005: Offensive Counterspace (OCS) C2	-	7.737	3.961	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604421F / Counterspace Systems				Project (Number/Name) 65A013 / BOUNTY HUNTER			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A013: BOUNTY HUNTER	-	1.782	1.996	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604421F / Counterspace Systems				Project (Number/Name) 65A024 / RAIDRS Block 20			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A024: RAIDRS Block 20	-	0.000	7.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	PE 0604425F / <i>Space Situation Awareness Systems</i>											
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	30.116	23.945	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
65A006: <i>Space Based Space Surveillance</i>	-	28.404	23.945	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
65A026: <i>C-Band Radar</i>	-	1.712	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

In FY2018, PE 0604425F, Space Situational Awareness Systems efforts were transferred to PE 1206425F, Space Situational Awareness Systems due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206425F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	30.116	23.945	0.000	0.000	0.000
Total Adjustments	30.116	23.945	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	30.116	23.945	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604425F / Space Situation Awareness Systems				Project (Number/Name) 65A006 / Space Based Space Surveillance			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A006: Space Based Space Surveillance	-	28.404	23.945	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A026: <i>C-Band Radar</i>	-	1.712	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification Mission Description not provided.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Title: C-Band Radar Description: In FY2018, PE 0604425F, Space Situational Awareness Systems efforts were transferred to PE 1206425F, Space Situational Awareness Systems due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206425F. FY 2016 Accomplishments: In FY2018, PE 0604425F, Space Situational Awareness Systems efforts were transferred to PE 1206425F, Space Situational Awareness Systems due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206425F.										1.712	-	-
Accomplishments/Planned Programs Subtotals										1.712	-	-
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604426F I Space Fence							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	240.692	168.364	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
65A009: Space Fence	-	240.692	168.364	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0604426F, Space Fence efforts were transferred to PE 1206426F, Space Fence due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206426F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	240.692	168.364	0.000	0.000	0.000
Total Adjustments	240.692	168.364	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	240.692	168.364	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604429F I Airborne Electronic Attack							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	8.067	9.187	7.091	0.000	7.091	7.207	0.002	0.000	0.000	0.000	31.554
655192: Network & Sys -of-Sys Dev	-	8.067	9.187	7.091	0.000	7.091	7.207	0.002	0.000	0.000	0.000	31.554
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). Funding supports establishment and use of virtual test capabilities for system of systems effectiveness testing/evaluation for AEA, instantiating updated Defense Planning Guidance (DPG) scenarios into digital representations suitable for supporting modeling and simulation, conducting studies and technology risk mitigation demonstrations for potential AEA SoS components and AEA SoS battle management, development planning, planning for and conducting an OSD directed Joint AEA Analysis of Alternatives (AoA) (working group support and organic civilian salaries), 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 has evolved since 2004 and now includes the Navy EA-18G and its Next Generation Jammer (NGJ) subsystem and the Air Force EC-130H Compass Call Baseline 3 (significant upgrades to the former Block 35) configuration as modified escort/stand-off components, respectively. As stand-in/penetrating components, the AEA SoS includes the Air Force Miniature Air Launched Decoy (MALD) and its jammer variant, MALD-J; Active Electronically Scanned Array (AESA) radar equipped aircraft; and possible unmanned stand-in jamming/counter electronics platforms and other stand-in and distributed components capable of suppressing or degrading enemy integrated air defense system (IADS) and non-IADS targets. Current military actions continue to drive the need for increased focus on developing advanced electronic attack capabilities for use against both IADS and non-IADS targets such as radar sensors, infrared (IR) sensors, communications networks, remote controlled improvised explosive devices, computers, command and control links, man portable air defenses, etc. in both major combat and irregular warfare scenarios.

This program is included in Budget Activity 5, System Development and Demonstration, because it pursues materiel solutions passing Milestone B approval and is conducting engineering and manufacturing development tasks aimed at validating requirements.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604429F I Airborne Electronic Attack					
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total		
Previous President's Budget	8.358	9.187	7.071	0.000	7.071		
Current President's Budget	8.067	9.187	7.091	0.000	7.091		
Total Adjustments	-0.291	0.000	0.020	0.000	0.020		
• Congressional General Reductions	0.000	0.000					
• Congressional Directed Reductions	0.000	0.000					
• Congressional Rescissions	0.000	0.000					
• Congressional Adds	0.000	0.000					
• Congressional Directed Transfers	0.000	0.000					
• Reprogrammings	0.000	0.000					
• SBIR/STTR Transfer	-0.291	0.000					
• Other Adjustments	0.000	0.000	0.020	0.000	0.020		
Change Summary Explanation							
No significant program changes							
C. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AEA System Engineering Studies & Technology Transition			4.506	4.409	2.985	0.000	2.985
Description: Apply systems engineering rigor to manage Air Force Airborne Electronic Attack (AEA) System of Systems (SoS) program requirements, designs, and operational concepts. Assess operational effectiveness of multiple Electronic Warfare systems in both offensive and defensive roles.							
FY 2016 Accomplishments: Conducted cost and operational effectiveness assessments of all components of the AEA SoS in preparation for conducting a joint Air Force/Navy offensive AEA SoS Analysis of Alternatives. Further defined and recommended implementation strategies to resolve AF electronic support system risks; updated AF EW Roadmap as directed by HQ AF; and updated AF EW Capability Investment Strategy with studies in support of CAF Core Function Support Plans.							
FY 2017 Plans: Support the Joint AF/Navy AEA SoS Analysis of Alternatives. Conduct technology maturation demonstrations to address AF electronic support system risks; update AF EW Roadmap as directed by HQ AF; update AF EW Capability Investment Strategy with studies in support of CAF Core Function Support Plans.							
FY 2018 Base Plans:							

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604429F I Airborne Electronic Attack				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Finalize preparations for Joint AF/Navy AEA SoS AoA. Conduct technology demonstrations to provide potential solutions to AF Electronic Support system limitations; update/revise AF EW roadmap as directed by HQ AF; update AF EW capability investment strategy with studies in support of CAF Core Function Support Plans. FY 2018 OCO Plans: N/A						
Title: AEA Capability Planning Description: Provide capability planning to the Air Force electronic warfare and Airborne Electronic Attack (AEA) System of Systems (SoS) portfolio and constructive modeling and simulation and analysis management. FY 2016 Accomplishments: Conducted cost and operational effectiveness assessments of all components of the AEA SoS in preparation for conducting a joint Air Force/Navy offensive AEA SoS Analysis of Alternatives. Further defined and recommended implementation strategies to resolve AF electronic support system risks; updated AF EW Roadmap as directed by HQ AF; and updated AF EW Capability Investment Strategy with studies in support of CAF Core Function Support Plans. FY 2017 Plans: Jointly with the Navy develop final plans for executing the Joint AEA SoS analysis of alternatives. Develop concepts, conduct trade space analysis, and begin narrowing down alternatives to manageable number that have the potential to provide advanced cost and operationally effective materiel solutions to joint AF/Navy combat operations in the 2030+ time frame. FY 2018 Base Plans: Initiate execution of the Joint AEA SoS AoA. Prepare to report out preferred concepts that provide advanced cost and operationally effective materiel solutions for joint AF/Navy combat operations in the 2030+ time frame. FY 2018 OCO Plans: N/A		3.561	4.778	4.106	0.000	4.106
Accomplishments/Planned Programs Subtotals		8.067	9.187	7.091	0.000	7.091
D. Other Program Funding Summary (\$ in Millions) N/A						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604429F <i>I Airborne Electronic Attack</i>	
D. Other Program Funding Summary (\$ in Millions)		
Remarks		
E. Acquisition Strategy N/A		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					PE 0604441F I Space Based Infrared System (SBIRS) High EMD							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	291.510	218.766	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
653616: SBIRS High Element Emd	-	202.929	145.690	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
657009: Space Modernization Initiatives	-	88.581	73.076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

In FY2018, PE 0604441F, Space Based Infrared System (SBIRS) High EMD efforts were transferred to PE 1206441F, Space Based Infrared System (SBIRS) High EMD, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206441F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	291.510	218.766	0.000	0.000	0.000
Total Adjustments	291.510	218.766	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	291.510	218.766	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
653616: <i>SBIRS High Element Emd</i>	-	202.929	145.690	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 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 Initiatives</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657009: <i>Space Modernization Initiatives</i>	-	88.581	73.076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604602F I Armament/Ordnance Development							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	36.266	20.312	46.540	0.000	46.540	75.547	36.644	205.043	117.144	Continuing	Continuing
651033: Sensor Fuzed Weapon	-	0.000	0.000	32.092	0.000	32.092	41.016	8.004	0.000	0.000	Continuing	Continuing
653133: Bombs & Fuzes	-	17.546	11.066	9.592	0.000	9.592	29.596	23.614	199.930	111.926	Continuing	Continuing
653134: BLU-109 and BLU-113 Upgrade	-	13.412	4.496	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.908
655361: Stores-Aircraft Interface	-	5.308	4.750	4.856	0.000	4.856	4.935	5.026	5.113	5.218	Continuing	Continuing

Note

This program, BA 05 PE 0604602F, project 651033, Sensor Fuzed Weapon-Extended Range (SFW-ER), is a new start.

This program, BA 05 PE 0604602F, project 653133, Cockpit-Selectable Height-Of-Burst Sensor (C-HOBS), is a new start.

A. Mission Description and Budget Item Justification

The Armament/Ordnance Development program provides for the development and integration of advanced precision, navigation, and timing (PNT) capabilities (i.e., GPS, non-GPS, optical, passive, active, etc.); initial and continuing development of weapons, munitions, and munitions equipment for aircraft integration, support, and operational use. This program develops, characterizes, and improves current, future, and legacy munitions, ammunitions, and subsystems.

The Armament/Ordnance Development program is a collection of efforts in Budget Activity 5, System Development and Demonstration (SDD). The program efforts are conducting TMRR and EMD tasks aimed at meeting validated requirements prior to full-rate production, to include pre-planned product improvements (P3I).

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	37.654	20.312	6.551	0.000	6.551
Current President's Budget	36.266	20.312	46.540	0.000	46.540
Total Adjustments	-1.388	0.000	39.989	0.000	39.989
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.388	0.000			
• Other Adjustments	0.000	0.000	39.989	0.000	39.989

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604602F I Armament/Ordnance Development	
<p><u>Change Summary Explanation</u></p> <p>FY2018 increase of \$8.500M is for development of C-HOBS</p> <p>FY2018 increase of \$32.092M for Sensor Fuze Weapon</p> <p>FY2018 decrease of \$0.645M ZBT to PE 0604327F, BPAC 645341, PEC Hard and Deeply Buried Target Defeat System (HDBTDS) Program</p>		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development				Project (Number/Name) 651033 / Sensor Fuzed Weapon			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
651033: Sensor Fuzed Weapon	-	0.000	0.000	32.092	0.000	32.092	41.016	8.004	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This program, BA 05 PE 0604602F, project 651033, Sensor Fuzed Weapon-Extended Range (SFW-ER), is a new start.												
A. Mission Description and Budget Item Justification Modification to develop a wing kit to extend the range of inventory Cluster Bomb Unit-105 (CBU-105) anti-tank area attack weapons.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Sensor Fuzed Weapon-Extended Range (SFW-ER)								0.000	0.000	32.092	0.000	32.092
Description: Modification to develop a wing kit to extend the range of inventory Cluster Bomb Unit-105 (CBU-105) anti-tank area attack weapons.												
FY 2016 Accomplishments: N/A												
FY 2017 Plans: N/A												
FY 2018 Base Plans: Develop modification to wing kit to extend the range of inventory Cluster Bomb Unit-105 (CBU-105) anti-tank area attack weapons.												
FY 2018 OCO Plans: N/A												
Accomplishments/Planned Programs Subtotals								0.000	0.000	32.092	0.000	32.092
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development				Project (Number/Name) 651033 / Sensor Fuzed Weapon			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
<u>Remarks</u>											
D. Acquisition Strategy											
Develop modification to wing kit to extend the range of inventory Cluster Bomb Unit-105 (CBU-105) anti-tank area attack weapons.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development						Project (Number/Name) 651033 / Sensor Fuzed Weapon			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Design Development	TBD	Not specified. : TBD	-	0.000		0.000		17.330		0.000		17.330	Continuing	Continuing	-
Subtotal			-	0.000		0.000		17.330		0.000		17.330	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration	TBD	Not specified. : TBD	-	0.000		0.000		0.802		0.000		0.802	Continuing	Continuing	-
Subtotal			-	0.000		0.000		0.802		0.000		0.802	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Modeling and Simulation	TBD	Not specified. : TBD	-	0.000		0.000		13.158		0.000		13.158	Continuing	Continuing	-
Subtotal			-	0.000		0.000		13.158		0.000		13.158	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Support	TBD	Not specified. : TBD	-	0.000		0.000		0.802		0.000		0.802	Continuing	Continuing	-
Subtotal			-	0.000		0.000		0.802		0.000		0.802	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		0.000		32.092		0.000		32.092	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity $3600 / 5$

R-1 Program Element (Number/Name)

PE 0604602F / Armament/Ordinance

Development

Project (Number/Name)	Start Date	End Date	Status	Manager	Budget (USD)	Actual Cost (USD)	Progress (%)	Risks	Notes
101	2023-01-15	2023-03-31	Completed	John Doe	150000	148000	100	Low	Project completed ahead of schedule.
102	2023-04-01	2023-06-30	In Progress	Jane Smith	200000	180000	90	Medium	Minor delays in procurement.
103	2023-07-01	2023-09-30	On Hold	Mike Johnson	120000	0	0	High	Waiting for client approval.
104	2023-10-01	2023-12-31	Planned	Sarah Lee	80000	0	0	Low	Initial planning phase.
105	2024-01-01	2024-03-31	Planned	David Kim	90000	0	0	Medium	Resource allocation pending.

651033 / Sensor Fuzed Weapon

[illegible]

Development /Testing

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development	Project (Number/Name) 651033 / Sensor Fuzed Weapon

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Development /Testing	1	2018	4	2021

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development				Project (Number/Name) 653133 / Bombs & Fuzes			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
653133: Bombs & Fuzes	-	17.546	11.066	9.592	0.000	9.592	29.596	23.614	199.930	111.926	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This program, BA 05 PE 0604602F, project 653133, Cockpit-Selectable Height-Of-Burst Sensor (C-HOBS), is a new start.												
A. Mission Description and Budget Item Justification The Bombs & Fuzes (Armament Subsystems) Project develops and integrates advanced precision, navigation, and timing (PNT) capabilities (i.e., GPS, non-GPS, optical, passive, active, etc.); and improves conventional weapons/munitions (kinetic and non-kinetic), fuzes, and height-of-burst sensors (HOBS). 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, fuzing, and HOBS modifications to improve lethality against area, mobile, and fixed 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, fuzes, and HOBS. Major thrust areas include: - Munitions Materiel Handling Equipment (MMHE): MMHE is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. Efforts are primarily the study, design, and development of MMHE and armament control systems; however, support may be provided to other functional areas as requested. Procurement will be performed and funded by the applicable weapons system project. - Medium Caliber Ammunition project assesses, refines, and develops medium caliber ammunition, to include, but not limited to, conducting 25mm (F-35) qualification and comparative testing. - Insensitive Munitions (IM): IM models and validates munition performance, integrates less sensitive explosive fills, addresses IM explosive fill deficiencies, and develops bomb case modifications to improve the response of conventional weapons to unplanned stimuli. 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. - BLU-134/B Improved Lethality Warhead (ILW): This Next Generation Area Attack Weapon (NGAAW), formerly known as Improved Lethality (IL), continues and expands development planning and legacy warhead efforts to improve lethality against area targets, to include anti-personnel anti-materiel (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 in Project 653133, Bombs & Fuzes, in FY15.												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development	Project (Number/Name) 653133 / Bombs & Fuzes			
<p>- Advanced Precision Kill Weapon System (APKWS) II Rotary Wing Plus (RW+): Integrate rotary wing rocket (2.75-inch), M151 warhead (Frag) with a new BAE laser guidance system on A-10/F-16. Provide limited envelope capability within 6 months, expand envelope in 14 months, and integrate new M282 warhead (Penetrator). This effort was an approved UON in FY2016, executing FY2015 funding.</p> <p>- Cockpit-selectable Height-Of-Burst Sensor (C-HOBS): Follow-on development activities for legacy fuzes and HOBS, including reliability enhancements and producibility improvements.</p>						
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Munitions Materiel Handling Equipment (MMHE)		0.748	0.674	0.692	0.000	0.692
Description: MMHE. Armament Standardization/Control/Munitions Materiel Handling Equipment (MMHE) is a continuing project to develop and improve the standardization and commonality of munitions handling and 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.						
FY 2016 Accomplishments: Completed 18 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricated 12 prototypes for test and evaluation purposes. Completed 10 first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provided support to all system program offices with new weapons and aircraft configurations, as needed. Continued support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continued support and sustain all previously existing items developed by the MMHE program office. Continued to provide MMHE Sustainment office at Robins AFB with engineering support.						
FY 2017 Plans: Completed 10 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricated 6 prototypes for test and evaluation purposes. Completed 9 first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provided support to all system program offices with new weapons and aircraft configurations, as needed. Continued support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continued support and sustainment of all previously existing items developed by the MMHE program office. Continued to provide MMHE Sustainment office at Robins AFB with engineering support.						
FY 2018 Base Plans:						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development	Project (Number/Name) 653133 / Bombs & Fuzes			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete 15 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate 10 prototypes for test and evaluation purposes. Complete 15 first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide support to all system program offices with new weapons and aircraft configurations, as needed. Continue support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Provide support to the B-21 program office with evaluations and recommendations for equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support and sustain all previously existing items developed by the MMHE program office. Continue to provide MMHE Sustainment office at Robins AFB with engineering support. FY 2018 OCO Plans: N/A						
Title: Medium Caliber Ammunition Description: The Medium Caliber ammunition efforts support the warfighter’s medium caliber ammunition research, development, test, and evaluation (RDT&E) requirements, DoN/USAF collaboration for the medium caliber family of ammunition, foreign comparative testing, inventory health challenges, procurement of ammunition, and other emerging technologies. FY 2016 Accomplishments: Continued to provide engineering and technical support for DT flight testing of PGU-48/B (Frangible Armor Piercing (FAP)) rounds and integration of PGU-48/B with F-35 25mm gun ammunition loader assembly. Continued/completed acquisition planning for initial production contract and acquisition of data rights. FY 2017 Plans: Continued to provide engineering and technical support for DT flight testing of PGU-48/B (Frangible Armor Piercing (FAP)) rounds and integration of PGU-48/B with F-35 25mm gun ammunition loader assembly. Completed acquisition planning for initial production contract and acquisition of data rights to include sole source award of PGU-48/B for F-35 3F IFC. Comparative testing of PGU-20X/U against results from the PGU-48/B tests to establish alternate vendor base source to enable competition in future procurements and long-term F-35 25mm ammunition. Assessed and mitigated inventory health challenges. FY 2018 Base Plans:		0.100	0.100	0.100	0.000	0.100

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development	Project (Number/Name) 653133 / Bombs & Fuzes				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to provide engineering and technical support for PGU-48/B rounds as well as further comparative testing/EMD of alternative products/sources. Continue to assess and mitigate Medium Caliber ammunition health inventory challenges. FY 2018 OCO Plans: N/A						
Title: Insensitive Munitions (IM) Description: Model and validate munition performance; assess and correct identified IM explosive fill deficiencies; conduct strategic IM planning for the AF; support Joint Service IM efforts; provide technical guidance and test expertise to AF IM programs. FY 2016 Accomplishments: Delivered the FY17/18 AF IM Strategic Plan; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs. FY 2017 Plans: Initiated the FY19/20 AF IM; model and validate munition performance; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs. FY 2018 Base Plans: Initiate the FY21/22 AF IM; model and validate munition performance; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs and continue to improve, characterize, and integrate less sensitive explosive fills, assess and correct identified IM explosive fill deficiencies, and develop bomb case modifications to improve the response of conventional weapons to unplanned stimuli. FY 2018 OCO Plans: N/A		0.350	0.300	0.300	0.000	0.300
Title: BLU-134/B Improved Lethality Warhead (ILW) Description: BLU-134/B Improved Lethality Warhead (ILW), formerly known as Improved Lethality (IL), seeks to 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 possible solutions for other Next Generation Area Attack Weapons (NGAAW).		15.648	9.492	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development		Project (Number/Name) 653133 / Bombs & Fuzes		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Completed BLU-134/B Improved Lethality Warhead (ILW) source selection for an area attack employed, near-term, 500lb warhead for improved APAM target lethality which meets DoD policy. Two (2) contracts were awarded for pilot production with potential for four (4) production options with max qty 15K/option and Best Estimated Quantity (BEQ) 10K/option. The contractors continue to prove out their manufacturing processes with each producing thirty (30) MK 82 Mod 7 empty Cast Ductile Iron (CDI) bomb body assemblies in accordance with the Government owned Technical Data Package (TDP). Continued to develop other Next Generation Area Attack Weapon (NGAAW) solutions to meet DoD UXO Policy including Next Generation Area Attack Weapon Increment II (NGAAW II) with a reserved designation as the BLU-136/B.						
FY 2017 Plans: Continued manufacturing development of BLU-134/B ILW. Began Government testing (DT/OT) of the BLU-134/B ILW. Continued to develop NGAAW II, designated the BLU-136/B, as an enhanced solution to meet DoD UXO Policy. Plans included: mature the warhead designs, build and test prototypes, and develop the Technical Data Packages for high fragmentation warheads.						
FY 2018 Base Plans: Continue Government RDT&E of BLU-134/B ILW. Continue warhead design TMRR, EMD, and qualification of Next Generation Area Attack Weapon Increment II, in preparation for production. Continue planning for NGAAW pre-planned product improvements (P3I).						
FY 2018 OCO Plans: N/A						
Title: Cockpit-Selectable Height-Of-Burst Sensor (C-HOBS)		0.000	0.000	8.500	0.000	8.500
Description: Cockpit-Selectable Height-Of-Burst Sensor (C-HOBS): Cockpit selectable sensor capability to support legacy and Next Generation Area Attack weapons, to include the BLU-134/136. Eliminates single factory setting; allows flexibility during flight to address a wide array of targets. Effort includes follow-on studies, risk reduction, and product improvement initiatives to integrate cockpit selectability and other flexible effects features with threshold and objective aircraft and weapons platforms.						
FY 2016 Accomplishments: N/A						
FY 2017 Plans:						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development	Project (Number/Name) 653133 / Bombs & Fuzes				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A						
FY 2018 Base Plans: Support Cockpit selectable sensor capability to legacy and Next Generation Area Attack weapons, to include the BLU-134/136. Eliminates single factory setting; allows flexibility during flight to address a wide array of targets. Effort includes follow-on studies, risk reduction, and product improvement initiatives to integrate cockpit selectability and other flexible effects features with threshold and objective aircraft and weapons platforms. Contract award projected 3QFY18. Planned completion of all activities leading up to and including Systems Requirements Review (SRR), followed by 80% of preparatory actions required to execute Preliminary Design Review (PDR) in 1QFY19.						
FY 2018 OCO Plans: N/A						
Title: Advanced Precision Kill Weapon System II Rotary Wing Plus (APKWS II RW+) Description: Integrate rotary wing rocket (2.75-inch), M151 warhead (Frag) with a new BAE laser guidance system on A-10/F-16. Provide limited envelope capability within 6 months, expand envelope in 14 months, and integrate new M282 warhead (Penetrator).		0.700	0.500	0.000	0.000	0.000
FY 2016 Accomplishments: Completed AGR-20A (M151 warhead) weapons integration and fielding activities on the A-10/F-16 aircraft. Began integration efforts of the AGR-20B (M282 Warhead), to include centrifuge testing, captive flight profiles, initial DT testing, ground testing and instrumented measurement vehicle flights.						
FY 2017 Plans: Continued integration efforts on the M282 to include vibration, DT, lethality, OT, and Weapons Effects testing. Developed the Rules of Thumb and employment TTP’s on the A-10/F-16. Fielded the AGR-20B rocket on the A-10/F-16.						
FY 2018 Base Plans: Complete any remaining OT and weapon effects testing for M282 fielding recommendation.						
FY 2018 OCO Plans: N/A						
Accomplishments/Planned Programs Subtotals		17.546	11.066	9.592	0.000	9.592

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development				Project (Number/Name) 653133 / Bombs & Fuzes			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PAAF: BA01: Line Item #	0.000	80.000	81.573	0.000	81.573	85.000	87.000	0.000	0.000	0.000	0.000
353020: General Purpose Bombs											
• PAAF: BA01: Line Item #356120: Fuzes	0.000	0.000	0.000	0.000	0.000	0.000	20.400	31.400	29.300	0.00	81.100
• PAAF: BA01:Line Item #352010: Cartridges	0.000	10.000	4.000	0.000	4.000	4.000	8.000	8.000	8.000	0.00	10.000
Remarks											
D. Acquisition Strategy											
- Fuzes (including the FMU-152) is a continuing effort with most activities performed in-house or through contracted services (small contracts).											
- Munitions Materiel Handling Equipment (MMHE) project activities are performed in-house with limited technical and analysis contract support.											
- Medium Caliber ammunition project activities are performed in-house with technical and analysis contract support, organic government test support, and possible contracted services (small contracts).											
- Insensitive Munitions project activities are performed in-house with limited technical and analysis contract support.											
- The BLU-134/B ILW 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).											
- Other NGAAW solutions will implement an accelerated acquisition program strategy. The strategy includes concurrent TMRR and development of warhead designs, building and testing prototypes, to develop technical data packages (TDPs) for low-rate initial production (LRIP), while continuing NGAAW pre-planned product improvements (P3I).											
- APKWS II RW+ will leverage M151 testing and activities to advance the fielding of the M282 warhead. The Department of Navy (DoN) has a production contract with BAE Systems, Inc. to produce APKWS II RW+ units for rotary wing aircraft. The proposed solution is to procure APKWS II hardware with Fixed Wing software (RW+) and integrate onto the A-10 and F-16 aircraft.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development				Project (Number/Name) 653134 / BLU-109 and BLU-113 Upgrade			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
653134: BLU-109 and BLU-113 Upgrade	-	13.412	4.496	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.908
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Advanced BLU-109 project develops and integrates advanced precision, navigation, and timing (PNT) capabilities (i.e., GPS, non-GPS, optical, passive, active, etc.); and demonstrates advancements in capability of the legacy penetrator warhead, enabling it to hold more targets at risk than currently achievable with the legacy weapon. The initial effort will focus on demonstrating an Advanced 2000 lb (A2K) warhead in a relevant military environment. Advanced 2000 lb (A2K) has been designated the BLU-137/B. The follow-on effort will provide production assets as a replacement warhead for the BLU-109 C/B warhead.

BLU-113 D/B incorporates BLU-137/B based design modifications to improve BLU-113 performance.

The Advanced 5000 lb Penetrator (A5K) risk reduction efforts started in the PE 0604602F/Armament/Ordnance Development 653134/BLU-109 and BLU-113 Upgrade but funding for the A5K development effort will transition to PE 0604327F/Hard and Deeply Buried Target Defeat System (HDBTDS)Program 645341/Direct Strike Penetrator Systems beginning FY18.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Advanced 2000 lb (A2K) Penetrator and Advanced 5000 lb (A5K) Penetrator Programs	13.412	4.496	0.000	0.000	0.000
Description: Conduct A2K and A5K design analysis, warhead modifications, and testing to improve BLU-109/113 performance against increasingly hardened targets. A2K will maintain the current BLU-109 mold lines and will attempt to maintain current BLU-109 mass properties and Insensitive Munitions (IM) characteristics. Finalize new technical drawing package and manufacturing readiness for A2K warhead and replace BLU-109 C/B warhead production with A2K warhead.					
FY 2016 Accomplishments: Completed manufacturing and technical data package as well as conduct risk reduction and qualification testing of A2K design to include modified FZUs and cables, modified JDAM hardbacks, and modified warhead cases employed on the threshold platforms (B-2A & F-15E). Fully qualify A2K warhead design for Production readiness. Continued developing A5K initial design, risk reduction and modeling and simulation.					
FY 2017 Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017		
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development				Project (Number/Name) 653134 / BLU-109 and BLU-113 Upgrade			
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Finalized 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). Also, completed qualification of the A2K warhead design for Production readiness. Continued developing A5K initial design, risk reduction, qualification and testing.											
FY 2018 Base Plans: N/A											
FY 2018 OCO Plans: N/A											
Accomplishments/Planned Programs Subtotals							13.412	4.496	0.000	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PAAF:BA01 BPAC: 353020: GP Bombs	0.000	35.000	35.000	0.000	35.000	35.000	35.000	75.000	75.000	Continuing	Continuing
• RDTE: BA04: PE 0604327F: HDBTDS	0.000	0.000	17.365	0.000	17.365	72.039	0.000	0.000	0.000	0.00	89.404
Remarks N/A											
D. Acquisition Strategy The A2K/A5K project will provide a BLU-109/BLU-113 modification package to enable a fielding recommendation.											
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development				Project (Number/Name) 655361 / Stores-Aircraft Interface			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
655361: Stores-Aircraft Interface	-	5.308	4.750	4.856	0.000	4.856	4.935	5.026	5.113	5.218	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) and Universal Navigation Interface (UNI). UAI and UNI are Air Force initiatives to develop standardized software interfaces in aircraft weapons and Mission Planning. UAI standardizes software interfaces to support integration of weapons independent of aircraft Operational Flight Programs (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), B-1, B-52, LRS-B, MQ-9, JASSM-ER, CWDS as well as Army and Navy UAVs and Navy F/A-18s, have program plans to implement UAI. UNI standardizes software interfaces between the Embedded Global Positioning/Inertial Navigation System (EGI/INS) and the aircraft and weapons. 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: UAI and UNI Development								5.308	4.750	4.856	0.000	4.856
Description: Conduct stores-aircraft interface upgrades and standards development to the Universal Armament Interface (UAI) and Universal Navigation Interface (UNI) development of and maintenance to the UAI and UNI, and facilitation of aircraft, stores and mission planning program users in the UAI and UNI process.												
FY 2016 Accomplishments: Continued with development and configuration management of UAI standards in response to new users including but not limited to F-35, JASSM-ER, CWDS, F/A-18 and Army & Navy UAVs and stores. Supported working group management, technical meetings and workshops, risk reduction studies, common mission planning, and supported platform specific implementation of UAI. Continued maintenance of existing certification tools and procured new certification tools with miniature and micro munitions interface capability to meet F-35, B-1, B-52, SDB II, F/A-18, and other future user system integration lab test certification needs. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts. Continued negotiation implementation for multinational Memorandum of Understanding to broaden the use by coalition partners.												
FY 2017 Plans:												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force						Date: May 2017					
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development			Project (Number/Name) 655361 / Stores-Aircraft Interface				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Continue development and configuration management of UAI standards in response to new users including but not limited to F-35, JASSM-ER, CWDS, F/A-18 and Army & Navy UAVs and stores. Support working group management, technical meetings and workshops, risk reduction studies, common mission planning, and support platform specific implementation of UAI. Continue development of new certification tools with miniature and micro munitions interface capability to meet F-35, SDB II, F/A-18, and other future user system integration lab test certification needs. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts. Continue negotiation for multinational Memorandum of Understanding to broaden the use by coalition partners. Develop a baseline UNI ICD defining a standardized interface between the EGI-M box and the aircraft.</p> <p>FY 2018 Base Plans: Continue development and configuration management of UAI standards in response to new users including but not limited to F-35, JASSM-ER, CWDS, F/A-18 and Army & Navy UAVs and stores. Support working group management, technical meetings and workshops, risk reduction studies, common mission planning, and support platform specific implementation of UAI. Continue maintenance of existing certification tools to meet F-35, SDB II, F/A-18, and other future user system integration lab test certification needs. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts. Supporting multinational Memorandum of Understanding including but not limited to Joint Strike Missile (JSM), SPEAR 3 and Stand Off Missile - Joint (SOM-J). Continue UNI development of the ICD.</p> <p>FY 2018 OCO Plans: N/A</p>											
Accomplishments/Planned Programs Subtotals							5.308	4.750	4.856	0.000	4.856
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE BA04 PE 0604201F BPAC:641029: Acft Interface	0.000	0.000	5.014	0.000	5.014	0.000	0.000	0.000	0.000	0.00	5.014
Remarks N/A											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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>
<p><u>D. Acquisition Strategy</u></p> <p>In December 2004, under the authority of a class Justification and Approval (J&A), the UAI program office awarded individual Cost Plus Fixed Fee (CPFF) contracts to Boeing, Lockheed Martin, Northrop Grumman and Raytheon. Each Original Equipment Manufacturer is responsible for a different piece of the total UAI requirement based on its product-specific (platform/weapon) expertise. During FY10 these contracts expired. Under the authority of the class J&A, Cost Plus Incentive Fee (CPIF) contracts were awarded to the four UAI vendors in August 2010. Follow-on period of performance was awarded in March 2014 for 16 months to better align future contract awards with funding through the Future Years Defense Program. The current period of performance was extended to 1 November 2015 to allow immediate start of the effort on F-35/JSF request for changes. A new J&A was approved in January 2015 for the follow-on sole source contracts to the original equipment manufacturers. These new sole-source contracts awarded November 2015.</p> <p><u>E. Performance Metrics</u></p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604604F I Submunitions							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	2.419	2.503	2.705	0.000	2.705	2.712	2.762	2.810	2.867	Continuing	Continuing
653166: Joint Smart Munitions Test and Evaluation	-	2.419	2.503	2.705	0.000	2.705	2.712	2.762	2.810	2.867	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 (JTCCG) who develop the Joint Munitions Effectiveness Manuals (JMEMs), Combatant Commands, AF Major Commands, US Air Force Weapons School curriculum support, and others. Current projects include, but are not limited to: target signature exploitation, target geometric modeling (for identifying vulnerabilities), improving air capabilities against protected structures (specifically hard and deeply buried targets), and the testing of multiple seekers, sensors, and targeting technologies in representative environments against 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.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604604F I Submunitions			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	2.506	2.503	2.697	0.000	2.697
Current President's Budget	2.419	2.503	2.705	0.000	2.705
Total Adjustments	-0.087	0.000	0.008	0.000	0.008
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.087	0.000			
• Other Adjustments	0.000	0.000	0.008	0.000	0.008
Change Summary Explanation					
No significant changes					
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Project Chicken Little	2.419	2.503	2.705	0.000	2.705
Description: Provide the DoD community accurate multi-spectral signatures obtained from high-value, signature representative modern threat systems using advanced collection technologies.					
Exploitations typically occur CONUS; however, Project Chicken Little is postured to support OCONUS collections as dictated by mission requirements.					
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.					
Plan and conduct captive carry flight tests and signature collection for seeker/sensor technology evaluations.					
Develop, validate, and accredit improved models for target vulnerability and weapons effectiveness in support of Combatant Commands' (CoCOMs) requirements.					
FY 2016 Accomplishments:					

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604604F I Submunitions				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Exploited high value threat systems (typically 4 per year). Provide signature data from multiple threat systems in various environments using advanced and developmental seeker/sensor technologies. Conduct Sensor Week (SW), providing a singularly unique forum for joint service demonstration of developmental and operational seekers/sensors/ISR assets against a wide array of US, coalition, and foreign national ground targets.						
Exploit the signatures of ISR targets; conduct rapid reaction performance analysis & evaluations in support of COCOM/MAJCOM immediate/urgent warfighter needs; optimize current project methods to support ISR testing						
No OCONUS requirements.						
Assist in obtaining relevant, high value, and emergent threat assets and/or decoys. Ensure the fleet foreign threat assets remain properly "signature representative" for systems development and testing.						
Develop, validate, and accredit improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements.						
FY 2017 Plans:						
Exploit high value threat systems (typically 4 per year). Provide signature data from multiple threat systems in various environments using advanced and developmental seeker/sensor technologies. Conduct Sensor Week (SW), providing a singularly unique forum for joint service demonstration of developmental and operational seekers/sensors/ISR assets against a wide array of US, coalition, and foreign national ground targets.						
Exploit the signatures of ISR targets; conduct rapid reaction performance analysis & evaluations in support of COCOM/MAJCOM immediate/urgent warfighter needs; optimize current project methods to support ISR testing						
No OCONUS requirements.						
Assist in obtaining relevant, high value, and emergent threat assets and/or decoys. Ensure the fleet foreign threat assets remain properly "signature representative" for systems development and testing.						
Develop, validate, and accredit improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements.						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017							
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>			R-1 Program Element (Number/Name) PE 0604604F / <i>Submunitions</i>								
C. Accomplishments/Planned Programs (\$ in Millions)											
			FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
N/A <i>FY 2018 Base 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. Conduct Sensor Week (SW), providing a singularly unique forum for joint service demonstration of developmental and operational seekers/sensors/ISR assets against a wide array of US, coalition, and foreign national ground targets. Exploit the signatures of ISR targets; conduct rapid reaction performance analysis & evaluations in support of COCOM/MAJCOM immediate/urgent warfighter needs; optimize current project methods to support ISR testing No OCONUS requirements. Assist in obtaining relevant, high value, and emergent threat assets and/or decoys. Ensure the fleet foreign threat assets remain properly "signature representative" for systems development and testing. Develop, validate, and accredit improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements. <i>FY 2018 OCO Plans:</i> N/A											
Accomplishments/Planned Programs Subtotals			2.419	2.503	2.705	0.000	2.705				
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• None: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
E. Acquisition Strategy											
Funds are executed organically in support of test and evaluation activities including studies, analyses, flight & ground tests, model building and simulation. Virtually all of the work is performed in-house by the 96th Test Wing.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604604F <i>I Submunitions</i>	
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604617F I Agile Combat Support							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	56.178	53.680	31.240	0.000	31.240	17.177	17.497	17.800	18.163	Continuing	Continuing
652895: CE Readiness	-	54.712	52.127	26.804	0.000	26.804	15.566	15.856	16.131	16.459	Continuing	Continuing
654910: Aeromedical Readiness	-	1.466	1.553	4.436	0.000	4.436	1.611	1.641	1.669	1.704	Continuing	Continuing

Note
This program, BA 05 PE 0604617F, project 654910, Aeromedical Equipment, is a new start.

A. Mission Description and Budget Item Justification

This program provides lighter, leaner, rapidly-deployable and technologically-advanced materiel, forces and capabilities to the warfighter. Current projects in this program include Civil Engineering Readiness (Project 652895) and Aeromedical Readiness (Project 654910). Civil Engineering Readiness projects enable airfield protection and airfield damage repair for sustainment or restoration of airfield operations anywhere in the world. Aeromedical Readiness projects provide aerospace medical systems and treatment equipment to improve casualty care and meet worldwide warfighter medical operational requirements.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	56.178	53.680	28.307	0.000	28.307
Current President's Budget	56.178	53.680	31.240	0.000	31.240
Total Adjustments	0.000	0.000	2.933	0.000	2.933
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	2.933	0.000	2.933

Change Summary Explanation

FY18 Funding increased by \$2.844M - Non-Invasive Warming and Cooling Device (\$1.415M) and Aeromedical Equipment (\$1.429M). FY18 Funding increased by an additional \$0.089M due to inflation adjustment.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
652895: CE Readiness	-	54.712	52.127	26.804	0.000	26.804	15.566	15.856	16.131	16.459	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Civil Engineering (CE) Readiness project develops Airfield Damage Repair (ADR) and Airfield Protection (AP) solutions for in-garrison, expeditionary, and contingency installations & airbases. This includes: technologies for airfield assessment, repair and unexploded ordnance identification & mitigation to enable rapid recovery and regeneration of airfield operations; infrastructure design criteria, construction methods, hardened shelters, evaluation tools, materials, force protection technologies, and systems for improved resiliency and rapid restoration of airbase and airfield operations following an attack.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Airfield Damage Repair	33.212	41.752	21.837	0.000	21.837
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 will also 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.					
FY 2016 Accomplishments: Continued developing rapid assessment, mitigation and repair tools and solutions for airfield damage repair. Rapid assessment included the development of IT solutions for Minimum Airfield Operating Surface (MAOS) selection, ADR command and control (C2), ADR training, and interfaces to other AF C2 systems. Mitigation included removal of UXOs through a family of Multiple UXO Removal Systems (MURS). Repair of airfield damages focused different techniques required to return an airfield to operational status.					
FY 2017 Plans: Mature the rapid assessment, mitigation and repair tools and solutions for airfield damage repair through testing and delivery. Rapid assessment includes the development of IT solutions for MAOS selection, ADR command and control (C2), ADR training, and interfaces to other AF C2 systems. Mitigation includes removal of UXOs					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
through a family of Multiple UXO Removal Systems (MURS). Repair of airfield damage focusing on different techniques required to return an airfield to operational status. FY 2018 Base Plans: Mature the rapid assessment, mitigation and repair tools and solutions for airfield damage repair through testing and delivery. Rapid assessment includes the development of IT solutions for MAOS selection, ADR command and control (C2), ADR training, and interfaces to other AF C2 systems. Mitigation includes removal of UXOs through a family of Multiple UXO Removal Systems (MURS). Repair of airfield damage focuses different techniques required to return an airfield to operational status. FY 2018 OCO Plans: N/A						
Title: Airfield Protection Description: Advance and transition various solutions for protecting airfield infrastructure (not associated with airfield surfaces) from ballistic and guided penetrating threats. Included within this effort are structural solutions, expeditionary and expedient hardening and protection solutions, rapid restoration of fuels distribution and storage, hardening criteria, implementation costs, and updated Tactics, Techniques and Procedures (TTPs). This effort is designed to advance solutions developed under the Hardened Installation Protection for Persistent Operations (HIPPO) Joint Capability Technology Demonstration (JCTD) and transition for implementation at fixed and expeditionary locations, providing improved resiliency and rapid restoration of airbase and airfield operations following an attack. FY 2016 Accomplishments: Continued Engineering and Manufacturing Development (EMD) of technology solutions for Ultra High Performance Concrete; executed research for hardening against cruise missile threats. Finalized sheltering designs for Expeditionary Large Asset Protection & Expedient Small Asset Protection and fuel distribution restoration & recovery products. Developed test plans for final sheltering designs and training TTPs. FY 2017 Plans: Complete Engineering Manufacturing Development (EMD) of expedient and expeditionary sheltering concepts. Proceed with testing and performance validation of protection components in commercially-viable formats. Test and evaluate front and back shelter expedient covering systems. Continue exploration of new concepts for sheltering materials for lighter, cheaper solutions. Advance and finalize the development of models for ultrahigh velocity penetrating weapons. Advance and finalize the development of models for prediction of ultrahigh performance concrete materials (UHPC) for use in hardening and resiliency. Complete generation of physical		15.000	10.375	4.967	0.000	4.967

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
data to support all model development efforts. Execute and test the development of lighter, cheaper multi-layer hardening solutions for application against penetrating munitions. Develop, test and evaluate materials and concepts for hardening against cruise missile threats; plan for full scale sled track testing of possible concepts. Finalize EMD for Water and Fuels Expedient Repair System (WaFERS) for first article delivery of capability to Pacific Air Forces Regional Training Center (PRTC). Refine WaFERS training capability tactics, techniques and procedures (TTP) and mockup for ruggedized use, deliver and install to PRTC for training on WaFERS first article deliveries. Execute planning for procurement acquisition processes and methods to advance products moving through EMD to deployment. Advance development of technology for unconventional countermeasures. Deliver prototype components and systems for expedient sheltering. FY 2018 Base Plans: Continue exploration of new concepts for protection materials for lighter, cheaper solutions for sheltering. Advance and finalize the development of models for prediction of ultrahigh performance concrete materials (UHPC) for use in hardening and resiliency. Advance solution development for penetrating munitions including cruise missile hardening. Continue development of unconventional countermeasures technology. Improve expedient sheltering to address other threats. Initiate selective hardening development for infrastructure. Execute planning for acquisition of expedient shelters through design reviews, final testing, to deployment. FY 2018 OCO Plans: N/A						
Title: Bear Technology and Integration Lab (Congressional Add) Description: Support to Basic Expeditionary Airfield Resources (BEAR) Technology Evaluation and Integration Lab (BTEIL) (FY16 Congressional Add). FY 2016 Accomplishments: Provided support to the Basic Expeditionary Airfield Resources (BEAR) Technology Evaluation and Integration Lab (BTEIL). FY 2017 Plans: N/A FY 2018 Base Plans: N/A FY 2018 OCO Plans:		6.500	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force								Date: May 2017				
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>				Project (Number/Name) 652895 / <i>CE Readiness</i>				
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A												
Accomplishments/Planned Programs Subtotals								54.712	52.127	26.804	0.000	26.804
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• OPAF:BA04:Line Item #845100A: <i>Contingency Operations - Engineering and EOD Equipment</i>	5.412	0.379	13.789	0.000	13.789	29.430	31.831	29.752	0.000	Continuing	Continuing	
Remarks FY18-22 Procurement funding for Small Sheltering products (PE 0208028F).												
D. Acquisition Strategy The majority of efforts in this project employ existing contracts established to support CE Readiness requirements. Other DoD and US Government laboratories/ engineering centers are used whenever practical and appropriate, especially where a unique technical capability or expertise exists. Established DoD and GSA contracts are considered and evaluated for applicability and use before a new contract effort is implemented. Airfield Protection shelters are being transitioned to the Air Force Life Cycle Management Center (AFLCMC), Agile Combat Support Program Executive Officer (PEO), for procurement.												
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>	Project (Number/Name) 652895 / <i>CE Readiness</i>
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Airfield Damage Repair (ADR)	Various	AFCEC : Tyndall AFB, FL	-	12.001	Feb 2016	20.013	Feb 2017	7.515	Dec 2017	0.000		7.515	Continuing	Continuing	-
Airfield Damage Repair (ADR) ERDC	MIPR	USERDC : Vicksburg, MS	-	8.575	Feb 2016	7.000	Feb 2017	4.000	Dec 2017	0.000		4.000	Continuing	Continuing	-
Airfield Damage Repair (ADR) Asphalt	C/CPFF	Applied Research Associates : Tyndall AFB, FL	-	1.350	Dec 2015	4.500	Jan 2017	3.000	Jan 2018	0.000		3.000	Continuing	Continuing	-
Multiple UXO Removal (MURS) Robotics	C/CPFF	Applied Research Associates : Tyndall AFB, FL	-	2.810	Apr 2016	3.950	Dec 2016	3.000	Jan 2018	0.000		3.000	Continuing	Continuing	-
Rapid Airfield Damage Assessment System (RADAS) Integration	MIPR	TORC Robotics : Blacksburg, VA	-	7.214	Feb 2016	5.000	Dec 2016	3.000	Jan 2018	0.000		3.000	Continuing	Continuing	-
Airfield Protection	Various	AFCEC : Tyndal AFB, FL	-	0.150	Feb 2016	0.375	Feb 2017	5.000	Jan 2018	0.000		5.000	Continuing	Continuing	-
Airfield Protection - ERDC Efforts	MIPR	USERDC : Vicksburg, MS	-	7.460	Mar 2016	5.975	Jan 2017	0.000		0.000		0.000	Continuing	Continuing	-
Airfield Protection - Shelters	C/CPFF	Jacobs Technology : FL	-	3.510	Jan 2016	1.720	Jan 2017	0.000		0.000		0.000	Continuing	Continuing	-
Airfield Protection - WAFERS/Hardening	MIPR	NAVFAC EXWC : Port Hueneme, CA	-	3.880	Jun 2016	2.305	Feb 2017	0.000		0.000		0.000	Continuing	Continuing	-
BEAR	Various	AFCEC : Tyndall AFB, FL	-	6.500	Aug 2016	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	53.450		50.838		25.515		0.000		25.515	-	-	-

Remarks
\$77K increase to FY18 ADR due to inflation adjustment

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration (PMA)	Various	AFCEC : Tyndall AFB, FL	-	0.298	Jan 2016	0.325	Dec 2016	0.325	Nov 2017	0.000		0.325	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support				Project (Number/Name) 652895 / CE Readiness					
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	0.298		0.325		0.325		0.000		0.325	-	-	-
Remarks															
PMA includes travel and supplies to support CE Readiness RDT&E activities.															
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS Program Support RDT&E	C/FFP	Multiple : FL	-	0.964	Oct 2015	0.964	Jan 2017	0.964	Jan 2018	0.000		0.964	Continuing	Continuing	-
Subtotal			-	0.964		0.964		0.964		0.000		0.964	-	-	-
Remarks															
Advisory and Assistance Services (A&AS) contract support for the Life Cycle Management Center (LCMC) procurement of Expeditionary Small Airfield Protection (ESAP), Expeditionary Large Airfield Protection (ELAP), and WaFERS.															
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	54.712		52.127		26.804		0.000		26.804	-	-	-
Remarks															
NOTE: This is primarily a level of effort Program Element with multiple projects.															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity

3600 / 5

R-1 Program Element (Number/Name)

PE 0604617F / Agile Combat Support

Project (Number/Name)

652895 / CE Readiness

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ADR Command and Control Simulator																												
ADR Robotic Appliques Operational Utility Evaluation (OUE)																												
ADR Material Transfer Concept Activities, and Test and Evaluation																												
AM2 Matting (Lightweight/Autocad/Lay Pattern)																												
MOS Marking/Striping																												
Screed Development																												
ADR/2-Hr Crater Repair Performance																												
ADR/Large Crater Asphalt Repair																												
MURS - Wide Area Mechanical Blade UXO Clearance																												
RADAS Development, Test & Evaluation																												
RADBO Vehicle Operational Utility Assessment																												
RADBO Non-Recurring Engineering, Test & Evaluation																												
Airfield Protection (AP) Large/Small Sheltering Product Design, Development, Test and Evaluation																												
Airfield Protection (AP) Small Shelters Prototypes																												
AP Ultra-high Performance Concrete Model/ Materials																												
AP Guided Threats Protection Concept Activities																												
AP Guided Threats Protection Design and Development																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																				Date: May 2017								
Appropriation/Budget Activity 3600 / 5										R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support								Project (Number/Name) 652895 / CE Readiness										
	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Initiate new civil engineering projects for sustained airbase operations																												
AP Fuel Repair Design and Development																												

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

Date: May 2017

Appropriation/Budget Activity

3600 / 5

R-1 Program Element (Number/Name)

PE 0604617F / Agile Combat Support

Project (Number/Name)

652895 / CE Readiness

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ADR Command and Control Simulator	1	2016	4	2017
ADR Robotic Appliques Operational Utility Evaluation (OUE)	1	2016	4	2018
ADR Material Transfer Concept Activities, and Test and Evaluation	1	2016	3	2017
AM2 Matting (Lightweight/Autocad/Lay Pattern)	2	2016	1	2018
MOS Marking/Striping	3	2016	1	2018
Screed Development	1	2016	2	2017
ADR/2-Hr Crater Repair Performance	1	2016	4	2017
ADR/Large Crater Asphalt Repair	1	2016	4	2017
MURS - Wide Area Mechanical Blade UXO Clearance	1	2016	2	2018
RADAS Development, Test & Evaluation	1	2016	4	2018
RADBO Vehicle Operational Utility Assessment	1	2016	4	2016
RADBO Non-Recurring Engineering, Test & Evaluation	1	2017	2	2018
Airfield Protection (AP) Large/Small Sheltering Product Design, Development, Test and Evaluation	1	2016	1	2018
Airfield Protection (AP) Small Shelters Prototypes	2	2017	3	2019
AP Ultra-high Performance Concrete Model/Materials	1	2016	1	2018
AP Guided Threats Protection Concept Activities	1	2016	4	2017
AP Guided Threats Protection Design and Development	1	2018	4	2018
Initiate new civil engineering projects for sustained airbase operations	2	2018	1	2022
AP Fuel Repair Design and Development	1	2016	1	2018

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support				Project (Number/Name) 654910 / Aeromedical Readiness			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
654910: Aeromedical Readiness	-	1.466	1.553	4.436	0.000	4.436	1.611	1.641	1.669	1.704	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0604617F, project 654910, Aeromedical Equipment, is a new start.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Deployable Oxygen Generation System - Small (DOGS-S)	0.200	0.000	0.000	0.000	0.000
Description: This effort designs, develops, and engineers manufacturing capability for a portable oxygen generation system, which provides medical grade oxygen for Expeditionary Medical Systems (EMEDS) hospitals and mobile aeromedical staging facilities.					
FY 2016 Accomplishments: Transitioned program from EMD to Low Rate Initial Production with successful Milestone C decision.					
FY 2017 Plans: N/A					
FY 2018 Base Plans: N/A					
FY 2018 OCO Plans: N/A					
Title: Non-Invasive Warming and Cooling Device (NIWCD)	1.266	1.553	3.007	0.000	3.007
Description: Single device to provide therapeutic temperature control during treatment and movement of patient from point of injury through the continuum of care. The mortality in combat casualties with hypothermia is double that of normothermic casualties with similar injuries. Cooling the patient is required to treat hyperthermia.					
FY 2016 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Completed Source Selection, entered Engineering & Manufacturing Development (EMD) phase with Milestone B decision, conducted System Requirements Review, and Preliminary Design Review. FY 2017 Plans: Conduct Critical Design Review, Developmental Test Readiness Review and begin Developmental Test and Evaluation. FY 2018 Base Plans: Complete Critical Design Review, Developmental Test Readiness Review and Developmental Test and Evaluation. FY 2018 OCO Plans: N/A						
Title: Aeromedical Equipment Description: Procures and qualifies commercial-off-the shelf (COTS) medical and aeromedical products and/ or performs minor development efforts. Programs that are planned to be evaluated in FY18 include, but are not limited to, a Multi-channel Infusion Pump for expeditionary purposes (MCIP-E), Field Intravenous Reconstitution (FIVR) and Pilot Physiology and Cognitive Performance (P2CP). FY 2016 Accomplishments: N/A FY 2017 Plans: N/A FY 2018 Base Plans: Evaluate MCIP-E to enter EMD phase, conduct System Requirements Review, and Preliminary Design Review for the MCIP. Formulate and begin implementing an acquisition strategy for the Field Intravenous Reconstitution (FIVR) and Pilot Physiology and Cognitive Performance (P2CP) programs. FY 2018 OCO Plans: N/A		0.000	0.000	1.429	0.000	1.429
Accomplishments/Planned Programs Subtotals		1.466	1.553	4.436	0.000	4.436

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support				Project (Number/Name) 654910 / Aeromedical Readiness			

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• NA: NA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000

Remarks

D. Acquisition Strategy

Programs will consider a streamlined acquisition approach. Whenever practical, commercial items are tested and evaluated as candidates for providing solutions to user needs. This normally involves characterization, verification, and qualification testing to ensure commercial off-the-shelf equipment is properly evaluated to identify any capability gaps that may require minor modifications for military use.

E. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604618F I Joint Direct Attack Munition
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	9.901	0.000	0.000	0.000	15.906	0.000	8.001	0.000	0.000	33.808
653891: JDAM M-Code Integration	0.000	0.000	9.901	0.000	0.000	0.000	15.906	0.000	8.001	0.000	0.000	33.808
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

M-code and Enhanced Anti-Jam (EAJ) develops and integrates advanced precision, navigation, and timing (PNT) capabilities to provide the capability to operate in adversarial anti-access/area denial (A2/AD). M-Code with EAJ also provides increased accuracy, better signal acquisition, and advanced security.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	9.901	14.856	0.000	14.856
Current President's Budget	0.000	9.901	0.000	0.000	0.000
Total Adjustments	0.000	0.000	-14.856	0.000	-14.856
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-14.856	0.000	-14.856

Change Summary Explanation

FY2018 decrease \$14.856M ZBT to PE 0604201F, BPAC 641030, PEC GPS Receiver Development.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Title: M-Code/Enhanced Anti-Jam (EAJ)	-	9.901	-

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0604618F <i>I Joint Direct Attack Munition</i>						
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018	
Description: M-code and Enhanced Anti-Jam (EAJ) develops and integrates advanced precision, navigation, and timing (PNT) capabilities to provide the capability to operate in adversarial anti-access/area denial (A2/AD). M-Code with EAJ also provides increased accuracy, better signal acquisition, and advanced security. FY 2017 Plans: Develop M-Code with Enhanced Anti-Jam (EAJ) receiver.											
Accomplishments/Planned Programs Subtotals								-	9.901	-	
D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0604201F: <i>Integrated Avionics</i> <i>Planning and Development</i>	0.000	0.000	60.400	0.000	60.400	15.000	0.000	0.000	0.000	0.00	0.000
Remarks											
E. Acquisition Strategy M-code/EAJ effort will be under multiple contract awards.											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	7.904	7.520	9.060	0.000	9.060	8.987	8.689	18.841	19.046	Continuing	Continuing
65412A: Life Support Systems	-	7.904	7.520	9.060	0.000	9.060	8.987	8.689	18.841	19.046	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This program, BA 05 PE 0604706F, project 65412A, Next Generation Ejection Seat, is a new start.												
A. Mission Description and Budget Item Justification This program upgrades and fields 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, identifying and assessing existing products or developing new technology, and conducting required Safe-to-Fly 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/ballistic protective gear; aircraft seating; impact protection equipment; flotation devices; parachutes; ejection seats; and other aircrew/life support/airman combat 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Previous President's Budget				8.187	7.520	9.034	0.000	9.034				
Current President's Budget				7.904	7.520	9.060	0.000	9.060				
Total Adjustments				-0.283	0.000	0.026	0.000	0.026				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				-0.016	0.000							
• SBIR/STTR Transfer				-0.267	0.000							
• Other Adjustments				0.000	0.000	0.026	0.000	0.026				
Change Summary Explanation No Significant Changes												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604706F I Life Support Systems				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Aircrew Performance Studies/Technology Projects		1.975	2.595	4.335	-	4.335
Description: Air Force Life Cycle Management Center's Aircrew Performance Branch is the single USAF focal point for Aircrew Flight Equipment (AFE) Safe-to-Fly (STF) testing certification, addressing Safety Investigation Board (SIB) recommendations, along with studies and analysis. In addition, funding is for projects that are responses to real-time capability gaps identified by the warfighter which may be satisfied quickly by procuring and qualifying commercial-off-the-shelf (COTS) products and/or performing minor development efforts. Previous successful STF efforts may evolve into enduring capabilities as other users / MAJCOMs seek to incorporate these STF assets into their inventory. The Cold Weather Aviation System (CWAS), Aircrew Body Armor (ABA), BA-X Low Profile Parachute (LPP) and Nuclear Flash Blindness Goggles (NFBG) are currently the active STF programs within Life Support Systems (LSS). Funds may be used to address associated emerging requirements.						
FY 2016 Accomplishments: Started integration testing of CWAS AF Elements. Purchased LPP test assets and started integration testing. Partnered with AFRL to mature the current industry base of nuclear flash protection.						
FY 2017 Plans: Complete CWAS integration testing. Test Ballistic Aircrew Helmet and ABA improvements for reliability and acceptability for introduction to Air Force inventory. Perform STF testing and certification of COTS products. Address SIB recommendations. Formulate an acquisition strategy for next generation aircrew laser eye protection technology to address new and evolving threats and next generation peacetime radio technology to replace Vietnam Era PRC-90 radios.						
FY 2018 Base Plans: Perform STF testing and certification of COTS products. Continuation of test for Ballistic Aircrew Helmet and ABA improvements for reliability and acceptability for introduction to Air Force inventory. Address SIB recommendations. Formulate an acquisition strategy for next generation nuclear flash blindness technology. Continue the development efforts of aircrew laser eye protection (ALEP), radio modernization and improvement of parachute/flotation devices.						
Title: Integrated Aircrew Ensemble (IAE)		5.879	4.800	3.800	-	3.800
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						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604706F I Life Support Systems				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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 2016 Accomplishments: Started First Article Testing (FAT) of the finalized design of IAE and proved out the maturity of the production line. FY 2017 Plans: Start Low Rate Initial Production (LRIP) and begin Operational Testing FY 2018 Base Plans: Complete Low Rate Initial Production (LRIP) and Operational Testing. Begin modification planning for the IAE Rotary/Fixed Wing variant.						
Title: Advanced Concept Ejection Seat Description: Ejection Seat upgrade for B-2 FY 2016 Accomplishments: Started qualification testing of the ACES II SSIP. FY 2017 Plans: Continue qualification testing of the ACES II SSIP for B-2. FY 2018 Base Plans: Complete Qualification testing of the ACES II SSIP for B-2.		0.050	0.125	0.125	-	0.125
Title: Next Generation Ejection Seat Description: The new ejection seat escape system shall safely accommodate greater variation in aircrew minimum/maximum weights, a minimum aircrew sitting height of 31 inches, and the use of Helmet Mounted Displays. It shall reduce the risk of injuries to the arms and legs (especially limb flail), neck, and spinal column throughout the entire ejection event. FY 2016 Accomplishments:		0.000	0.000	0.800	-	0.800

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
FY 2017 Plans: N/A					
FY 2018 Base Plans: Award EMD contract to begin qualification testing of selected seat.					
Accomplishments/Planned Programs Subtotals	7.904	7.520	9.060	-	9.060

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF:BA04: Line Item # 842990: <i>Items Less Than \$5 Million</i> <i>(Safety and Rescue Equipment)</i>	61.106	25.499	27.084	8.469	35.553	30.205	28.553	25.131	157.672	Continuing	Continuing
Remarks											
E. Acquisition Strategy The majority of efforts funded in this project employ a streamlined acquisition approach. Whenever practical, Government-Off-The-Shelf/Commercial-Off-The-Shelf (GOTS/COTS) items are tested and evaluated as candidates for solutions to user needs. This normally involves characterization, verification, and qualification testing to ensure GOTS/COTS equipment is properly certified and adapted for military purposes. However, acquisition strategies may be carried out at the project level for traditional Engineering and Manufacturing Development (EMD), e.g., Integrated Aircrew Ensemble (IAE) and Aircrew Laser Eye Protection (ALEP) Block III.											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604735F I Combat Training Ranges							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	11.368	77.409	87.350	0.000	87.350	70.361	18.682	0.000	23.968	Continuing	Continuing
652286: Combat Training Range Equipment	-	11.368	77.409	87.350	0.000	87.350	70.361	18.682	0.000	23.968	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0604735F, project 652286, Advanced Radar Threat System (ARTS V3) Development, is a new start.
This program, BA 05 PE 0604735F, project 652286, Advanced Radar Threat System (ARTS V4) Development, is a new start.
In CY17 Digital Threat Relevancy was a new start.

A. Mission Description and Budget Item Justification

The Combat Training Range (CTR) program provides equipment and support to Air Force units and combat training ranges for electronic warfare (EW) 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 Air Combat Training Systems (ACTS), threat emitters, advanced radar threat systems, communication jammers, instrumentation equipment/systems, and evolutionary upgrades to facilitate standardization and integration across all platforms to include coalition and 5th Generation aircraft. The Advanced Radar Threat Systems (ARTS) programs develop, design, build and test threat system simulators based on advanced foreign fielded surface-to-air missile (SAM) radar threat systems. ARTS are designed to be used at Department of Defense (DoD) training ranges for 4th and 5th generation aircrew training and tactics development to increase combat effectiveness and aircrew survivability by training aircrews to engage or defend against an advanced SAM threat before encountering it in actual combat to stress their tactics, techniques and procedures. The ARTS-Variant 1 (ARTS-V1) is focused on long-range, re-locatable radar threat systems. ARTS Variant 2 (ARTS-V2) is focused on mobile, short/medium-range radar threat systems. ARTS-V3 will establish a long range, high power SAM radar simulator. ARTS-V4 will establish a highly mobile, tactical modern threat simulator. The ARTS program supports early research, studies, technology development, and planning for next generation threat systems that challenge the Air Force's asymmetric advantage. The ARTS programs also fund development of high fidelity surrogate targets matching simulated threat systems, to stress 5th generation sensor fusion capabilities. The Legacy Range Threat Systems Low Cost Mod (LRTSLCM) effort funds development of modifications for Legacy Range Threat Systems to provide continued threat relevancy and enhanced systems capabilities. Legacy Systems include the Multiple Threat Emitter System (MUTES), the Miniature Multiple Threat Emitter System (Mini-MUTES), the Modular Threat Emitter (MTE) system, the Tactical Radar Threat Generator (TRTG) system, the Band Simulator, and the Unmanned Modular Threat Emitter (UMTE) system, and legacy Joint Threat Emitter (JTE) systems. Enhancements focus on upgrading threat systems to match fielded modifications for foreign threat systems faced by combat aircrews. The Common Electronic Attack Receiver (CEAR) provides reactive training and enhanced debriefs using legacy threats. The Digital Threat Relevancy (DTR) effort is focused on upgrading the Band Simulator and other legacy emitters, with modern electronics to improve threat relevance and sustainability. The Double Digit Threat Emitter (DDTE) effort will leverage JTE to provide a lower cost EW simulator, enabling greater on-range threat density of advanced SAM radars. Lastly, this program funds ongoing analyses, studies, risk reduction efforts, and/or technology development to enhance range systems, such as combat training range equipment integration into a blended training (Live, Virtual, Constructive) architecture, communication and GPS jammers, weapon drop scoring systems and infrastructure networks. These enhancements add a critical dimension to exercises and optimize warfighter training.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604735F I Combat Training Ranges				
This program is in Budget Activity 5. Legacy/fielded portions (LRTSCM, JTE) of the portfolio are past Milestone C. The ARTS-V1 Program will enter at Milestone C, leveraging a Navy program's system development and demonstration. ARTS-V2 will pass Milestone B in FY17. ARTS-V3 and -V4 and DTR will enter at Milestone B.						
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		11.795	77.409	53.485	0.000	53.485
Current President's Budget		11.368	77.409	87.350	0.000	87.350
Total Adjustments		-0.427	0.000	33.865	0.000	33.865
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		-0.427	0.000			
• Other Adjustments		0.000	0.000	33.865	0.000	33.865
Change Summary Explanation						
FY2018 funding request was increased \$33.865 million to initiate development of a long range advanced radar threat system training simulator and to restructure the short/medium advanced radar threat system to be consistent with the current development schedule.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: P5 Combat Training System (CTS)				3.376	5.221	0.499
Description: P5 CTS funding supports Air Combat Training Systems (ACTS) capabilities and includes the development, integration and testing of future software/hardware upgrades, aircraft/pod integration, upgrades for range applications, and associated studies. Additionally, funding supports efforts to enable initial training interoperability with 5th Generation aircraft via Ground Subsystem (GS) decryption of secure (encrypted) Time, Space Position Information (TSPI), weapon simulation, and other training data.						
FY 2016 Accomplishments: Funding supported development, integration, and testing of software/hardware upgrades, aircraft/pod integration, and upgrades for range applications, and pod service life extension analysis and studies.						
FY 2017 Plans:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604735F <i>I Combat Training Ranges</i>		
C. Accomplishments/Planned Programs (\$ in Millions) P5CTS funding will support development, integration, and testing of ongoing and future software/hardware upgrades, aircraft/pod integration, and upgrades for range applications. Funding also supports pod capability development for operation in a GPS denied environment. FY 2018 Plans: P5 CTS funding will support development, integration and testing of future software/hardware upgrades, aircraft/pod integration, and upgrades for range applications.		FY 2016	FY 2017	FY 2018
Title: Legacy Range Threat Systems Description: The Legacy Range Threat Systems Low Cost Mod (LRTSLCM) effort develops, integrates, and tests modifications to extend the systems' service life through threat relevancy and enhanced systems capabilities. Legacy Systems include the Multiple Threat Emitter System (MUTES), the Miniature Multiple Threat Emitter System (Mini-MUTES), the Modular Threat Emitter (MTE) system, the Tactical Radar Threat Generator (TRTG) system, the Band Simulator, and the Unmanned Modular Threat Emitter (UMTE) system. It also covers legacy Joint Threat Emitter systems. The Common Electronic Attack Receiver (CEAR) modification enables radar threat emitters 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 recording of aircrew reactions for playback and debriefing. FY 2016 Accomplishments: N/A FY 2017 Plans: Funding will be used to integrate the current CEAR design onto the Mini-MUTES system while maintaining commonality with previously integrated platforms (JTE, UMTE). Funding will be used to study enhancements to legacy systems capable of providing advanced SAM threats through integration of COTS or previously developed technology into existing systems. FY 2018 Plans: Funding will be used to complete integration of the current CEAR design onto the Mini-MUTES system.		0.000	8.789	4.128
Title: Advanced Radar Threat Systems (ARTS V1) Development Description: Title: Advanced Radar Threat Systems (ARTS V1) Development Description: The Advanced Radar Threat System Variant 1 (ARTS-V1) program will develop, design, build and test threat system simulators based on advanced strategic, long-range, re-locatable foreign fielded surface-to-air missile (SAM) radar threat systems. ART-V1 will leverage an existing DoD test resource development program to reduce non-recurring development cost, schedule risk, and promote range interoperability between test and training. ARTS-V1 is designed to be used at Department of Defense (DoD) training ranges for aircrew training and tactics development to increase combat effectiveness and aircrew survivability by		5.000	11.000	14.050

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604735F <i>I Combat Training Ranges</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>training aircrews to engage or defend against an advanced SAM threat before encountering it in actual combat. Various aircraft platforms may train against ARTS-V1, but the most stringent requirements placed on ARTS-V1 design come from fifth generation aircraft capabilities. Additionally, development of a high-fidelity surrogate target, ongoing analyses, studies, and risk reduction efforts will focus on integrating ARTS and other systems into regional range and live-virtual-constructive architectures.</p> <p>FY 2016 Accomplishments: ARTS V1 and V2 were the same Major Thrust in the FY16 PB; but have been broken out to provide greater visibility. ARTS-V1 funding supported risk reduction, Milestone C preparation, Engineering and Manufacturing Development (EMD) contract award (as an option on the Navy Closed Loop PESA (Passive Electronic Scanned Array) Simulator (CLPS) contract), Production Representative Article (PRA) material and development, and all acquisition efforts required for development, integration, and testing of ARTS-V1. Additionally, funding supported ongoing analyses and studies focused on integrating ARTS and other systems into a regional range architecture with live-virtual-constructive capabilities.</p> <p>FY 2017 Plans: ARTS-V1 funding supports risk reduction, Milestone C preparation, contract award (CLPS option), Production Representative Article (PRA) material and development, and all acquisition efforts required for development, integration, and testing of ARTS-V1. Additionally, funding supports ongoing analyses and studies focused on integrating ARTS-V1 and other systems into regional range and a Live Virtual Constructive architectures.</p> <p>FY 2018 Plans: ARTS-V1 funding supports risk reduction, pre-solicitation for production contract, Milestone C preparation, Production Representative Article (PRA) development, and all acquisition efforts required for development, integration, and testing of ARTS-V1.</p>				
<p>Title: Advanced Radar Threat System (ARTS V2) Development</p> <p>Description: The Advanced Radar Threat System-Variant 2 (ARTS-V2) Program will develop, design, build and test a threat system simulator based on an advanced tactical, mobile, short/medium range foreign fielded surface-to-air missile (SAM) radar threat system. ARTS-V2 is designed to be used at Department of Defense (DoD) training ranges for aircrew training and tactics development to increase combat effectiveness and aircrew survivability by training aircrews to engage or defend against an advanced SAM threat before encountering it in actual combat. Various aircraft platforms may train against ARTS-V2, but the most stringent requirements placed on ARTS-V2 design come from fifth generation aircraft capabilities. Additionally, ongoing analyses, studies, and risk reduction efforts will focus on integrating ARTS-V2 and other systems into a Live Virtual Constructive architecture.</p> <p>FY 2016 Accomplishments:</p>		2.992	51.949	57.762

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604735F <i>I Combat Training Ranges</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
ARTS-V2 funding supported preparation for Milestone B, solicitation, and source selection through pre-contract award. Additionally, funding supported ongoing analyses and studies focused on integrating ARTS into a Live Virtual Constructive architecture. FY 2017 Plans: ARTS-V2 funding supports Milestone B and contract award. The contract is being awarded for Engineering and Manufacturing Development (EMD), to include development, integration and testing. Additionally funding is being used to support ongoing analyses and studies focused on integrating ARTS into regional range and a Live Virtual Constructive architectures. FY 2018 Plans: ARTS-V2 funding will be used to support continuation of the Engineering and Manufacturing Development (EMD) contract for Production Representative Article (PRA) development through programmatic and technical reviews and build of the PRA. Funding also will support integration and testing. Additionally funding will support ongoing analyses and studies focused on integrating ARTS into regional range and a Live Virtual Constructive architectures.				
Title: Advanced Radar Threat System (ARTS V3) Development Description: The Advanced Radar Threat System-Variant 3 (ARTS-V3) Program will develop, design, build and test an advanced surface-to-air threat simulation systems replicating current strategic/tactical threat (s) at the fidelity necessary to stress current EW systems, 5th and 6th generation air platform engagements and be integrated into a future CAF LVC system. ARTS-V3 will provide an A2/AD environment for CAF test and training with a highly reactive threat systems that provides immediate feedback to aircrews. The ART-V3 system will create a relevant combat training threat system that is dynamic and reconfigurable to represent a modern, dynamic adversary force. FY 2016 Accomplishments: N/A FY 2017 Plans: N/A FY 2018 Plans: ARTS-V3 funding will establish program foundation to include intelligence & requirements support, early research, studies, support technology maturation, and planning to support a milestone B decision. Funding will be used to support intelligence data to ensure emulation of the real world system is relevant and realistic.		0.000	0.000	4.911
Title: Advanced Radar Threat System (ARTS V4) Development Description: The Advanced Radar Threat System-Variant 4 (ARTS-V4) Program will develop, design, build and test a modern surface-to-air threat simulation system(s) replicating current tactical highly mobile threats at the fidelity necessary to stress current		0.000	0.000	4.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604735F <i>I Combat Training Ranges</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>EW systems, 5th and 6th generation air platform engagements and be integrated into a future CAF LVC system. ARTS-V4 will leverage an existing DoD training resource development program to reduce non-recurring development cost, schedule risk, and promote range interoperability between test and training. ARTS-V4 will provide an A2/AD environment for CAF test and training with a highly reactive threat systems that provides immediate feedback to aircrews. The ART-V4 system will create a relevant combat training threat system that is dynamic and reconfigurable to represent a dynamic adversary force.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: N/A</p> <p>FY 2018 Plans: ARTS-V4 funding will establish program foundation to include requirements, intelligence support, early research, studies, support technology maturation, and planning to support a milestone B decision. Funding will also be used to support intelligence data to ensure emulation of the real world system is relevant and realistic.</p>				
<p>Title: Digital Threat Relevancy</p> <p>Description: Digital Threat Relevancy will conduct RDT&E to modernize the Range Threat family of systems. Foreign fielded surface to air (SAM) threat systems have undergone major modernization programs to replace aging analog technology with modern digital electronics. This program requires the development of digital electronics upgrades to provide realistic electronic warfare training to combat aircrews. This effort will improve threat fidelity (ensuring threat faithful RF emissions), increase reliability, maintainability, supportability, system mobility, and support remote operations with Digital Integrated Air Defense Systems (DIADS). This effort supports warfighter development of new tactics, techniques, and procedures in a relevant, realistic combat environment.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: Digital Threat Relevancy funding will support preparation for Milestone B, solicitation, and source selection through pre-contract award to design and build a prototype of a Mobile MPS-T1 threat system, as a first step in upgrading aging threat systems to replicate modernized foreign threat systems. Efforts will focus on replacing analog technology with digital electronics in both the control and emitter subsystems of the MPS-T1 threat system. Additionally, funding will support ongoing analyses and studies</p>		0.000	0.450	2.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0604735F <i>I Combat Training Ranges</i>							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
focused on integrating MPS-T1 and other legacy emitters into a Live Virtual Constructive architecture and integration of COTS technology to upgrade to digital threat capabilities. FY 2018 Plans: Digital Threat Relevancy funding will support preparation for Milestone B, solicitation, and source selection through Engineering and Manufacturing Development (EMD) contract award to design and build a prototype of a Mobile MPS-T1 threat system, as a first step in upgrading aging threat systems to replicate modernized foreign threat systems. Efforts will focus on replacing analog technology with digital electronics in both the control and emitter subsystems of the MPS-T1 threat system. Funding will be used to study enhancements to legacy systems capable of providing advanced SAM threats through integration of COTS or previously developed technology into existing systems.												
Accomplishments/Planned Programs Subtotals										11.368	77.409	87.350
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• OPAF: BA03: Line Item #	28.106	34.850	115.198	0.000	115.198	152.630	244.174	201.495	215.380	Continuing	Continuing	
834190: <i>Combat Training Ranges</i>												
• OPAF: BA05: Line Item #	0.101	5.930	15.988	0.000	15.988	5.569	0.693	0.705	0.718	Continuing	Continuing	
861900: <i>Spares and Repair Parts</i>												
• APAF: BA07: Line Item #	0.000	1.662	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
000075: <i>Other Production Charges</i>												
• APAF: BA06: Line Item #	1.995	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
000999: <i>Initial Spares/Repair Parts</i>												
Remarks												
E. Acquisition Strategy												
The acquisition strategy is competition focused, with both cost plus and fixed price contracts.												
F. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604735F / Combat Training Ranges				Project (Number/Name) 652286 / Combat Training Range Equipment					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Radar Threat System Variant 3 (ARTS-V3) Development	MIPR	Various : Various	-	0.000		0.000		0.080	Dec 2017	0.000		0.080	Continuing	Continuing	-
Advanced Radar Threat System-Variant 1 (ARTS-V1) Development	Various	Various : Hill AFB, UT	-	4.580	Dec 2016	10.190	Mar 2017	14.015	Mar 2018	0.000		14.015	Continuing	Continuing	-
Advanced Radar Threat System-Variant 2 (ARTS-V2) Development	C/Various	Not specified. : HILL AFB, UT	-	2.017	Sep 2016	46.819	Apr 2017	57.563	Jun 2018	0.000		57.563	Continuing	Continuing	-
Advanced Radar Threat System-Variant4 4 (ARTS-V-4) Development	Various	Various : Hill AFTB, UT	-	0.000		0.000		0.500	May 2018	0.000		0.500	Continuing	Continuing	-
Legacy System Improvements	Various	Not specified. : Hill AFB, UT	-	0.000		7.370	May 2017	4.108	May 2018	0.000		4.108	Continuing	Continuing	-
JSF Encrypted Pass-Through Development (P5CTS)	Various	Various : Various	-	0.883	Oct 2016	1.000	Mar 2017	0.000		0.000		0.000	Continuing	Continuing	-
Future Block Upgrades (P5CTS)	Various	Various : Various	-	0.000		2.021	Jun 2017	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	7.480		67.400		76.266		0.000		76.266	-	-	
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AFLCMC/HBZC, Hill AFB (Direct Msn Support)	Various	Various : Various	-	0.350	Jun 2016	2.750	May 2017	8.446	May 2018	0.000		8.446	Continuing	Continuing	-
AFLCMC/EBYC, Eglin AFB - Direct Msn Spt	Various	TBD : TBD	-	1.692	Oct 2016	0.739	Mar 2017	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	2.042		3.489		8.446		0.000		8.446	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604735F / Combat Training Ranges				Project (Number/Name) 652286 / Combat Training Range Equipment					

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
P5CTS Flight Test, 46 Test Wing	Various	Eglin AFB : FL	-	0.000	Sep 2016	0.132	Mar 2017	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	0.000		0.132		0.000		0.000		0.000	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AFLCMC/HBZC, Hill AFB (PMA)	Various	Various : Hill AFB, UT	-	1.045	Sep 2016	5.059	May 2017	2.139	May 2018	0.000		2.139	Continuing	Continuing	-
AFLCMC/EBYC (PMA/ A&AS)	C/FFP	Jacobs/Oasis/ Odyssey : Eglin AFB, FL	-	0.801	Mar 2016	1.329	Mar 2017	0.499	Mar 2018	0.000		0.499	Continuing	Continuing	-
Subtotal			-	1.846		6.388		2.638		0.000		2.638	-	-	-

			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	11.368		77.409		87.350		0.000		87.350	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity

3600 / 5

R-1 Program Element (Number/Name)

PE 0604735F / Combat Training Ranges

Project (Number/Name)

652286 / Combat Training Range
Equipment

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
P5CTS Development																												
-- JSF Encrypted Pass-Through																												
-- Future Block Upgrades																												
JTE S/W Development																												
Advanced Radar Threat System Variant 1(ARTS-V1) EMD Phase																												
-- Develop First Article (PRA)																												
-- First Article Development Testing																												
-- Milestone C																												
Advanced Radar Threat System Variant 2 (ARTS-V2) EMD Phase																												
-- ARTS-V2 MilestoneB																												
-- ARTS-V2 Contract																												
-- ARTS-V2 PDR																												
-- ARTS-V2 CDR																												
-- ARTS-V2 DT-E and OT-E																												
-- ARTS-V2 Milestone C																												
Advanced Radar Threat System Variant 3 (ARTS-V3) EMD Phase																												
--ARTS-V3 Pre-milestone B Activities																												
-- ARTS-V3 Milestone B																												
-- ARTS-V3 EMD contract																												
Legacy RTS CEAR Development																												
-- CEAR Mini-MUTES Development and Integration																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																				Date: May 2017																	
Appropriation/Budget Activity 3600 / 5										R-1 Program Element (Number/Name) PE 0604735F / Combat Training Ranges								Project (Number/Name) 652286 / Combat Training Range Equipment																			
										FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Legacy RTS Digital Threat Relevance																																					
-- Pre-Development Analysis																																					
-- Control System Development																																					
-- Emitter System Development																																					
Advanced Radar Threat System Variant 4 (ARTS-V4) Pre-milestone B																																					
ARTS-V4 Milestone B																																					
ARTS-V4 Development																																					

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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	1	2016	4	2020
-- JSF Encrypted Pass-Through	1	2016	4	2017
-- Future Block Upgrades	3	2017	4	2020
JTE S/W Development	1	2016	3	2016
Advanced Radar Threat System Variant 1(ARTS-V1) EMD Phase	1	2017	4	2022
-- Develop First Article (PRA)	3	2017	4	2020
-- First Article Development Testing	3	2019	2	2020
-- Milestone C	3	2022	3	2022
Advanced Radar Threat System Variant 2 (ARTS-V2) EMD Phase	1	2016	4	2022
-- ARTS-V2 MilestoneB	3	2017	3	2017
-- ARTS-V2 Contract	3	2017	3	2017
-- ARTS-V2 PDR	3	2018	3	2018
-- ARTS-V2 CDR	2	2019	2	2019
-- ARTS-V2 DT-E and OT-E	3	2019	1	2021
-- ARTS-V2 Milestone C	1	2021	1	2021
Advanced Radar Threat System Variant 3 (ARTS-V3) EMD Phase	1	2018	4	2021
--ARTS-V3 Pre-milestone B Activities	1	2018	4	2020
-- ARTS-V3 Milestone B	4	2021	4	2021
-- ARTS-V3 EMD contract	4	2021	4	2021
Legacy RTS CEAR Development	1	2016	4	2019
-- CEAR Mini-MUTES Development and Integration	3	2018	4	2020
Legacy RTS Digital Threat Relevancy	2	2017	2	2020

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017	
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604735F / Combat Training Ranges		Project (Number/Name) 652286 / Combat Training Range Equipment
		Start		End
Events	Quarter	Year	Quarter	Year
-- Pre-Development Analysis	1	2016	3	2018
-- Control System Development	2	2017	4	2018
-- Emitter System Development	2	2019	2	2021
Advanced Radar Threat System Variant 4 (ARTS-V4) Pre-milestone B	1	2018	3	2020
ARTS-V4 Milestone B	3	2020	3	2020
ARTS-V4 Development	2	2021	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	21,111.851	575.932	450.467	292.947	0.000	292.947	69.655	7.796	5.598	0.000	0.000	22,514.246
653831: Joint Strike Fighter	21,036.317	497.031	403.505	255.745	0.000	255.745	69.655	7.796	5.598	0.000	0.000	22,275.647
653832: JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT	75.534	78.901	46.962	37.202	0.000	37.202	0.000	0.000	0.000	0.000	0.000	238.599
Program MDAP/MAIS Code: 198												
A. Mission Description and Budget Item Justification												
<p>The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the USN, USAF, USMC and allies. The three variants are the F-35A conventional takeoff and landing; F-35B short takeoff and vertical landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.</p> <p>The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, Norway, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.</p> <p>Funding at the accomplishment/planned program level is reported as the total of all services and partners as these activities support all aircraft variants.</p> <p>The System Development and Demonstration (SDD) budget funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USAF, and USMC use.</p> <p>FY07: 1 F-35A flight test article FY08: 1 F-35B flight test article; 1 F-35B ground test article FY09: 1 F-35B flight test article; 2 F-35A ground test articles FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C FY13: 1 F-35C flight test article</p> <p>BA05: This program is Budget Activity 5, System Development and Demonstration (SDD) because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 0604800F / F-35 - EMD			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	586.953	450.467	137.362	0.000	137.362
Current President's Budget	575.932	450.467	292.947	0.000	292.947
Total Adjustments	-11.021	0.000	155.585	0.000	155.585
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	9.999	0.000			
• SBIR/STTR Transfer	-21.020	0.000			
• Other Adjustments	0.000	0.000	155.585	0.000	155.585
Change Summary Explanation					
FY18 Increase reflects an extension to the SDD program along with internal F-35 realignments to fund the SDD and D&S efforts to completion.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
653831: Joint Strike Fighter	21,036.317	497.031	403.505	255.745	0.000	255.745	69.655	7.796	5.598	0.000	0.000	22,275.647
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Total cost including USN, USMC, International partner contributions and USAF funding are: FY2016 \$1,462.496M, FY2017 \$1,436.879M, and FY2018 \$527.873M. R-2 data reflects variant unique funding only.

R-2A (section B)/R-3 displays total combined program (i.e. not Service specific), including International partners.

F-35 EMD Includes:

USAF PE 0604800F BPAC 653831

USN PE 0604800N Project Unit 2261

USMC PE 0604800M Project Unit 2262

D&S Includes:

USAF PE 0604800F BPAC 653832

USN PE 0604800N Project Unit 3352

USMC PE 0604800M Project Unit 3350

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the USN, USAF, USMC and allies. The three variants are the F-35A conventional takeoff and landing; F-35B short takeoff and vertical landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, Norway, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.

Funding at the accomplishment/planned program level includes the total of all services and partners as these activities support all aircraft variants.

The System Development and Demonstration (SDD) budget funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USAF, and USMC use.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter				
FY07: 1 F-35A flight test article FY08: 1 F-35B flight test article; 1 F-35B ground test article FY09: 1 F-35B flight test article; 2 F-35A ground test articles FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C FY13: 1 F-35C flight test article						
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Title: System Development and Demonstration (SDD) (F-35 JSF)</p> <p>Description: 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.</p> <p>FY 2016 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 including modifications to Operational Testing. Activity aligned to Integrated Master Schedule (IMS) in accordance with variant Initial Operational Capability (IOC).</p> <p>FY 2017 Plans: Continue SDD execution of Air System Lockheed Martin, including International Commonality Effort which include, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC.</p> <p>FY 2018 Base Plans: Complete SDD execution of Air System Lockheed Martin, including International Commonality Effort which include, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC.</p>		850.841	925.860	331.783	-	331.783
<p>Title: F135 Propulsion System (F-35 JSF)</p> <p>Description: 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 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</p>		123.198	120.000	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
integrated test efforts including modifications to Operational Testing. Activity aligned to Integrated Master Schedule (IMS) in accordance with variant Initial Operational Capability (IOC).						
FY 2017 Plans: Complete SDD execution of the F135 Propulsion System with Pratt & Whitney that includes engine testing, autonomic logistics, integration and performing technology maturation efforts.						
FY 2018 Base Plans: N/A						
Title: Systems Engineering (SE) (F-35 JSF) Description: SDD SE including systems operations requirements analysis, program integration, requirements integration, and interoperability support. FY 2016 Accomplishments: Continued SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support. FY 2017 Plans: Continue SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support. FY 2018 Base Plans: Complete SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support.		24.844	28.181	0.911	-	0.911
Title: Development Test and Evaluation (DT&E) (F-35 JSF) Description: Government DT&E/Operational Testing (OT) in support of first flight of test aircraft. Elements of DT&E includes preparation for flight testing and weapons integration testing. FY 2016 Accomplishments: Continued government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL and CV variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing. FY 2017 Plans:		291.530	281.672	143.809	-	143.809

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing. FY 2018 Base Plans: Complete government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing.					
Title: Development Support (F-35 JSF) Description: SDD Support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. FY 2016 Accomplishments: Continued SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. FY 2017 Plans: Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. FY 2018 Base Plans: Complete SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities.	171.482	80.945	10.676	-	10.676
Title: Autonomic Logistics Information System (ALIS) Description: SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. FY 2016 Accomplishments: Continued SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support. FY 2017 Plans:	0.600	0.221	40.694	-	40.694

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017			
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Complete SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users.												
FY 2018 Base Plans: Continue SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users.												
Accomplishments/Planned Programs Subtotals							1,462.495	1,436.879	527.873	-	527.873	
Other Service Funding Adjustment							965.464	1,033.374	272.128	-	272.128	
Air Force Subtotals							497.031	403.505	255.745	-	255.745	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA05: PE 0604800F 3832: JSF Deployability and Suitability Enhancements, BPAC 653832	78.901	46.962	37.202	0.000	37.202	0.000	0.000	0.000	0.000	0.00	238.599	
• RDTE: BA07: PE 0207142F 5346: JSF Follow-on Development (FoD), BPAC 675346	47.023	127.302	299.408	0.000	299.408	463.321	474.971	396.488	263.548	Continuing	Continuing	
• RDTE: BA07: PE 0207142F 6011: Dual Capable Aircraft (DCA), BPAC 676011	4.967	25.743	35.122	0.000	35.122	47.016	49.026	67.040	62.599	Continuing	Continuing	
• APAF: BA01: Line Item # ATA000 AP: JSF CTOL Advance Procurement, PE 0207142F, BP10 AP	460.260	404.500	780.300	0.000	780.300	405.200	1,003.600	965.300	414.700	13,451.541	20,181.883	
• APAF: BA01: Line Item # ATA000: JSF CTOL, PE 0207142F, BP10	5,259.812	4,997.394	4,544.684	0.000	4,544.684	4,253.696	4,209.813	4,862.684	4,796.042	144,128.756	198,657.199	
• APAF: BA06: Line Item # F03500 BP16: JSF Initial Spares, PE 0207142F, BP16	229.582	362.792	320.831	0.000	320.831	319.151	416.722	399.361	394.654	3,893.112	7,567.519	

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017		
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)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APAF: BA05: Line Item # F03500 BP11: JSF Modifications, PE 0207142F, BP11	70.167	175.811	68.270	0.000	68.270	230.448	279.814	259.978	301.899	Continuing	Continuing
• USAF OM: Operations and Maintenance	312.557	425.978	452.906	0.000	452.906	555.687	873.270	998.979	958.708	Continuing	Continuing
• OPAF: BA01: Line Item # 821800: Joint Strike Fighter, PE 0207142F	3.858	2.333	3.326	0.000	3.326	3.310	2.993	2.463	2.507	Continuing	Continuing
• MILCON: BA01: PE 0207142F: USAF JSF Military Construction Operations	132.850	305.700	80.000	0.000	80.000	27.500	0.000	0.000	0.000	1,312.100	2,511.350
• MILCON: BA01: PE 0207597F: USAF JSF Military Construction Training	65.400	20.000	21.000	0.000	21.000	34.000	15.900	0.000	0.000	0.00	156.300
• MILCON: BA01: PE 0502635F: USAF JSF Military Construction Air National Guard	0.000	15.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	15.100
• RD TEN: BA05: PE 0604800N 2261: JSF SDD (CV)	453.036	504.296	103.144	0.000	103.144	61.179	1.637	0.454	0.467	0.00	48,627.350
• RD TEN: BA05: PE 0604800N 3352: F-35C Sustainment/ Capability Enhancements (CV)	35.666	24.420	5.787	0.000	5.787	4.995	0.000	0.000	0.000	0.00	108.345
• RD TEN: BA05: PE 0604810N 2936: F-35C Follow-on Development (CV), BPAC 2936	20.544	63.387	139.942	0.000	139.942	224.712	228.707	188.678	120.192	Continuing	Continuing
• APN: BA01: Line Item # 0147: JSF (CV), PE 0204146N	1,033.142	890.650	582.324	0.000	582.324	1,105.952	1,805.276	2,582.852	2,730.285	27,953.966	50,644.344
• APN: BA01: Line Item # 0147 AP: JSF (CV) AP, PE 0204146N	48.630	80.908	263.112	0.000	263.112	144.282	252.453	262.416	267.646	2,417.943	5,140.935
• APN: BA06: Line Item # 0605 USN: Initial Spares (CV), PE 0204146N	59.914	26.076	84.591	0.000	84.591	44.971	52.858	303.608	309.680	Continuing	Continuing
• APN: BA05: Line Item # 0593: Modifications (CV), PE 0204146N	48.527	26.004	31.689	0.000	31.689	22.344	14.155	13.404	13.672	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017		
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)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN BA03:: ALIS Ship ALTS Installs	1.924	0.329	2.024	0.000	2.024	1.890	1.933	1.972	0.986	0.00	15,035.000
• OPN BA03: Spares for Aviation Support Equipment	2.946	0.881	2.297	0.000	2.297	2.321	0.139	1.977	0.000	Continuing	Continuing
• RDTEN: BA05: PE 0604800M 2262: JSF SDD (STOVL)	495.428	507.078	141.534	0.000	141.534	55.952	1.727	0.547	0.564	0.000	3,874.211
• RDTEN: BA05: PE 0604800M 3350: F-35B Sustainment/ Capability Enhancements (STOVL), BPAC 3350	30.819	24.348	11.400	0.000	11.400	0.000	0.000	0.000	0.000	0.00	99.115
• RDTEN: BA05: PE 0604810M 2935: F-35B Follow-on Development (STOVL), BPAC 2935	20.157	74.227	144.958	0.000	144.958	226.310	230.383	190.442	123.531	Continuing	Continuing
• APN: BA01: Line Item # 0152C: JSF Advance Procurement (STOVL), PE 0204146M	203.060	233.648	413.450	0.000	413.450	228.492	231.802	220.822	222.245	1,959.119	4,802.154
• APN: BA01: Line Item # 0152: JSF (STOVL), PE 0204146M	2,147.714	2,040.681	2,398.139	0.000	2,398.139	2,338.179	2,404.257	2,585.039	2,600.750	20,548.402	42,209.667
• APN: BA06: Line Item # 0605 USMC: Initial Spares (STOVL), PE 0204146M	111.569	123.252	105.671	0.000	105.671	92.198	160.150	140.989	143.809	Continuing	Continuing
• APN: BA05: Line Item # 0592: Modifications (STOVL), PE 0204146M	204.464	34.928	34.963	0.000	34.963	70.305	67.039	79.174	80.761	Continuing	Continuing
• OPN/4268: Logistics Information System (ALIS)	48.773	39.099	34.032	29.245	63.277	32.742	46.073	47.389	62.299	Continuing	Continuing
• DoN MILCON: USN/ USMC MILCON	94.420	230.900	64.666	0.000	64.666	121.990	119.800	0.000	0.000	642.400	1,406.074
• International 1: International SDD	17.000	22.000	27.450	0.000	27.450	0.000	0.000	0.000	0.000	0.00	5,013.463
• International 2: International Production	189.922	185.641	124.114	0.000	124.114	151.776	150.588	149.848	87.119	Continuing	Continuing
• International 3: International FoD	83.595	84.602	158.273	0.000	158.273	159.649	162.023	167.383	160.111	Continuing	Continuing

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• International 4: <i>International Unique (SDD/PSFD)</i>	38.438	32.374	15.566	0.000	15.566	0.000	0.000	0.000	0.000	0.00	482.417

Remarks

This is a joint program with no executive service. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Navy. Program Element 0604800N/0604800M continues USN development efforts budgeted in 0603800N prior to FY2002. The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, and Norway are participants in the SDD phase of JSF.

Note: The USAF/USN/USMC procurement lines include Aircraft Procurement and Advanced Procurement only. Initial Spares and Repair Parts for all Services are reflected in separate lines. International Partner Funding also includes funds provided under the Italy and Netherlands Bilateral agreements.

RELATED RDT&E: Funding prior to JSF SDD (FY94-FY01): USN PE 0603800N \$1,950,617; USAF PE 0603800F \$1,907,352; DARPA PE 0603800E \$118,056; and International Partner contributions of \$253,921 for a total of \$4,229,946.

D. Acquisition Strategy

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 procurement 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.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter

Multiple-year, fixed-price-type Performance Based Logistics contracts for sustainment will be requested to support multi-Service and multi-national requirements.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Lockheed Martin - SDD	SS/CPIF	Lockheed Martin : Ft. Worth, TX	30,424.313	795.482	Dec 2015	774.642	Dec 2016	274.720	Dec 2017	0.000		274.720	170.619	32,439.776	32,439.776
Lockheed Martin - SDD Fee	SS/CPIF	Lockheed Martin : Ft. Worth, TX	1,709.429	17.830	Dec 2015	11.430	Dec 2016	35.000	Dec 2017	0.000		35.000	2.500	1,776.189	1,776.189
Lockheed Martin -0031	SS/CPFF	Lockheed Martin : Ft. Worth, TX	0.337	0.000		0.506	Dec 2016	0.169	Dec 2017	0.000		0.169	0.000	1.012	1.012
Lockheed Martin - BOA 0020	SS/CPFF	Lockheed Martin : Ft. Worth, TX	45.120	36.718	Dec 2015	139.281	Dec 2016	21.893	Dec 2017	0.000		21.893	0.000	243.012	243.012
Lockheed Martin - BOA 0016	SS/CPFF	Lockheed Martin : Ft. Worth, TX	15.045	0.811	Dec 2015	0.000		0.000		0.000		0.000	0.000	15.856	15.856
Pratt & Whitney - SDD	SS/CPIF	Pratt & Whitney : Hartford, CT	7,180.563	115.765	Dec 2015	105.448	Dec 2016	0.000		0.000		0.000	0.000	7,401.776	7,401.776
Pratt & Whitney - Fee	SS/CPIF	Pratt & Whitney : Hartford, CT	670.213	7.433	Dec 2015	14.552	Dec 2016	0.000		0.000		0.000	0.000	692.198	692.198
Systems Engineering	Various	Various : Various	414.111	21.260	Nov 2015	23.577	Nov 2016	0.911	Dec 2017	0.000		0.911	0.000	459.859	459.859
Prime LM 02-C-3002 ALIS	SS/CPAF	LM : Ft Worth, TX	461.717	0.600	Dec 2015	0.221	Dec 2016	40.694	Dec 2017	0.000		40.694	27.400	530.632	530.632
Prior Year not funded in FYDP	Various	Various : Various	2,893.266	0.000		0.000		0.000		0.000		0.000	0.000	2,893.266	2,893.266
Subtotal			43,814.114	995.899		1,069.657		373.387		0.000		373.387	200.519	46,453.576	46,453.576

Remarks

Contract type prior to 2013 was CPAF.
Cumulative Award Fee earned in prior years for Lockheed Martin is 86%.
Cumulative Award Fee earned in prior years for Pratt and Whitney is 94%.

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AFFTC/Eglin	Various	Various : Various	133.721	5.205	Nov 2015	1.834	Nov 2016	0.830	Nov 2017	0.000		0.830	0.000	141.590	141.590
AFLCMC/AFRL	Various	AFLCMC/AFRL : Various	65.104	10.725	Nov 2015	3.133	Nov 2016	0.000		0.000		0.000	0.000	78.962	78.962
AFTOC/Fuel	Various	Various : Various	191.102	8.845	Nov 2015	3.771	Nov 2016	0.000		0.000		0.000	0.000	203.718	203.718

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Miscellaneous	Various	Various : Various	110.915	12.601	Nov 2015	12.356	Nov 2016	2.927	Nov 2017	0.000		2.927	0.764	139.563	139.563
NAWC China Lake	Various	NAWC WD : China Lake, CA	152.642	10.533	Nov 2015	4.312	Nov 2016	0.000		0.000		0.000	0.000	167.487	167.487
NAWC Patuxent River	Various	NAWC AD : Patuxent River, MD	406.999	98.485	Nov 2015	41.726	Nov 2016	6.913	Nov 2017	0.000		6.913	0.000	554.123	554.123
Prior Year no longer funded in FYDP	Various	Various : Various	77.641	0.000		0.000		0.000		0.000		0.000	0.000	77.641	77.641
Subtotal			1,138.124	146.394		67.132		10.670		0.000		10.670	0.764	1,363.084	1,363.084
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NAWC China Lake	Various	NAWC WD : China Lake, CA	38.905	1.640	Nov 2015	2.712	Nov 2016	0.000		0.000		0.000	0.000	43.257	-
Development Test and Evaluation	Various	NAWC AD : Patuxent River, MD	668.838	83.330	Nov 2015	54.944	Nov 2016	4.400	Oct 2017	0.000		4.400	0.000	811.512	-
Edwards AFB	Various	Edwards AFB : Edwards AFB, CA	618.609	65.334	Nov 2015	54.976	Nov 2016	4.400	Nov 2017	0.000		4.400	0.000	743.319	-
Other (including Classified PIDs)	Various	Various : Various	204.506	36.766	Dec 2015	30.602	Nov 2016	2.400	Nov 2017	0.000		2.400	0.000	274.274	-
WEPS/Eglin	Various	WEPS : Eglin AFB, FL	27.829	0.000		0.000		0.000		0.000		0.000	0.000	27.829	-
OT - AFOTEC/AFFTC	Various	OT AFOTEC/ AFFTC : Various	179.619	24.926	Nov 2015	35.436	Nov 2016	41.976	Nov 2017	0.000		41.976	2.150	284.107	-
OT - JITC/OPTEV	Various	OT JITC/OPTEV : Various	36.435	24.808	Nov 2015	42.956	Nov 2016	71.886	Nov 2017	0.000		71.886	2.143	178.228	-
OT CHLK	Various	NAWC WD : China Lake, CA	0.000	3.999	Nov 2015	9.912	Nov 2016	15.392		0.000		15.392	0.000	29.303	-
OT - Various	Various	Various : Various	0.105	7.718	Nov 2015	2.775	Nov 2016	3.274	Nov 2017	0.000		3.274	0.000	13.872	-
Subtotal			1,774.846	248.521		234.313		143.728		0.000		143.728	4.293	2,405.701	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Security - System High BOS	C/FP	System High : Arlington, VA	0.000	7.845	Nov 2015	8.037	Nov 2016	0.000		0.000		0.000	0.000	15.882	-
AFLCMC Civilian Pay	Various	AFLCMC : Wright Patterson AFB, OH	94.833	25.478	Oct 2015	10.270	Oct 2016	0.000		0.000		0.000	0.000	130.581	130.581
OPS-Jacobs BOSS	Various	TBD : Arlington, VA	26.070	6.702	Dec 2015	9.013	Dec 2016	0.000		0.000		0.000	0.000	41.785	75.126
OPS- Allutiq/E3	C/CPAF	TBD : Arlington, VA	1.934	0.279	Dec 2015	0.192	Dec 2016	0.000		0.000		0.000	0.000	2.405	2.405
OPS - Cost/FM/EV	Various	TBD : Arlington, VA	2.000	0.000		3.845	Dec 2016	0.000		0.000		0.000	0.000	5.845	5.845
Andrews AFB	Various	TBD : Camp Springs, MD	0.242	0.116	Dec 2015	0.135	Dec 2016	0.000		0.000		0.000	0.000	0.493	0.493
Program Management Support - BOS	C/CPFF	Jacobs : Arlington, VA	26.012	24.428	Dec 2015	24.686	Dec 2016	0.000		0.000		0.000	0.000	75.126	41.785
CIO ODCs	C/CPAF	Various : Various	9.058	3.963	Dec 2015	7.256	Dec 2016	0.000		0.000		0.000	0.000	20.277	20.277
Travel	C/CPAF	Various : Various	21.959	2.870	Oct 2015	2.343	Oct 2016	0.088	Dec 2017	0.000		0.088	0.000	27.260	27.261
Prior Year not funded in FYDP	Various	Various : Various	593.944	0.000		0.000		0.000		0.000		0.000	0.000	593.944	593.944
Subtotal			776.052	71.681		65.777		0.088		0.000		0.088	0.000	913.598	-
Remarks															
Cumulative Award Fee earned in prior years for Stanley is 99%.															
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals			47,503.136	1,462.495		1,436.879		527.873		0.000		527.873	205.576	51,135.959	-
Other Service Funding Adjustment			26,466.819	965.464		1,033.374		272.128		-		272.128	122.527	28,860.312	-
Project Cost Totals			21,036.317	497.031		403.505		255.745		0.000		255.745	83.049	22,275.647	-
Remarks															
The project information shown here reflects USN, USMC, USAF and International Partner funding total for each contract. By agreement USN and USMC funding shares are approximately equal and when combined are equal to the USAF share.															
NOTE 1: Prior Years reflect \$21,025.899M USAF/\$18,858.842M USN/\$2,671.382M USMC /\$4,947.013M International/Total \$47,503.136															

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force							Date: May 2017			
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
FY 2016 reflects \$497.031M USAF/\$453.037M USN/\$495.428M USMC/\$17.000M International/Total \$1,462.496M										
FY 2017 reflects \$403.505M USAF/\$504.296M USN/\$507.078M USMC/\$22.000M International/Total \$1,436.879M										
FY 2018 reflects \$255.745 USAF/\$103.144M USN/\$141.534 USMC/\$27.450 International/Total \$527.873M										
JSF EMD Includes: USAF PE 0604800F BPAC 653831 USN PE 0604800N Project Unit 2261 USMC PE 0604800M Project Unit 2262										
D&S Includes: USAF PE 0604800F BPAC 653832 USN PE 0604800N Project Unit 3352 USMC PE 0604800M Project Unit 3350										

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones: F-35C Initial Operational Capability																												
Test & Evaluation: Test and Evaluation: Block 3F DT&E/Cert																												
Test & Evaluation: Test and Evaluation: Initial Operational Test and Evaluation (IOT&E)																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY16																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY17																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY18																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY19																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY20																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY21																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 8 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 9 Full Funding / Production / Delivery																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity

3600 / 5

R-1 Program Element (Number/Name)

PE 0604800F / F-35 - EMD

Project (Number/Name)

653831 / Joint Strike Fighter

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 10 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 11 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 12 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 13 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 14 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 15 Full Funding / Production / Delivery																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Acquisition Milestones: F-35C Initial Operational Capability	4	2018	4	2018
Test & Evaluation: Test and Evaluation: Block 3F DT&E/Cert	1	2016	3	2018
Test & Evaluation: Test and Evaluation: Initial Operational Test and Evaluation (IOT&E)	2	2018	1	2020
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY16	4	2016	4	2016
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY17	4	2017	4	2017
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY18	4	2018	4	2018
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY19	4	2019	4	2019
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY20	4	2020	4	2020
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY21	4	2021	4	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 8 Full Funding / Production / Delivery	1	2016	1	2017
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 9 Full Funding / Production / Delivery	4	2016	1	2018
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 10 Full Funding / Production / Delivery	4	2016	1	2019
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 11 Full Funding / Production / Delivery	2	2017	1	2020
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 12 Full Funding / Production / Delivery	2	2018	1	2021

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017	
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604800F / <i>F-35 - EMD</i>		Project (Number/Name) 653831 / <i>Joint Strike Fighter</i>

Events	Start		End	
	Quarter	Year	Quarter	Year
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 13 Full Funding / Production / Delivery	2	2019	4	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 14 Full Funding / Production / Delivery	2	2020	4	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 15 Full Funding / Production / Delivery	2	2021	4	2022

Note

Schedule details reflect fiscal years

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
653832: JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT	75.534	78.901	46.962	37.202	0.000	37.202	0.000	0.000	0.000	0.000	0.000	238.599
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Total cost including United States Navy (USN), United States Marine Corps (USMC), United States Air Force (USAF) funding and International Partner contributions to D&S is: FY2016 \$184.378M, FY2017 \$108.761M, and FY2018 \$61.770M

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

D&S Includes:

USAF PE 0604800F BPAC 653832

USN PE 0604800N Project Unit 3352

USMC PE 0604800M Project Unit 3350

A. Mission Description and Budget Item Justification

Funds enhancements to the Deployability and Suitability (D&S) of the air system such as low observable (LO) maintenance enhancements, security architecture updates, redesign of obsolete items and integrated training simulators. These enhancements will provide vital on-demand support to the warfighter within a deployed environment and are not funded via the existing System Development and Demonstration (SDD) program or tied to Block 4 Operational Flight Program development. Funding will result in achieving targeted suitability, maintainability, and affordability returns employing the F-35 in deployed or austere locations.

Funding at the accomplishment/planned program level is reported as the total of all services as these activities support all aircraft variants. By agreement, USN and USMC funding shares are approximately equal and when combined are equal to the USAF share.

BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Sustainment and Capability Enhancements (F-35 JSF)	118.070	64.044	26.030	-	26.030

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017			
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: Apply disciplined systems engineering, refinement of requirements, develop and acquire suitability and maintainability of the air system such as decentralized maintenance capabilities, LO maintenance enhancements, security architecture updates, redesign of obsolete items and integrated training simulators.</p> <p>FY 2016 Accomplishments: Continued to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts.</p> <p>FY 2017 Plans: Continue to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts.</p> <p>FY 2018 Base Plans: Complete conducting systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts.</p>							
<p>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 2016 Accomplishments: Continued 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</p>			16.592	4.040	1.000	-	1.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017				
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. FY 2017 Plans: Complete SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between both services. FY 2018 Base Plans: Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between all services.								
Title: Development Test and Evaluation Description: Verification and testing for deployability and suitability enhancements. FY 2016 Accomplishments: Continued to initiate government test and evaluaton of capability enhancements for Deployable Autonomic Logistics Information System, and LO maintenance enhancements. FY 2017 Plans: Complete government test and evaluaton of capability enhancements for Deployable Autonomic Logistics Information System, and LO maintenance enhancements. FY 2018 Base Plans: Continue to initiate government test and evaluation of capability enhancements for Deployable Autonomic Logistics Information System and LO maintenance enhancements.				1.609	0.976	0.500	-	0.500
Title: Autonomic Logistics Information System Description: SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. FY 2016 Accomplishments:				48.107	39.701	33.740	-	33.740

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Executed Autonomic Logistics Information System (ALIS) development of the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users.											
FY 2017 Plans: SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users.											
FY 2018 Base Plans: Complete SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users.											
Accomplishments/Planned Programs Subtotals							184.378	108.761	61.270	-	61.270
Other Service Funding Adjustment							105.477	61.799	24.068	-	24.068
Air Force Subtotals							78.901	46.962	37.202	-	37.202
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA05: PE 0604800F 3831: JSF SDD, BPAC 653831	497.031	403.505	255.745	0.000	255.745	69.655	7.796	5.598	122.000	0.00	22,265.228
• RDTE: BA07: PE 0207142F 5346: JSF Follow-on Development (FoD), BPAC 675346	47.023	127.302	299.408	0.000	299.408	463.621	474.971	396.488	263.548	Continuing	Continuing
• RDTE: BA07: PE 0207142F 6011: Dual Capable Aircraft (DCA), BPAC 676011	4.967	25.743	35.122	0.000	35.122	47.016	49.026	67.040	62.599	Continuing	Continuing
• APAF: BA01: Line Item # ATA000 AP: JSF CTOL Advance Procurement, PE 0207142F, BP10 AP	460.260	404.500	780.300	0.000	780.300	405.200	1,003.600	965.300	414.700	13,451.547	20,181.883
• APAF: BA01: Line Item # ATA000: JSF CTOL, PE 0207142F, BP10	5,259.812	4,997.394	4,544.684	0.000	4,544.684	4,253.696	4,209.813	4,862.684	4,796.042	144,128.756	198,657.199

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APAF: BA06: Line Item # F03500 BP16: JSF Initial Spares, PE 0207142F, BP16	229.582	362.792	320.831	0.000	320.831	319.151	416.722	399.361	394.654	3,893.112	7,567.519
• APAF: BA05: Line Item # F03500 BP11: JSF Modifications, PE 0207142F, BP11	70.167	175.811	68.270	0.000	68.270	230.448	279.814	259.978	301.899	Continuing	Continuing
• USAF OM: Operations and Maintenance	312.557	425.978	452.906	0.000	452.906	555.687	873.270	998.979	958.708	Continuing	Continuing
• OPAF: BA01: Line Item # 821800: Joint Strike Fighter, PE 0207142F	3.858	2.333	3.326	0.000	3.326	3.310	2.993	2.463	2.507	Continuing	Continuing
• MILCON: BA01: PE 0207142F: USAF JSF Military Construction Operations	132.850	305.700	80.000	0.000	80.000	27.500	0.000	0.000	0.000	1,312.100	2,511.350
• MILCON: BA01: PE 0207597F: USAF JSF Military Construction Training	65.400	20.000	21.000	0.000	21.000	34.000	15.900	0.000	0.000	0.00	156.300
• MILCON: BA01: PE 0502635F: USAF JSF Military Construction Air National Guard	0.000	15.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	15.100
• RD TEN: BA05: PE 0604800N 2261: JSF SDD (CV)	453.037	504.296	103.144	0.000	103.144	61.179	1.637	0.454	0.467	0.00	19,983.056
• RD TEN: BA05: PE 0604800N 3352: F-35C Sustainment/ Capability Enhancements (CV)	35.666	24.420	5.787	0.000	5.787	4.995	0.000	0.000	0.000	0.00	108.345
• RD TEN: BA05: PE 0604810N 2936: F-35C Follow-on Development (CV), BPAC 2936	20.544	63.387	139.942	0.000	139.942	224.712	228.707	188.678	120.378	Continuing	Continuing
• APN: BA01: Line Item # 0147C: JSF Advance Procurement (CV), PE 0204146N	48.630	80.908	263.112	0.000	263.112	144.282	252.453	262.416	267.146	2,147.943	5,140.935
• APN: BA01: Line Item # 0147: JSF (CV), PE 0204146N	1,033.142	890.650	582.324	0.000	582.324	1,105.952	1,805.276	2,582.852	2,730.285	27,953.966	55,785.279

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force									Date: May 2017			
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• APN: BA06: Line Item # 0605 USN: <i>Initial Spares (CV), PE 0204146N</i>	59.914	26.076	84.591	0.000	84.591	44.971	52.858	303.608	309.680	Continuing	Continuing	
• APN: BA05: Line Item # 0593: <i>Modifications (CV), PE 0204146N</i>	48.527	26.004	31.689	0.000	31.689	22.344	14.155	13.404	13.672	Continuing	Continuing	
• OPN: BA03: Line Item # 4268: <i>JSF Aviation Support Equipment ALIS Ship Alts</i>	48.773	39.099	34.032	29.245	63.277	37.742	46.019	47.389	62.299	Continuing	Continuing	
• OPN BA03:: <i>Spares for Aviation Support Equipment</i>	2.946	0.881	2.297	0.000	2.297	2.321	0.139	1.977	0.000	Continuing	Continuing	
• USN OM: <i>Operations and Maintenance</i>	78.529	120.648	207.302	0.000	207.302	211.332	236.682	281.622	327.009	Continuing	Continuing	
• DoN MILCON: <i>USN/USMC JSF Military Construction</i>	94.420	203.900	64.660	0.000	64.660	121.990	119.800	0.000	0.000	642.400	1,406.074	
• RDTEN: BA05: PE 0604800M 2262: <i>JSF SDD (STOVL)</i>	495.428	507.078	141.534	0.000	141.534	55.952	1.727	0.547	0.564	0.00	3,874.211	
• RDTEN: BA05: PE 0604800M 3350: <i>F-35B Sustainment/ Capability Enhancements (STOVL), BPAC 3350</i>	30.819	24.348	11.400	0.000	11.400	0.000	0.000	0.000	0.000	0.00	99.115	
• RDTEN: BA05: PE 0604810M 2935: <i>F-35B Follow-on Development (STOVL), BPAC 2935</i>	20.544	63.387	139.942	0.000	139.942	224.712	228.707	188.678	120.192	Continuing	Continuing	
• APN: BA01: Line Item # 0152C: <i>JSF Advance Procurement (STOVL), PE 0204146M</i>	203.060	233.648	413.450	0.000	413.450	228.492	231.802	220.822	225.245	1,959.119	4,802.154	
• APN: BA01: Line Item # 0152: <i>JSF (STOVL), PE 0204146M</i>	2,147.714	2,040.681	2,398.139	0.000	2,398.139	2,338.179	2,404.257	2,585.039	2,600.750	20,548.402	42,209.667	
• APN: BA06: Line Item # 0605 USMC: <i>Initial Spares (STOVL), PE 0204146M</i>	111.569	123.252	105.671	0.000	105.671	92.198	160.150	140.989	143.809	Continuing	Continuing	

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
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 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APN: BA05: Line Item # 0592: <i>Modifications</i> (<i>STOVL</i>), <i>PE 0204146M</i>	204.464	34.928	34.963	0.000	34.963	70.305	67.039	79.174	80.761	Continuing	Continuing
• USMC OM: <i>Operations</i> <i>and Maintenance</i>	184.171	233.576	315.630	0.000	315.630	375.578	412.813	470.490	544.031	Continuing	Continuing
• International 1: <i>International SDD</i>	17.000	22.000	27.450	0.000	27.450	0.000	0.000	0.000	0.000	0.00	5,013.463
• International 2: <i>International Production</i>	189.922	185.641	124.114	0.000	124.114	151.776	150.588	149.848	87.113	Continuing	Continuing
• International 3: <i>International FoD</i>	83.595	84.602	158.273	0.000	158.273	159.649	162.023	167.383	160.111	Continuing	Continuing
• International 4: <i>International</i> <i>Unique (SDD/PSFD)</i>	38.483	32.374	15.566	0.000	15.566	22.812	29.409	5.357	0.000	0.00	482.417

Remarks

This is a joint program with no executive service. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Navy. Program Element 0604800N/0604800M continues USN development efforts budgeted in 0603800N prior to FY2002. The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, and Norway are participants in the SDD phase of JSF.

Note: The USAF/USN/USMC procurement lines include Aircraft Procurement and Advanced Procurement only. Initial Spares and Repair Parts for all Services are reflected in separate lines. International Partner Funding also includes funds provided under the Italy and Netherlands Bilateral agreements.

RELATED RDT&E: Funding prior to JSF SDD (FY94-FY01): USN PE 0603800N \$1,950,617; USAF PE 0603800F \$1,907,352; DARPA PE 0603800E \$118,056; and International Partner contributions of \$253,921 for a total of \$4,229,946.

D. Acquisition Strategy

Implement JSF Joint Executive Steering Board (JESB)/Configuration Steering Board (CSB) approved enhancements 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.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - 3002 SDD	SS/CPFF	Lockheed Martin : Fort Worth, TX	0.000	41.330	Mar 2016	35.844	Mar 2017	23.655	Mar 2018	0.000		23.655	4.995	105.824	105.824
Primary Hardware Development - 3002 ALIS	SS/CPFF	Lockheed Martin : Fort Worth, TX	87.723	48.107	Mar 2016	39.701	Mar 2017	33.740	Mar 2018	0.000		33.740	0.000	209.271	209.271
Primary Hardware Development - 14-C-0002 Band 2/5	SS/CPFF	Lockheed Martin : Fort Worth, TX	15.590	76.740	Mar 2016	28.220	Mar 2017	2.375	Mar 2018	0.000		2.375	0.000	122.925	122.925
Subtotal			103.313	166.177		103.765		59.770		0.000		59.770	4.995	438.020	438.020
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	AFLCMC : Eglin AFB, FL	19.720	13.781	Mar 2016	0.000		0.000		0.000		0.000	0.000	33.501	-
Various	Various	Various : Various	11.668	0.700	Mar 2016	2.410	Mar 2017	1.000	Mar 2018	0.000		1.000	0.000	15.778	-
Subtotal			31.388	14.481		2.410		1.000		0.000		1.000	0.000	49.279	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Various : Various	0.606	1.404	Mar 2016	0.976	Mar 2017	0.500	Mar 2018	0.000		0.500	0.000	3.486	-
Subtotal			0.606	1.404		0.976		0.500		0.000		0.500	0.000	3.486	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	Various	Various : Various	1.000	2.316	Mar 2016	1.610	Mar 2017	0.000		0.000		0.000	0.000	4.926	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD				Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT					
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			1.000	2.316		1.610		0.000		0.000		0.000	0.000	4.926	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals			136.307	184.378		108.761		61.270		0.000		61.270	4.995	495.711	-
Other Service Funding Adjustment			60.773	105.477		61.799		24.068		-		24.068	4.995	257.112	-
Project Cost Totals			75.534	78.901		46.962		37.202		0.000		37.202	0.000	238.599	-
Remarks															
NOTE: Prior Years reflect \$75.534M USAF/\$74.351M USN/\$69.507M USMC/Total \$145.559M															
FY 2016 reflects \$78.901M USAF/\$35.666M USN/\$30.819M USMC/\$38.992M International/Total \$176.938722M															
FY 2017 reflects \$46.962M USAF/\$24.420M USN/\$24.348M USMC/\$13.031M International/Total \$108.761M															
FY 2018 reflects \$37.202M USAF/\$5.787M USN/\$11.400M USMC/\$6.881M International/Total \$184.378M															
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															
JSF D&S Includes: USAF PE 0604800F BPAC 653832 USN PE 0604800N Project Unit 3352 USMC PE 0604800M Project Unit 3350															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD		Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT	

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
D&S: Standard Operating Unit (SOUv2)																												
D&S: Band 2/5																												
D&S: Security Architecture																												
D&S: Offboard Mission Support (OMS) Redesign																												
D&S: Distributed Mission Training/Distributed Mission Operations (DMT/DMO)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
D&S: Standard Operating Unit (SOUv2)	1	2016	4	2018
D&S: Band 2/5	3	2016	3	2018
D&S: Security Architecture	1	2016	3	2018
D&S: Offboard Mission Support (OMS) Redesign	1	2016	4	2018
D&S: Distributed Mission Training/Distributed Mission Operations (DMT/DMO)	1	2016	2	2019

Note

Schedule details reflect fiscal years

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					PE 0604853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	224.920	296.572	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
650006: Next Generation Liquid Rocket Engine	-	224.920	296.572	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0604853F, Evolved Expendable Launch Vehicle Program (SPACE) efforts were transferred to PE 1206853F, Evolved Expendable Launch Vehicle Program (SPACE) due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206853F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	224.920	296.572	0.000	0.000	0.000
Total Adjustments	224.920	296.572	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	224.920	296.572	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604932F I Long Range Standoff Weapon							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	10.274	16.143	95.604	451.290	0.000	451.290	619.547	727.970	478.877	361.901	Continuing	Continuing
657011: LONG RANGE STAND-OFF	10.274	16.143	95.604	451.290	0.000	451.290	619.547	727.970	478.877	361.901	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 489

Note

In FY 2017, Materiel Solution Analysis completes.

A. Mission Description and Budget Item Justification

The Long Range Stand-Off (LRSO) effort will develop a weapon system to replace the Air Force's Air Launched Cruise Missile (ALCM), operational since 1986. The LRSO weapon system will be capable of penetrating and surviving advanced Integrated Air Defense Systems (IADS) from significant stand-off range to prosecute strategic targets in support of the Air Force's global attack capability and strategic deterrence core function.

This program is in Budget Activity 5, System Development and Demonstration (SDD), because it is conducting technology maturation and risk reduction (TMRR) development tasks aimed at meeting validated requirements prior to the engineering & manufacturing phase.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	16.143	95.604	419.817	0.000	419.817
Current President's Budget	16.143	95.604	451.290	0.000	451.290
Total Adjustments	0.000	0.000	31.473	0.000	31.473
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	31.473	0.000	31.473

Change Summary Explanation

FY18: Adjusted to match updated service cost estimate.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604932F I Long Range Standoff Weapon				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: LRSO Materiel Solution Analysis (MSA) Description: Conduct LRSO Weapon Milestone A and pre-TMRR activities FY 2016 Accomplishments: Continued LRSO MS A and TMRR preparation/support. Activities included: Pre-TMRR efforts with industry (concept/component refinement and technology analyses), modeling and simulation support, engineering studies, test support, program cost and schedule estimation, program security plan implementation (to include secure connectivity and communication between Department of Defense (DoD), Department of Energy (DOE) and industry), acquisition strategy refinement, risk reduction efforts, continued requirements definition/refinement, completing MS A documentation, RFP release and preparation for/initiation of source selection activities. Expanded program office staff, facilities and security infrastructure upgrades in preparation for TMRR. Established and implemented practices that ensure the following were met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, and supportability. Performed planning activities necessary to integrate LRSO with aircraft. Performed test activities and support for LRSO design validation, verification, and nuclear certification. Developed and refined LRSO Interface Control Documents (ICD) to include missile to warhead ICD. Continued to support the DoD/DOE Interagency warhead life extension program 6.X process. FY 2017 Plans: Execute TMRR source selection. Continue expanding program office staff, facilities and security infrastructure upgrades in preparation for TMRR. Continue aircraft integration planning activities with aircraft SPO. Continue refining missile-to-warhead interface control document. Perform test planning activities and support for LRSO design validation, verification, and nuclear certification. Continue supporting DOE warhead life extension program. FY 2018 Base Plans: Material solution analysis efforts conclude in FY17. FY 2018 OCO Plans: N/A		16.143	43.287	0.000	0.000	0.000
Title: LRSO Weapon Development Description: Conduct LRSO Weapon Development activities		0.000	52.317	451.290	0.000	451.290

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604932F / Long Range Standoff Weapon				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: N/A						
FY 2017 Plans: Award Prime TMRR contract(s) for design, development, integration and testing of the LRSO system. Perform Aircraft Integration efforts including activities associated with integration on B-52 threshold aircraft and aircraft mission planning system upgrades to accommodate the new weapon. Furthermore, these efforts include activities related to weapon design compatibility with both threshold (B-52) and objective aircraft (B-2 and B-21). Other activities falling under these efforts include: developing mission planning upgrade needs, Operational Flight Profile (OFP) development and integration to deliver the OFP test tapes, planning activities necessary to integrate LRSO with aircraft using MIL STD 1760D based aircraft/store interface, and ensuring the logical, electrical, and physical interfaces of the LRSO as defined in the ICD. Perform Test Support efforts, including test activities and support for design validation and verification and nuclear certification, as well as system qualification (includes design and operational certification activities). Furthermore, these efforts will continue test planning and execution activities to support LRSO weapon development, All-Up-Round technical integration, and aircraft integration.						
This program is reported in accordance with Title 10, United State Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.						
FY 2018 Base Plans: Continue Prime TMRR contract(s) for design, development, integration and testing of the LRSO system. Continue 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. Continue to perform Aircraft Integration efforts including activities associated with integration on B-52 threshold aircraft and aircraft mission planning system upgrades to accommodate the new weapon. Furthermore, these efforts include activities related to weapon design compatibility with both threshold (B-52) and objective aircraft (B-2 and B-21). Other activities falling under these efforts include: developing mission planning upgrade needs, OFP development and integration to deliver the OFP test tapes, planning activities necessary to integrate LRSO with aircraft using MIL STD 1760D based aircraft/store interface, and ensuring the logical, electrical, and physical interfaces of the LRSO as defined						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017							
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>			R-1 Program Element (Number/Name) PE 0604932F <i>I Long Range Standoff Weapon</i>								
C. Accomplishments/Planned Programs (\$ in Millions)											
			FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
<p>in the ICD. Continue to perform Test Support efforts, including test activities and support for design validation and verification and nuclear certification, as well as system qualification (includes design and operational certification activities). Furthermore, these efforts will continue test planning and execution activities to support LRSO weapon development, All-Up-Round technical integration, and aircraft integration.</p> <p>This program is reported in accordance with Title 10, United State Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.</p> <p>FY 2018 OCO Plans: N/A</p>											
Accomplishments/Planned Programs Subtotals			16.143	95.604	451.290	0.000	451.290				
D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• MILCON: PE 0604932: <i>Long Range Standoff Weapon</i>	0.000	0.000	38.000	0.000	38.000	0.000	0.000	0.000	9.628	Continuing	Continuing
Remarks											
E. Acquisition Strategy											
The Milestone Decision Authority directed in accordance with the approved acquisition strategy, upon entering the TMRR phase, the Air Force will conduct a competitive source selection and award up to two contracts to mature the relevant technologies, reduce program risks, and produce designs that allow establishment of an Engineering and Manufacturing Development (EMD) program baseline.											
F. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Long Range Standoff Weapon Development	TBD	TBD : TBD	0.000	0.000		52.317	Aug 2017	451.290	Jan 2018	0.000		451.290	Continuing	Continuing	-
Subtotal			0.000	0.000		52.317		451.290		0.000		451.290	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Material Solution Analysis Support	Various	Various : TBD	4.308	7.076	May 2016	21.064	Nov 2016	0.000		0.000		0.000	0.000	32.448	-
Aircraft Integration Planning	Various	Various : TBD	0.000	0.872	Aug 2016	6.750	Jan 2017	0.000		0.000		0.000	0.000	7.622	-
Subtotal			4.308	7.948		27.814		0.000		0.000		0.000	0.000	40.070	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration	Various	Various : TBD	5.966	8.195	Oct 2015	15.473	Oct 2016	0.000		0.000		0.000	0.000	29.634	-
Subtotal			5.966	8.195		15.473		0.000		0.000		0.000	0.000	29.634	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force										Date: May 2017					
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604932F / Long Range Standoff Weapon					Project (Number/Name) 657011 / LONG RANGE STAND-OFF					
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			10.274	16.143		95.604		451.290		0.000		451.290	-	-	-
Remarks															

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

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Materiel Solution Analysis Phase																												
Milestone A Decision																												
Technology Maturation and Risk Reduction Phase																												
Technology Maturation and Risk Reduction Contract Award																												
Milestone B Decision																												
Engineering and Manufacturing Development Phase																												
Engineering and Manufacturing Development Contract Award																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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
Materiel Solution Analysis Phase	1	2016	3	2017
Milestone A Decision	4	2016	4	2016
Technology Maturation and Risk Reduction Phase	4	2017	2	2022
Technology Maturation and Risk Reduction Contract Award	4	2017	4	2017
Milestone B Decision	2	2022	2	2022
Engineering and Manufacturing Development Phase	2	2022	4	2022
Engineering and Manufacturing Development Contract Award	2	2022	2	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force											Date: May 2017	
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					PE 0604933F / ICBM Fuze Modernization							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	205.638	138.027	189.751	178.991	0.000	178.991	168.101	157.809	123.628	19.649	0.000	1,181.594
655082: ICBM FUZE SUPPORT	205.638	138.027	189.751	178.991	0.000	178.991	168.101	157.809	123.628	19.649	0.000	1,181.594
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 0498												
A. Mission Description and Budget Item Justification												
<p>The ICBM Fuze Modernization Program is designing and developing a form, fit and functionally equivalent replacement for the Mk21 fuze. The legacy Mk21 fuze is three times past its design life and ongoing Mk21 fuze refurbishment does not meet Nuclear Weapon Stockpile Plan requirements. The Mk21 Reentry Vehicle and fuze will be deployed on the current Minuteman III (MM III) and future Ground Based Strategic Deterrent (GBSD). Previous plans to integrate and test the Mk21 replacement fuze with the U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA) W78/88-1 Life Extension Program warhead were deferred.</p> <p>The US Air Force (USAF) will develop the Mk21 fuze utilizing the NNSA complex consisting of Sandia National Labs-California (SNL-CA), Sandia National Labs-New Mexico (SNL-NM), and Kansas City National Security Campus (KCNSC), formerly Kansas City Plant; as well as a USAF weapons system integration contractor. The ICBM Fuze Modernization program will leverage technologies, parts, components and development/production capabilities resulting from extensive fuze work performed by the US Navy (USN) and NNSA on the Mk5 Alt 370 Fuze program. Common USN & USAF fuze components include the Radar Module (RM), Thermal Battery Assembly (TBA) and Path Length Module (PLM). USN & USAF fuze components that are partially common and use common technologies include the Missile Interface and Controller Module (MICM), Launch Safety Device (LSD), Firing Set Integration Module (FSIM) and Terminal Protection Device (TPD).</p> <p>The ICBM Fuze Modernization Program will integrate the replacement fuze into MM III weapon system to include, support equipment, data, flight test hardware, and training materials. The program will also conduct required system testing (including ground and flight tests). The program is coordinating Mk21 fuze replacement development efforts with the DOE to synchronize USAF arming and fuze development activities with DOE warhead requirements. When prudent, the program will conduct trade studies and initiate conceptual designs to address operational system issues and meet future requirements.</p> <p>As a cooperative USAF, USN and NNSA acquisition, the USAF is executing the program using Department of Defense (DoD)-DOE Instruction 5030.55 Joint Nuclear Weapons Life Cycle Activities (Phase 6.X process) while meeting Major Defense Acquisition Program (MDAP) statutory requirements.</p> <p>The FY18 budget request continues cooperative efforts with the USN to leverage common components; continues design efforts for AF unique components; and continues development of lab, ground and flight test assets. This program also includes any needed nuclear surety and certification and system vulnerability assessments.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization				
This program is in Budget Activity 5, System Development and Demonstration (SDD), and continues to execute Phase 6.3 "Development Engineering" of the 6.X process. The program is conducting engineering development tasks aimed at meeting validated requirements prior to Phase 6.4 "Production Engineering", scheduled for FY19 (Objective).						
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		142.551	189.751	178.475	0.000	178.475
Current President's Budget		138.027	189.751	178.991	0.000	178.991
Total Adjustments		-4.524	0.000	0.516	0.000	0.516
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		-4.524	0.000			
• Other Adjustments		0.000	0.000	0.516	0.000	0.516
Change Summary Explanation						
FY 2016 funding reflects a decrease of \$4.524M for SBIR/STTR.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Fuze Design and Development				106.385	151.935	139.357
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 2016 Accomplishments:						
- Finalized development of common parts, components, and technology for application to Mk21 replacement fuze						
- Finalized component conceptual design development of common components to include Arming and Fuzing Assembly (AFA) prototype builds						
- Completed conceptual design development of AF unique components						
- Began Reentry 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 began testing of common components in conjunction with the group builds supporting production planning for the Radar, Battery, and Path Length Module						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
- SNL continued to analyze the design and perform tests on the remaining four components with AF unique sub-components (MICM, LSD, TPD and FSIM). SNL-CA solidified detailed AFA qualification plans and began the development process for the Flight Test Vehicle to meet the established objectives of Flight Test 1 FY 2017 Plans: - Continue assessing, testing and qualifying the common components (RM, PLM, TBA) with the unique AF environments to ensure compliance to AF requirements - Establish a solid design baseline for the AF unique components (MICM, TPD, LSD, FSIM) and push the design envelope towards meeting the Entrance and Exit criteria of the Baseline Design Review (BDR) scheduled for May 2017 - Finalize the Ground Test Unit (GTU) for ground testing and integration testing with the Integrated Test Bed (ITB) in preparation for Flight Test 1 scheduled for Oct 2018 - Develop surveillance strategy plan in order to finalize the requirements for assessing the aging trends, reliability and service life estimate during fuze operational and sustainment phase - Integrate updated MM Operational Targeting Program (MOTP) software to be utilized in Flight Test 2 - Establish a baseline design for the JTA used on Flight Test 3 and Flight Test 4 FY 2018 Plans: - Continue assessing, testing and qualifying the common components (RM, PLM, TBA) with the unique AF environments to ensure compliance to AF requirements - Accomplish engineering and design work for the AF unique components - Conduct Design Reviews - Prepare and complete all planning and coordination for Flight Test 1 - Continue to mature surveillance strategy plan in order to finalize the requirements for assessing the aging trends, reliability and service life estimate during fuze operational and sustainment phase - Begin preparations for AFA final design review - Begin flight test planning for Flight Test Unit 2				
Title: Weapon System Integration/Systems Engineering Description: Integrate Mk21 fuze into the MMIII weapon system. Validate designs through ground tests on an Integrated Test Bed (ITB). Plan and conduct necessary ground and flight testing. Coordinate design, development and test efforts. FY 2016 Accomplishments: - Developed Systems Engineering, Integration, and Management expertise in support of USAF and SNL development of the Mk21 replacement fuze - Continued to integrate AFA with the MM III weapon system during the development build		31.642	37.816	39.634

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
- Continued test and verification of SNL developed Laboratory Test Units (LTUs) and corresponding GTUs via the MM III ITB. Assessed the program's impact on MM III system-level effectiveness.												
FY 2017 Plans: - Finalize the results of the LTU to verify the functionality and performance of multiple fuze HW components during the Integration testing with the MM III weapon system which will provide the catalyst for starting the integration testing of the GTU to perform Flight Profiles and environmental unit tests (shock, vibe, temp)												
FY 2018 Plans: - Perform test and integration on GTU 1 for mechanical environmental, electrical integration, and performance - Perform integration testing on GTU 1B for MICM Fox Application Specific Integrated Circuit (ASIC) - Finalize GTU 1 and GTU 1B test data - Analyze test data for continued design confidence - Provide integration support												
Accomplishments/Planned Programs Subtotals										138.027	189.751	178.991
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• MPAF: BA05: Line Item # M30MLG: Minuteman III Modifications	13.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.400	
• MPAF: BA03: Line Item # M30FLH: ICBM Fuze Mod	0.000	17.095	6.334	0.000	6.334	9.841	12.094	34.145	88.677	643.463	811.649	
Remarks												
Other Program Funding Summary reflects equipment buys in FY15-19 as part of life of program buys, enabling the ICBM Fuze Modernization program to continue leveraging the USN design, development and production activities.												
E. Acquisition Strategy												
The USAF ICBM Fuze Modernization program is executing a full cost reimbursable Work for Others (WFO) agreement with the NNSA complex using SNL as the design agent and KCNSC as the production agent. The program is a collaborative effort with the USN reducing total program cost and development time by leveraging commonality between the ICBM and Submarine Launched Ballistic Missile fuze components. The USN Mk5 Alt 370 fuze is being developed first, with the USAF Mk21 fuze effort following. The USN Mk5 Alt 370 fuze entered Phase 6.3 Development Engineering in October 2012. USAF Mk21 fuze entered Phase 6.3 in August 2013. Both services participate in all design and development efforts to ensure maximum use of common components, subassemblies and technologies. Both services are												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604933F I ICBM Fuze Modernization	
using NNSA/SNL to perform fuze design and development. The USAF, as lead systems integrator for the Mk21 fuze, competed a separate Weapon System Integration Contract (WSIC) for integration support to assist the government with MM III unique modifications and fuze integration efforts. Both services are using KCNSC to produce fuzes.		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Fuze Preliminary Design Development	MIPR	Sandia National Labs : Albuquerque, NM	132.596	90.785	Nov 2015	129.850	Nov 2016	112.447	Nov 2017	0.000		112.447	255.538	721.216	-
Fuze EMD	Various	Various : TBD	0.767	0.660	Dec 2015	0.000		0.000		0.000		0.000	0.000	1.427	-
Fuze Engineering Change Orders	Various	Various : TBD	0.000	0.000		2.785	May 2017	4.175	May 2018	0.000		4.175	16.206	23.166	-
Fuze National Security Campus (formerly Kansas City Plant)	MIPR	National Security Campus : Kansas City, MO	5.750	15.600	Nov 2015	19.300	Nov 2016	22.735	Nov 2017	0.000		22.735	63.270	126.655	-
Fuze Weapon System Integration - ICBM Prime	C/CPAF	Northrop Grumman : Clearfield, UT	25.937	0.000		0.000		0.000		0.000		0.000	0.000	25.937	25.937
Fuze Weapon System Integration - RS/RV Sub-System Contract (SSC)	SS/CPAF	Lockheed Martin : Valley Forge, PA	11.269	24.102	Jan 2016	22.800	Jan 2017	20.885	Jan 2018	0.000		20.885	17.427	96.483	96.210
Fuze Nuclear Safety Cross-Check Analysis (NSCCA)	TBD	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	7.945	7.945	-
Subtotal			176.319	131.147		174.735		160.242		0.000		160.242	360.386	1,002.829	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Fuze Engineering Support - BAH	C/FP	Booz Allen Hamilton : Clearfield, UT	2.757	0.000		0.000		0.000		0.000		0.000	0.000	2.757	-
Fuze Engineering Support - BAE	C/FFP	BAE : Clearfield, UT	4.380	2.690	Jul 2016	3.216	Jul 2017	4.000	Jul 2018	0.000		4.000	34.004	48.290	47.506
Subtotal			7.137	2.690		3.216		4.000		0.000		4.000	34.004	51.047	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization				Project (Number/Name) 655082 / ICBM FUZE SUPPORT					
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Fuze Lead Project Office Support	MIPR	AFNWC : Albuquerque, NM	10.480	0.000		0.000		0.000		0.000		0.000	0.000	10.480	10.480
Fuze Finite Element Model Validation	C/CPFF	LMTF : Little Mountain, UT	1.843	0.000		0.000		0.000		0.000		0.000	0.000	1.843	1.843
Fuze Flight Test Support and Evaluation	TBD	TBD : TBD	0.000	0.000		0.000		8.502	Feb 2018	0.000		8.502	26.186	34.688	-
Subtotal			12.323	0.000		0.000		8.502		0.000		8.502	26.186	47.011	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Fuze Cost and Financial Management	C/FFP	Tecolote : Salt Lake City, UT	2.177	1.125	Dec 2015	1.762	Dec 2016	1.950	Dec 2017	0.000		1.950	0.420	7.434	-
Fuze FFRDC Support	MIPR	Aerospace : Los Angeles, CA	3.117	0.473	Dec 2015	2.284	Dec 2016	2.100	Dec 2017	0.000		2.100	3.836	11.810	-
Fuze Program Support	C/FFP	BAE : Clearfield, UT	0.000	0.918	Feb 2016	2.472	Feb 2017	1.400	Feb 2018	0.000		1.400	27.176	31.966	-
Fuze Program Management Administration	Various	Various : Various, UT	4.565	1.674	Mar 2016	5.282	Mar 2017	0.797	Mar 2018	0.000		0.797	17.179	29.497	-
Subtotal			9.859	4.190		11.800		6.247		0.000		6.247	48.611	80.707	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			205.638	138.027		189.751		178.991		0.000		178.991	469.187	1,181.594	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization	Project (Number/Name) 655082 / ICBM FUZE SUPPORT
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	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Phase 6.3 Developmental Engineering																																
Phase 6.4 Production Engineering Mk21																																
Baseline Design Review (BDR) (May 2017)																																
Final Design Review (FDR) (Dec 2019)																																
Complete Engineering Release (Jun 2020)																																
Flight Test 1 (Oct 2018)																																
Flight Test 2 (Oct 2019)																																
Flight Test 3 (Jul 2021)																																
Flight Test 4 (Mar 2022)																																
Life of Program Buy (LOPB)																																

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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	2016	1	2019
Phase 6.4 Production Engineering Mk21	2	2019	4	2022
Baseline Design Review (BDR) (May 2017)	3	2017	3	2017
Final Design Review (FDR) (Dec 2019)	1	2020	1	2020
Complete Engineering Release (Jun 2020)	3	2020	3	2020
Flight Test 1 (Oct 2018)	1	2019	1	2019
Flight Test 2 (Oct 2019)	1	2020	1	2020
Flight Test 3 (Jul 2021)	4	2021	4	2021
Flight Test 4 (Mar 2022)	2	2022	2	2022
Life of Program Buy (LOPB)	1	2016	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605030F I Joint Tactical Network Center (JTNC)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	1.131	12.736	0.000	12.736	8.093	8.098	8.244	8.413	Continuing	Continuing
655068: Joint Tactical Radio System (JTRS)	-	0.000	1.131	12.736	0.000	12.736	8.093	8.098	8.244	8.413	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Tactical Radio System (JTRS) development program is a joint program managed through the Navy's PEO for Joint Tactical Networks (PEO JTN). The JTN was formed upon the descoping of the Joint Tactical Radio System development program (PE 0604280F). JTN will provide interoperable, secure Joint Tactical Networking applications capable of operating in a variety of radio solutions to maintain and sustain an affordable, government-controlled open architecture, in support of Combatant Commanders', Services' and Coalition mission network requirements. JTN is responsible for the continuous development, delivery, and maintenance of networking waveforms and modified legacy radio waveforms that are Software Communications Architecture (SCA) compliant. SCA compliant waveforms enable interoperability and support Net-Centric operational warfare at sea, in the air and on the ground. Networking waveforms extend the Global Information Grid (GIG) to the first tactical mile and to the warfighter.

The JTN team is responsible for (1) the overall management and oversight of the Waveforms contained in the JTN repository; (2) development, validation, and evolution of a common JTN SCA; (3) development and evolution of waveform software applications for tactical radios; (4) development of software cryptographic algorithms and equipment applications (Information Assurance); (5) development and evolution of the JTN networking and network management software components, Joint Enterprise Network Manager (JENM); (6) testing and certification of JTN waveforms, network services, and network management; and, (7) full lifecycle support of waveforms and networking applications in order to maintain a robust industry base of radio vendors.

The individual services provide 1/3 each of funding to support activities of the JTNC.

This program is in Budget Activity 5, System Development and Demonstration (SDD), because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force					Date: May 2017						
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)			R-1 Program Element (Number/Name) PE 0605030F I Joint Tactical Network Center (JTNC)								
B. Program Change Summary (\$ in Millions)			FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Previous President's Budget			0.000	1.131	7.106	0.000	7.106				
Current President's Budget			0.000	1.131	12.736	0.000	12.736				
Total Adjustments			0.000	0.000	5.630	0.000	5.630				
• Congressional General Reductions			0.000	0.000							
• Congressional Directed Reductions			0.000	0.000							
• Congressional Rescissions			0.000	0.000							
• Congressional Adds			0.000	0.000							
• Congressional Directed Transfers			0.000	0.000							
• Reprogrammings			0.000	0.000							
• SBIR/STTR Transfer			0.000	0.000							
• Other Adjustments			0.000	0.000	5.630	0.000	5.630				
Change Summary Explanation											
\$5.630 Navy adjustment from JTN											
C. Accomplishments/Planned Programs (\$ in Millions)						FY 2016	FY 2017	FY 2018			
Title: JTRS						0.000	1.131	12.736			
Description: Funding provided by the Air Force will be used to support activities of the Joint Tactical Networking Center (JTNC).											
FY 2016 Accomplishments: Funding provided by the Air Force used to support activities of the Joint Tactical Networking Center (JTNC).											
FY 2017 Plans: FY17 funding provided by the Air Force will be used to support activities of the Joint Tactical Networking Center (JTNC).											
FY 2018 Plans: Funding provided by the Air Force will be used to support activities of the Joint Tactical Networking Center (JTNC).											
Accomplishments/Planned Programs Subtotals						0.000	1.131	12.736			
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPAF: BA03: Line item	9.933	10.397	6.485	0.000	6.485	5.955	6.344	6.459	6.575	Continuing	Continuing
#837100: Tactical C-E Equipment											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605030F I Joint Tactical Network Center (JTNC)						
D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
Remarks E. Acquisition Strategy The JTRS Budget Item Justification is located in the Navy's FY 2018 President's Budget under Joint Tactical Radio System Program (PE 0605030N, BA 5). The JTRS development program is a joint program managed through the Navy's PEO for Joint Tactical Networks (PEO JTN). The JTN was formed upon the descoping of the Joint Tactical Radio System development program (PE 0604280F) in FY 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.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605030F / Joint Tactical Network Center (JTNC)				Project (Number/Name) 655068 / Joint Tactical Radio System (JTRS)					

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Navy JTRS Development	C/CPAF	TBD : TBD	-	0.000		1.131	Nov 2016	12.736	Dec 2017	0.000		12.736	Continuing	Continuing	-
Subtotal			-	0.000		1.131		12.736		0.000		12.736	-	-	-

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		1.131		12.736		0.000		12.736	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																Date: May 2017			
Appropriation/Budget Activity 3600 / 5								R-1 Program Element (Number/Name) PE 0605030F / Joint Tactical Network Center (JTNC)								Project (Number/Name) 655068 / Joint Tactical Radio System (JTRS)			

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605030F / Joint Tactical Network Center (JTNC)	Project (Number/Name) 655068 / Joint Tactical Radio System (JTRS)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TBD Navy JTRS Development	1	2017	4	2022

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0605031F <i>I Joint Tactical Network (JTN)</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	9.319	0.000	9.319	3.690	3.704	3.763	3.841	Continuing	Continuing
655068: <i>Joint Tactical Radio System (JTRS)</i>	-	0.000	0.000	9.319	0.000	9.319	3.690	3.704	3.763	3.841	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0605031F, project 655068, Joint Tactical Radio System (JTRS), is a new start.

A. Mission Description and Budget Item Justification

The Joint Tactical Radio System (JTRS) development program is a joint program managed through the Navy's PEO for Joint Tactical Networks (PEO JTN). The JTN was formed upon the descoping of the Joint Tactical Radio System development program (PE 0604280F). JTN will provide interoperable, secure Joint Tactical Networking applications capable of operating in a variety of radio solutions to maintain and sustain an affordable, government-controlled open architecture, in support of Combatant Commanders', Services' and Coalition mission network requirements. JTN is responsible for the continuous development, delivery, and maintenance of networking waveforms and modified legacy radio waveforms that are Software Communications Architecture (SCA) compliant. SCA compliant waveforms enable interoperability and support Net-Centric operational warfare at sea, in the air and on the ground. Networking waveforms extend the Global Information Grid (GIG) to the first tactical mile and to the warfighter.

The JTN team is responsible for (1) the overall management and oversight of the Waveforms contained in the JTN repository; (2) development, validation, and evolution of a common JTN SCA; (3) development and evolution of waveform software applications for tactical radios; (4) development of software cryptographic algorithms and equipment applications (Information Assurance); (5) development and evolution of the JTN networking and network management software components, Joint Enterprise Network Manager (JENM); (6) testing and certification of JTN waveforms, network services, and network management; and, (7) full lifecycle support of waveforms and networking applications in order to maintain a robust industry base of radio vendors.

The individual services provide 1/3 each of funding to support activities of the JTNC.

This program is in Budget Activity 5, System Development and Demonstration (SDD), because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605031F I Joint Tactical Network (JTN)						
B. Program Change Summary (\$ in Millions)					FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total		
Previous President's Budget					0.000	0.000	0.000	0.000	0.000		
Current President's Budget					0.000	0.000	9.319	0.000	9.319		
Total Adjustments					0.000	0.000	9.319	0.000	9.319		
• Congressional General Reductions					0.000	0.000					
• Congressional Directed Reductions					0.000	0.000					
• Congressional Rescissions					0.000	0.000					
• Congressional Adds					0.000	0.000					
• Congressional Directed Transfers					0.000	0.000					
• Reprogrammings					0.000	0.000					
• SBIR/STTR Transfer					0.000	0.000					
• Other Adjustments					0.000	0.000	9.319	0.000	9.319		
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018	
Title: Joint Tactical Radio System (JTRS)								-	-	9.319	
Description: The Joint Tactical Radio System (JTRS) development program is a joint program managed through the Navy's PEO for Joint Tactical Networks (PEO JTN). The JTN was formed upon the descoping of the Joint Tactical Radio System development program (PE 0604280F). JTN will provide interoperable, secure Joint Tactical Networking applications capable of operating in a variety of radio solutions to maintain and sustain an affordable, government-controlled open architecture, in support of Combatant Commanders', Services' and Coalition mission network requirements. JTN is responsible for the continuous development, delivery, and maintenance of networking waveforms and modified legacy radio waveforms that are Software Communications Architecture (SCA) compliant. SCA compliant waveforms enable interoperability and support Net-Centric operational warfare at sea, in the air and on the ground. Networking waveforms extend the Global Information Grid (GIG) to the first tactical mile and to the warfighter											
FY 2018 Plans: Funding provided by the Air Force will be used to support activities of the Joint Tactical Networking Center (JTNC).											
Accomplishments/Planned Programs Subtotals								-	-	9.319	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605031F <i>I Joint Tactical Network (JTN)</i>	
E. Acquisition Strategy The JTRS Budget Item Justification is located in the Navy's FY 2018 President's Budget under Joint Tactical Radio System Program (PE 0605031N, BA 5). The JTRS development program is a joint program managed through the Navy's PEO for Joint Tactical Networks (PEO JTN). The JTN was formed upon the descoping of the Joint Tactical Radio System development program (PE 0604280F) in FY 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.		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605213F I F-22 Modernization Increment 3.2B							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	362.577	115.603	70.290	13.600	0.000	13.600	0.000	0.000	0.000	0.000	0.000	562.070
654785: F-22 INCREMENT 3.2B	362.577	115.603	70.290	13.600	0.000	13.600	0.000	0.000	0.000	0.000	0.000	562.070
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 474												
<p>Note</p> <p>All Increment 3.2B efforts and associated funding prior to FY 2013 are included in the F-22A Squadrons budget documentation, PE 0207138F and other outside funding Program Elements (PE). Prior year funding includes: PE 0207138F (FY 2004-FY 2012) \$422.4M; PE 0207163F (FY 2010-FY 2013) \$39.8M; PE 0207445F (FY 2007-FY 2010) \$39.6M; PE 0200001F (FY 2007) \$32.9M</p> <p>A. Mission Description and Budget Item Justification</p> <p>Increment 3.2B will integrate the newest air-to-air intercept missiles (i.e., AIM-9X and AIM-120D), further improve the Electronic Protection (EP) capability over Increment 3.2A, and enhance the F-22's geolocation capability from the Increment 3.1 baseline with the addition of Geolocation 2. Increment 3.2B will include the Enhanced Stores Management System (ESMS), as well as Common Weapon Engagement Zone (WEZ), and an Intra-Flight Datalink (IFDL) improvement to increase IFDL bandwidth and enable cooperative functions required to realize Increment 3.2B capabilities.</p> <p>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.</p> <p>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.</p> <p>Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill Federal Aviation Administration (FAA) or other mandates necessary to ensure continued aircrew safety and mission effectiveness. Additionally, this program element may include necessary civilian pay expenses required to manage, execute, and deliver F-22 weapon system capability.</p> <p>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.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0605213F / F-22 Modernization Increment 3.2B				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	140.640	70.290	0.000	0.000	0.000	
Current President's Budget	115.603	70.290	13.600	0.000	13.600	
Total Adjustments	-25.037	0.000	13.600	0.000	13.600	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	-20.000	0.000				
• SBIR/STTR Transfer	-5.037	0.000				
• Other Adjustments	0.000	0.000	13.600	0.000	13.600	
Change Summary Explanation						
2016: The F-22 identified \$20M for higher Air Force priorities.						
2018: Increased funds will allow the 3.2B RDT&E efforts to complete.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: F-22 Increment 3.2B				95.820	41.280	1.148
Description: The F-22 Increment 3.2B Modernization Program consists of the studies, analysis, demonstrations, and hardware/software development necessary to provide Intra-Flight Data Link improvements, Electronic Protection, AIM-9X and AIM-120D integration with Common Weapon Engagement Zone, Geolocate 2.0 and Stores Management System Common Split Bus. The Enhanced Stores Management System (ESMS) program is a hardware development program required to integrate any new weapons on the F-22 beyond Increment 3.1. Includes mission support of the F-22 Program Office: travel, computer costs, and other miscellaneous contract support.						
FY 2016 Accomplishments: F-22 Increment 3.2B software development, coding, integration, and testing. Milestone C approved on 2 Aug 2016.						
FY 2017 Plans: F-22 Increment 3.2B will continue its software development, coding integration, and testing.						
FY 2018 Plans: F-22 Increment 3.2B will complete its software development, coding integration, and testing.						
Title: Combined Test Force (CTF)				12.700	21.100	12.452

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
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 2016 Accomplishments: The CTF completed developmental flight test in preparation for the Low Rate Initial Production (LRIP) decision, Milestone C, which was 2 Aug 2016. FY 2017 Plans: The CTF will continue developmental flight test for Increment 3.2B Flight Test execution. FY 2018 Plans: The CTF will complete final developmental flight test for Increment 3.2B Flight Test execution.				
Title: Lab Test & Operations Description: Increment 3.2B Lab Test & Operations plans and conducts system integration and testing of software builds within the suite of F-22 system integration laboratories: the Agile Integration Lab (AIL); the Raptor Integration Lab (RaIL); the Air Combat Simulation (ACS) Lab; the Vehicle Management System (VMS); Vehicle Integration Facility (VIF); and the Vehicle System Simulator (VSS). FY 2016 Accomplishments: Increment 3.2B Lab Test & Operations planned and conducted testing for software build-up and integration on production representative hardware in the F-22 system integration laboratories that include: the AIL, the RaIL, the ACS lab, the VMS, the VIF, and the VSS. To enhance software maturation, the developmental software labs delivered several planned software versions to support developmental flight test execution. Increment 3.2B Lab Test & Operations delivered the fully integrated Operational Flight Program (OFP) required to continue developmental flight test and resolve performance deficiencies. FY 2017 Plans: Increment 3.2B Lab Test & Operations will conclude testing on production representative hardware in the F-22 system integration laboratories. Increment 3.2B Lab Test & Operations will deliver the fully integrated OFPs required to complete developmental flight test and resolve performance deficiencies in preparation for Air Force Operational Flight Test Evaluation.		7.083	7.910	-
Accomplishments/Planned Programs Subtotals		115.603	70.290	13.600

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)				R-1 Program Element (Number/Name) PE 0605213F I F-22 Modernization Increment 3.2B							
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E: BA07: PE 0207138F: F-22A Squadrons, RDT&E*	172.848	286.270	413.149	0.000	413.149	315.587	423.296	485.152	476.668	Continuing	Continuing
• APAF: BA05: Line Item # F2232B: Increment 3.2B**	64.325	78.410	105.756	0.000	105.756	13.081	20.373	6.013	0.000	0.000	340.617
• APAF: BA05: Line Item # F02200: F-22A***	111.077	163.008	176.630	0.000	176.630	257.891	257.310	347.665	457.265	Continuing	Continuing
• APAF: BA056: 000999: Initial Spares	2.822	4.431	7.732	0.000	7.732	0.000	0.000	0.000	0.000	0.000	14.973
• RDT&E: BA07: PE 0207163F: AIM-120D, AMRAAM T&E, RDT&E****	5.820	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	50.450
Remarks											
NOTES:											
*F-22A Squadrons, RDT&E/PE 0207138F includes F-22A Squadrons modernization and development. Both PEs 0207138F and 0605213F share lab and Combined OTF Test Force infrastructure support costs across the F-22 enterprise.											
**Increment 3.2B, APAF/PE 0207138F, F2232B includes BP11 (Aircraft Modifications) for Increment 3.2B only.											
***F-22A Squadrons, APAF/PE 0207138F, F02200 includes BPs 11 (Aircraft Modifications), 13 (Post-Production Support), 16 (Initial Spares), and 19 (Depot Activation) for F-22 Squadrons only.											
****AIM-120D, AMRAAM RDT&E/PE 0207163F, funding provides for the AIM-120D development as a part of the F-22 Increment 3.2B effort.											
E. Acquisition Strategy											
The Raptor Enhancement Development & Integration II (REDI II) contract is an Indefinite Delivery/Indefinite Quantity Ordering (ID/IQ) contract that maximizes flexibility to start, stop, accelerate and decelerate projects as required. The REDI II contract is a follow-on 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.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605213F I F-22 Modernization Increment 3.2B	
<p>Overall the F-22 program is managed with the F-22 SPO leveraging Department of Defense and Air Force guidance and policies to evaluate impacts to performance, schedule, and cost, working closely with key stakeholders to affirm the baseline schedule supporting the initial Increment 3.2B program Initial Operational Capability (IOC) in FY 2019. The F-22 SPO, prime contractors, supporting program offices, and Air Combat Command (ACC) are key stakeholders in risk management.</p> <p>The F-22 program is transitioning to organic management of major sustainment functions to include: customer services, field support, and fleet management.</p> <p>F. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Increment 3.2B	Various	Lockheed Martin : Ft. Worth, TX	303.082	95.820	Nov 2015	41.280	Nov 2016	1.148	Nov 2017	0.000		1.148	0.000	441.330	488.035
Subtotal			303.082	95.820		41.280		1.148		0.000		1.148	0.000	441.330	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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Combined Test Force	Various	Various : Various	12.590	12.700	Dec 2015	21.100	Dec 2016	12.452	Oct 2017	0.000		12.452	0.000	58.842	-
Laboratory Test Operations	SS/ Various	Lockheed Martin : Fort Worth, TX	46.905	7.083	Nov 2015	7.910	Dec 2016	0.000		0.000		0.000	0.000	61.898	-
Subtotal			59.495	19.783		29.010		12.452		0.000		12.452	0.000	120.740	-
Remarks															
FY12 and prior year costs for Increment 3.2B are shown under PE 0207138F. FY13 and later are shown under PE 0605213F.															
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force										Date: May 2017			
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>			
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	362.577	115.603		70.290		13.600		0.000		13.600	0.000	562.070	-
Remarks													

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

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Increment 3.2B Code, Integration, and Test																												
Increment 3.2B Critical Design Review (CDR)																												
Increment 3.2B Milestone C																												
Increment 3.2B Initial Operational Test & Evaluation (IOT&E)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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 Code, Integration, and Test	1	2016	1	2018
Increment 3.2B Critical Design Review (CDR)	1	2016	1	2016
Increment 3.2B Milestone C	4	2016	4	2016
Increment 3.2B Initial Operational Test & Evaluation (IOT&E)	4	2017	3	2018

Note

- ~ Increment 3.2B efforts funded prior to FY13 are reflected in the F-22A Squadrons documentation, PE 0207138F.
- ~ Increment 3.2B HW Development/Risk Reduction/Lab Equipment began FY2006.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					PE 0605214F I Ground Attack Weapons Fuze Development							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	3.477	0.937	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.414
655313: Hard Target Void Sensing Fuze	-	3.477	0.937	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.414
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program was created to include the whole spectrum of general purpose and specialized fuze development and integration of advanced precision, navigation, and timing (PNT) capabilities (i.e., GPS, non-GPS, optical, passive, active, etc.), resulting in commodity fuzes for use with air-to-ground weapons.

The Hard Target Void Sensing Fuze (HTVSF) is an advanced system designed to provide fuzing and void sensing functions for legacy penetrator weapons to destroy hardened targets protected by multiple layers of soil and/or reinforced concrete. The HTVSF will also provide in-flight cockpit programmability, safing and arming, multi-function (time delay and void sensing) and multi-delay arming. Program Element funding currently supports the Engineering, Manufacturing, and Development (EMD) effort for HTVSF.

HTVSF completed Milestone C in May 2015 and Low-Rate Initial Production (LRIP 1) was awarded in Jul 2015. EMD funding is currently needed in FY16-FY17 to complete BLU-113 follow-on testing and post-Milestone C development requirements as derived from the Milestone C Decision.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	3.598	0.937	0.000	0.000	0.000
Current President's Budget	3.477	0.937	0.000	0.000	0.000
Total Adjustments	-0.121	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.121	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017							
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0605214F I Ground Attack Weapons Fuze Development									
Change Summary Explanation No Significant Program Changes											
C. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Title: HTVSF Test Support			3.477	0.937	0.000	0.000	0.000				
Description: BLU-113 follow-on testing; post-Milestone C (MS C) development.											
FY 2016 Accomplishments: Continued BLU-113 follow-on testing and post-MS C development requirements as derived from the MS C decision.											
FY 2017 Plans: Completed BLU-113 follow-on testing and post-MS C development requirements as derived from the MS C decision.											
FY 2018 Base Plans: N/A											
FY 2018 OCO Plans: N/A											
Accomplishments/Planned Programs Subtotals			3.477	0.937	0.000	0.000	0.000				
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PAAF: BA01: Line Item # 356120: Fuzes	17.000	22.243	31.537	0.000	31.537	0.000	0.000	0.000	0.000	0.000	0.000
Remarks											
- PAAF dollars in War Reserve Materiel (WRM; Fuzes) fund initial procurement of 425/475/1,575/1,620 units for FY15 - FY18.											
- Navy PE 050120 to fund 50/450 units FY15 and FY17.											
E. Acquisition Strategy											
EMD Awarded to Alliant TechSystems Operations LLC											
Contract completion date: 31 Oct 2015											
Fixed Price Incentive Firm											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605214F / <i>Ground Attack Weapons Fuze Development</i>	
Contract Length - 55 months		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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

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
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	5,319.514	572.118	261.724	93.845	0.000	93.845	47.740	15.187	0.000	0.000	Continuing	Continuing
651120: Pegasus Capability Improvements*	0.000	0.000	0.000	0.000	0.000	0.000	13.605	15.187	0.000	0.000	Continuing	Continuing
655271: KC-46 RDT&E	5,319.514	572.118	261.724	93.845	0.000	93.845	34.135	0.000	0.000	0.000	0.000	6,281.336

Program MDAP/MAIS Code: 387

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

A. Mission Description and Budget Item Justification

Replacement of the legacy tanker fleet will take place in several stages. The initial tanker replacement increment of KC-46s will replace roughly a third of the current capability. Future programs will ultimately recapitalize the entire tanker fleet over a period of more than 30 years. The Air Force completed an Analysis of Alternatives (AoA) in Apr 2006 to determine the most appropriate strategy to recapitalize the aging fleet of aerial refueling aircraft. Based on this analysis, the Air Force concluded a strategy of full and open competition to select a commercial derivative replacement tanker aircraft would result in a best value tanker contract. To initiate the first phase of the tanker replacement, the KC-46 program released a final Request for Proposal (RFP) on 24 Feb 2010, and entered source selection on 9 Jul 2010. The KC-46 program held a Milestone B (MS B) Defense Acquisition Board (DAB) on 23 Feb 2011, received approval to enter Engineering and Manufacturing Development (EMD) from the Undersecretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) on 24 Feb 2011, and awarded the KC-46 EMD contract to Boeing on 24 Feb 2011 to develop and procure 179 KC-46 aircraft. The program is procuring four RDT&E aircraft for integration and demonstration of capability which will ultimately be operationally fielded. During production, the program plans to procure 175 aircraft throughout 13 lots. The KC-46 program held a MS C DAB on 12 Aug 2016 and received approval to enter Low Rate Initial Production (LRIP). The program awarded LRIP Lots 1 and 2 on 18 Aug 2016 and LRIP Lot 3 on 27 Jan 2017, totaling 34 aircraft. KC-46 funding also supports Training Systems, Direct Mission Support, Program Management Administration (PMA) activities, government developmental and operational test support, mission planning capability development, various studies and analyses, and future tanker replacement planning activities.

The KC-46 will provide the capability to fuel joint and coalition receivers via a boom or drogue system on every mission and will also augment the airlift fleet with cargo, passenger, and aeromedical evacuation capabilities. The KC-46 will operate in day/night and adverse weather conditions to enable deployment, employment, sustainment, and redeployment of U.S. joint, allied, and coalition forces. The KC-46 will have communication, navigation, and surveillance equipment for worldwide operations; the capability to perform missions in chemical and biological environments; the ability to operate in up to medium threat environments with self-defense/protection (both active and passive) capabilities; and the necessary battlespace awareness to mitigate survivability threats.

The Aircrew Training System (ATS) and the Maintenance Training System (MTS) are being developed and procured using KC-46 funding. The ATS contract was awarded on 1 May 2013 to FlightSafety Services Corporation. The ATS contract will provide Aircrew Training Devices (ATDs), to include Weapon System Trainers (WSTs), Boom Operator Trainers (BOTs), Fuselage Trainers (FuTs), and Part-Task Trainers (PTTs) at each Main Operating Base (MOB) and the Formal Training Unit (FTU). The ATS contract will also support Distributed Mission Operations (DMO), provide aircrew instruction, develop courseware, provide logistics support, acquire a technical data package to support future competition efforts, and manage training device concurrency with the aircraft.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605221F / KC-46
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The MTS acquisition focuses on designing, developing, testing, producing, and fielding an optimized training system for KC-46 maintainers by integrating various forms of training media and Maintenance Training Devices (MTDs) into a "blended" solution. This blended solution includes the appropriate mix of hardware and software, "high-fidelity" Augmented Hardware Training Devices (AHTDs), PTTs, Interactive Multimedia Instruction (IMI), and emerging technologies to meet validated Air Mobility Command (AMC) maintenance training requirements.

This program is in Budget Activity 05, System Development and Demonstration (SDD), because it passed MS C approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

In FY 2016, \$26.691M is no longer a part of the KC-46 program baseline (BPAC 655271) since it was approved to source the Counter-small Unmanned Aerial System Joint Emergent Operational Need (C-s UAS JEON), AFLCMC/HBU (Force Protection) program, as a Rapid Acquisition Authority (RAA) funded effort. This funding will not be reported in the Selected Acquisition Report (SAR).

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	592.364	261.724	21.175	0.000	21.175
Current President's Budget	572.118	261.724	93.845	0.000	93.845
Total Adjustments	-20.246	0.000	72.670	0.000	72.670
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-20.246	0.000			
• Other Adjustments	0.000	0.000	72.670	0.000	72.670

Change Summary Explanation

- In FY 2016, the SIBR reduction was in the amount of -\$20.246M.

- The FY 2018 funding request was increased by \$72.670M to align with the MS C Service Cost Position (SCP).

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605221F / KC-46				Project (Number/Name) 655271 / KC-46 RDT&E			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
655271: KC-46 RDT&E	5,319.514	572.118	261.724	93.845	0.000	93.845	34.135	0.000	0.000	0.000	0.000	6,281.336
Quantity of RDT&E Articles	4	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Replacement of the legacy tanker fleet will take place in several stages. The initial tanker replacement increment of KC-46s will replace roughly a third of the current capability. Future programs will ultimately recapitalize the entire tanker fleet over a period of more than 30 years. The Air Force completed an Analysis of Alternatives (AoA) in Apr 2006 to determine the most appropriate strategy to recapitalize the aging fleet of aerial refueling aircraft. Based on this analysis, the Air Force concluded a strategy of full and open competition to select a commercial derivative replacement tanker aircraft would result in a best value tanker contract. To initiate the first phase of the tanker replacement, the KC-46 program released a final Request for Proposal (RFP) on 24 Feb 2010, and entered source selection on 9 Jul 2010. The KC-46 program held a Milestone B (MS B) Defense Acquisition Board (DAB) on 23 Feb 2011, received approval to enter Engineering and Manufacturing Development (EMD) from the Undersecretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) on 24 Feb 2011, and awarded the KC-46 EMD contract to Boeing on 24 Feb 2011 to develop and procure 179 KC-46 aircraft. The program is procuring four RDT&E aircraft for integration and demonstration of capability which will ultimately be operationally fielded. During production, the program plans to procure 175 aircraft throughout 13 lots. The KC-46 program held a MS C DAB on 12 Aug 2016 and received approval to enter Low Rate Initial Production (LRIP). The program awarded LRIP Lots 1 and 2 on 18 Aug 2016 and LRIP Lot 3 on 27 Jan 2017, totaling 34 aircraft. KC-46 funding also supports Training Systems, Direct Mission Support, Program Management Administration (PMA) activities, government developmental and operational test support, mission planning capability development, various studies and analyses, and future tanker replacement planning activities.

The KC-46 will provide the capability to fuel joint and coalition receivers via a boom or drogue system on every mission and will also augment the airlift fleet with cargo, passenger, and aeromedical evacuation capabilities. The KC-46 will operate in day/night and adverse weather conditions to enable deployment, employment, sustainment, and redeployment of U.S. joint, allied, and coalition forces. The KC-46 will have communication, navigation, and surveillance equipment for worldwide operations; the capability to perform missions in chemical and biological environments; the ability to operate in up to medium threat environments with self-defense/protection (both active and passive) capabilities; and the necessary battlespace awareness to mitigate survivability threats.

The Aircrew Training System (ATS) and the Maintenance Training System (MTS) are being developed and procured using KC-46 funding. The ATS contract was awarded on 1 May 2013 to FlightSafety Services Corporation. The ATS contract will provide Aircrew Training Devices (ATDs), to include Weapon System Trainers (WSTs), Boom Operator Trainers (BOTs), Fuselage Trainers (FuTs), and Part-Task Trainers (PTTs) at each Main Operating Base (MOB) and the Formal Training Unit (FTU). The ATS contract will also support Distributed Mission Operations (DMO), provide aircrew instruction, develop courseware, provide logistics support, acquire a technical data package to support future competition efforts, and manage training device concurrency with the aircraft.

The MTS contract was awarded 6 Jul 2016 to The Boeing Company. The MTS acquisition focuses on designing, developing, testing, producing, and fielding an optimized training system for KC-46 maintainers by integrating various forms of training media and Maintenance Training Devices (MTDs) into a "blended" solution. This blended solution includes the appropriate mix of hardware and software, "high-fidelity" Augmented Hardware Training Devices (AHTDs), PTTs, Interactive Multimedia Instruction (IMI), and emerging technologies to meet validated Air Mobility Command (AMC) maintenance training requirements.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0605221F / KC-46	Project (Number/Name) 655271 / KC-46 RDT&E		
This program is in Budget Activity 05, System Development and Demonstration (SDD), because it passed MS C approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.					
In FY 2016, \$26.691M is no longer a part of the KC-46 program baseline (BPAC 655271) since it was approved to source the Counter-small Unmanned Aerial System Joint Emergent Operational Need (C-sUAS JEON), AFLCMC/HBU (Force Protection) program, as a Rapid Acquisition Authority (RAA) funded effort. This funding will not be reported in the SAR.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
Title: KC-46 Aircraft Product Development			449.438	170.824	15.997
Description: EMD activities will be conducted to include the following types of activities: develop a commercial 767-2C aircraft upon which the KC-46 is based; develop the KC-46 military capability and integrate it into the aircraft; build four EMD aircraft; procure live fire assets; procure required Government Furnished Equipment (GFE); procure simulator and maintenance data; develop technical manuals and Type 1 training; and conduct development and operational testing.					
FY 2016 Accomplishments: Continued aircraft manufacturing and certification/qualification ground and flight testing.					
FY 2017 Plans: Continue certification/qualification ground and flight testing.					
FY 2018 Plans: Support start of Initial Operational Test and Evaluation (IOT&E). Complete certification/qualification ground and flight testing and IOT&E.					
Title: KC-46 Trainer Product Development - Aircrew Training System (ATS)			1.061	1.072	0.000
Description: Trainer development activities will be conducted to include the following types of activities: development and procurement of ATDs, courseware, and associated support equipment.					
FY 2016 Accomplishments: Completed subsystem and final system level Critical Design Reviews (CDRs) for Increment 1. Conducted hardware/software integration for all ATDs. Conducted Initial Increment 1 Computer-Based Training (CBT)/Instructor-Based Training (IBT) courseware development.					
FY 2017 Plans: Begin delivery of courseware and first article ATDs to conduct System Level Formative Evaluation (SLFE). Complete in-plant and on-site testing of ATDs. Conduct simulator validation of ATDs at Altus and McConnell AFBs. Begin Small Group Try-Outs (SGTOs) and SLFE.					
FY 2018 Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605221F / KC-46	Project (Number/Name) 655271 / KC-46 RDT&E	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
Achieve Ready for Training (RFT) at Altus and McConnell Air Force Bases (AFBs). Complete final system level CDR for Increment 2. Complete software integration of all appropriate ATDs. Complete Increment 2 CBT/IBT courseware development.			
Title: KC-46 Trainer Product Development - Maintenance Training System (MTS) Description: Trainer development activities will be conducted to include the following types of activities: development and procurement of ATDs, courseware, and associated support equipment. FY 2016 Accomplishments: Completed source selection and awarded MTS contract on 6 Jul 2016 to The Boeing Company. Commenced EMD activities and hosted Post Award Conference and Program Startup Workshop. Initiated Training Systems Requirements Analysis (TSRA) Update activities and prepared for baselining the overall program schedule.		45.648	0.000
Title: KC-46 Support Description: Development, integration, and demonstration of the KC-46 mission planning capability. In addition, studies and analysis to support planning activities for future efficiency initiatives, business case analyses, future tanker replacement planning, and miscellaneous Program Office support and planning. Also includes requirements such as travel, office supplies, training courses, and service contracts. FY 2016 Accomplishments: Completed Final Qualification Test (FQT) on the Phase III Mission Planning Environment (MPE). Began development of Phase III option MPE to support IOT&E. Continued program support. FY 2017 Plans: Complete Phase III option MPE in support of IOT&E start. Award new Avionics, Weapons, and Equipment (AWE) maintenance contract to bridge MPE support through IOT&E. Complete Phase IV MPE option in support of IOT&E. Continue program support. FY 2018 Plans: Complete MPE maintenance and updates through IOT&E. Continue program support.		30.989	43.658
			7.580

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force							Date: May 2017					
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0605221F / KC-46			Project (Number/Name) 655271 / KC-46 RDT&E					
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2016	FY 2017	FY 2018			
Complete MPE maintenance and updates through IOT&E. Continue program support.												
Title: KC-46 Test & Evaluation							18.291	46.170	70.268			
Description: Test & Evaluation (T&E) activities will be conducted to include the following types of activities: Development Test & Evaluation, Operational Test & Evaluation, Tanker Qualification, Receiver Certifications, Live Fire Test & Evaluation (LFT&E), Federal Aviation Administration (FAA) support, and other test planning and organizational support.												
FY 2016 Accomplishments: Completed first boom and drogue aerial refueling contact and offload with five receivers: F-16C/D, C-17A, F/A-18C/D, AV-8B and A-10C. Met Milestone C (MS C) requirements. Completed Live Fire Testing and continued Ground and Flight integrated test.												
FY 2017 Plans: Continue T&E planning activities, including preparing for IOT&E. The KC-46 Program plans to utilize a combination of EMD, pre-delivery production, and LRIP aircraft for Developmental Test and IOT&E. Start aerial refueling (AR) tanker-receiver certification. Provide final Live Fire Test and Evaluation report.												
FY 2018 Plans: Complete integrated test. Complete T&E planning activities and preparations for IOT&E. Begin and complete IOT&E. Continue AR tanker-receiver certification and initial Aerial Refueling Simulator Qualifications data collection.												
Title: Counter-small Unmanned Aerial System Joint Emergent Operational Need (C-sUAS JEON)							26.691	-	-			
Description: Rapidly develop, procure, field, and sustain Counter-small Unmanned Aerial System capabilities. RAA effort will be executed by the Counter-small Unmanned Aerial System Joint Emergent Operational Need (C-sUAS JEON), AFLCMC/HBU (Force Protection), program. This funding will not be reported in the SAR.												
FY 2016 Accomplishments: Rapidly develop, procure, field, and sustain Counter-small Unmanned Aerial System capabilities. RAA effort will be executed by the Counter-small Unmanned Aerial System Joint Emergent Operational Need (C-sUAS JEON), AFLCMC/HBU (Force Protection), program. This funding will not be reported in the SAR.												
Accomplishments/Planned Programs Subtotals							572.118	261.724	93.845			
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• APAF: BA02: Line Item # KC046A: KC-46A Tanker	2,334.601	2,884.591	2,545.674	0.000	2,545.674	2,711.167	2,943.478	2,991.871	2,832.006	12,504.217	33,213.190	

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0605221F / KC-46				Project (Number/Name) 655271 / KC-46 RDT&E			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APAF: BA06: Line Item # 000999: Initial Spares	52.965	172.183	413.373	0.000	413.373	386.263	224.294	129.503	218.382	1,196.616	2,793.579
Remarks											
D. Acquisition Strategy											
<p>The KC-46 Program acquisition strategy is to procure an existing commercial, FAA certified aircraft modified to meet USAF requirements. The KC-46 program released a final RFP on 24 Feb 2010, and entered source selection on 9 Jul 2010. The KC-46 program held a MS B DAB on 23 Feb 2011, received approval to enter EMD from the USD(AT&L) on 24 Feb 2011, and awarded the KC-46 contract to Boeing on 24 Feb 2011 to develop and procure 179 KC-46 aircraft. The KC-46 contract procurement was conducted via a full and open competition per Federal Acquisition Regulation (FAR) Part 15, and resulted in a 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.</p> <p>The MS B acquisition strategy planned for two LRIP lots followed by 11 Full Rate Production (FRP) lots for a total aircraft procurement of 175 production aircraft. An update to the acquisition strategy occurred in support of Milestone C (MS C) that increased LRIP from two to four lots and the remaining nine to be FRP lots with the total aircraft buy remaining at 175 Production aircraft (+4 EMD aircraft, with a grand total of 179 aircraft).</p> <p>LRIP began with two Firm Fixed Price (FFP) and two FFP Not to Exceed (NTE) options (LRIP-1 Qty 7, LRIP-2 Qty 12, LRIP-3 Qty 15, and LRIP-4 Qty 15) followed by nine FFP FRP options [via NTE values + Economic Price Adjustment (EPA)]. LRIP Lots 1 and 2 were awarded on 18 Aug 2016 and LRIP Lot 3 was awarded on 27 Jan 2017. The FRP options will be exercised following successful completion of IOT&E.</p> <p>The ATS acquisition strategy is to provide ATDs, and associated support structure, to each MOB and the FTU. The ATS contract was awarded on 1 May 2013 to FlightSafety Services Corporation. The ATS contract procurement was conducted via a full and open competition per FAR Part 15, and resulted in an FY 2013 EMD FPIF contract. The ATS EMD phase will develop and procure ATDs; and will be supported with courseware, Training System Support Center, the technical data package, and support equipment to ensure system availability and concurrency with the aircraft. The ATS initial production options were exercised in Aug 2015.</p> <p>The MTS acquisition strategy is to acquire MTDs, and associated support structure, for two AMC active duty Regional Maintenance Training Facilities. The MTS contract was awarded 6 Jul 2016 to The Boeing Company. The MTS procurement was conducted via a full and open competition per FAR Part 15, and resulted in an FY 2016 EMD FFP contract. The MTS EMD phase will develop and procure MTDs; and will be supported with courseware, Training System Support Center, the technical data package, and support equipment to ensure system availability and concurrency with the aircraft.</p> <p>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.</p>											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605221F / KC-46	Project (Number/Name) 655271 / KC-46 RDT&E
<p>The long-term support concept for the KC-46 is organic two-level maintenance (2LM): organization level (O-level) and depot level (D-level). For the purposes of this program, all maintenance other than O-level shall be referred to as D-level. The product support strategy will initially employ Interim Contractor Support (ICS) before transitioning to a 100% organically-managed maintenance and supply support capability. Performance Based Logistics (PBL) solutions will be evaluated during EMD as viable approaches to facilitate the transition.</p> <p>E. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605221F / KC-46	Project (Number/Name) 655271 / KC-46 RDT&E
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
KC-46A aircraft non-recurring development, integration, and testing; 4 RDT&E tanker aircraft; and support	C/FPIF	The Boeing Company : Seattle, WA	4,940.077	449.438	Mar 2016	170.824	Mar 2017	15.997	Mar 2018	0.000		15.997	3.333	5,579.669	5,606.360
KC-46A Aircrew Training System	C/FPIF	FlightSafety Services Corp. : Centennial, CO	85.451	1.061	Feb 2016	1.072	Dec 2016	0.000		0.000		0.000	0.000	87.584	87.584
KC-46A Maintenance Training System	C/FFP	The Boeing Company : St. Louis, MO	1.302	45.648	Jul 2016	0.000		0.000		0.000		0.000	0.000	46.950	46.950
Subtotal			5,026.830	496.147		171.896		15.997		0.000		15.997	3.333	5,714.203	5,740.894

Remarks

The KC-46 EMD contract was awarded 24 Feb 2011. The contract ceiling price of \$4.9B is the government's maximum financial liability on the prime contract. The "Total Cost" value represents the MS C Service Cost Position (SCP), which accounts for the ceiling price of the contract plus the financial and schedule risk of potential design changes for the KC-46 aircraft.

FINANCIAL PERFORMANCE: The KC-46 is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, the KC-46 EMD contract is a FPIF contract with progress payments. Twenty percent of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
KC-46A studies and analysis associated with the development, integration, and demonstration of KC-46 capability & future planning	C/CPAF	Not specified. : TBD	54.752	14.828	Oct 2015	15.023	Mar 2017	3.817	Mar 2018	0.000		3.817	0.030	88.450	88.449
Subtotal			54.752	14.828		15.023		3.817		0.000		3.817	0.030	88.450	88.449

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605221F / KC-46				Project (Number/Name) 655271 / KC-46 RDT&E					
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks These contracts are on an as needed basis, with various contract types and performing activities.															
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
KC-46A testing and planning support of development & operational test, FAA & military certification, and aircraft qualification activities	Various	Various : Various	131.793	18.291	Oct 2015	46.170	Mar 2017	70.268	Mar 2018	0.000		70.268	30.772	297.294	297.294
Subtotal			131.793	18.291		46.170		70.268		0.000		70.268	30.772	297.294	297.294
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
KC-46A Program Management Administration - Program A&AS Support	C/FFP	US Falcon : Dayton, OH	61.532	8.142	Jan 2016	19.963	May 2017	2.287	May 2018	0.000		2.287	0.000	91.924	91.924
KC-46A Program Management Administration - Trainer A&AS Support	C/CPFF	HX5 : Fort Walton Beach, FL	5.712	3.500	Jan 2016	3.242	Jan 2017	0.753	Jan 2018	0.000		0.753	0.000	13.207	13.208
KC-46A Program Management Administration - Other	Various	KC-46 Program Office : Dayton, W-P AFB, OH	38.895	4.519	Oct 2015	5.430	Oct 2016	0.723	Oct 2017	0.000		0.723	0.000	49.567	49.567

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605221F / KC-46	Project (Number/Name) 655271 / KC-46 RDT&E
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Rapid Acquisition Authority	TBD	Not specified. : TBD	0.000	26.691		0.000		0.000		0.000		0.000	0.000	26.691	-
Subtotal			106.139	42.852		28.635		3.763		0.000		3.763	0.000	181.389	-

Remarks

Two Advisory and Assistance (A&AS) contracts over \$1M. Other PMA funding includes, but is not limited to, travel, supplies, and training.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5,319.514	572.118		261.724		93.845		0.000		93.845	34.135	6,281.336	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0605221F / KC-46		Project (Number/Name) 655271 / KC-46 RDT&E	

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EMD: KC-46 Aircraft																												
Developmental Test & Evaluation to support aircraft delivery																												
Operational Assessment-2 (OA-2)																												
Receiver Certification																												
Initial Operational Test & Evaluation																												
Milestone C																												
Support Equipment Analysis																												
Supply Support																												
Depot Maintenance Inter-servicing (DMI), Source of Repair Assignment Process (SORAP), Activation Planning, & FAA Certifications																												
Aircrew Training System Development & Updates																												
Maintenance Training System Development & Updates																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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	2016	2	2020
Developmental Test & Evaluation to support aircraft delivery	1	2016	4	2017
Operational Assessment-2 (OA-2)	1	2016	4	2016
Receiver Certification	1	2016	4	2019
Initial Operational Test & Evaluation	1	2018	4	2018
Milestone C	4	2016	4	2016
Support Equipment Analysis	1	2016	3	2016
Supply Support	1	2016	1	2020
Depot Maintenance Inter-servicing (DMI), Source of Repair Assignment Process (SORAP), Activation Planning, & FAA Certifications	1	2016	2	2020
Aircrew Training System Development & Updates	1	2016	3	2020
Maintenance Training System Development & Updates	3	2016	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605223F I Advanced Pilot Training							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	7.747	10.395	12.377	105.999	0.000	105.999	323.463	366.369	320.177	202.937	145.571	1,495.035
655340: Advanced Trainer Replacement T-X	7.747	10.395	12.377	105.999	0.000	105.999	323.463	366.369	320.177	202.937	145.571	1,495.035
Quantity of RDT&E Articles	-	-	-	3	-	3	2	-	-	-		

Program MDAP/MAIS Code: 436

Note

Prior Years Funding \$4.994M was executed in PE 0604233F.

A. Mission Description and Budget Item Justification

The APT program will replace the AETC aging T-38C fleet with new aircraft, Ground Based Training Systems (GBTS) (simulators, training devices, computer based training systems, academics, etc.), and support infrastructure currently used in the fighter/bomber advanced Specialized Undergraduate Pilot Training (SUPT) track as well as in the Introduction to Fighter Fundamentals (IFF) program. The APT program acquisition strategy was approved by OSD (AT&L) in early FY 2017 (December 2016). At the same time, the APT Team completed their Development Request for Proposal (RFP) Release Defense Acquisition Board (DAB) and subsequently released the RFP to industry on 30 Dec 2016. The Program will begin source selection evaluations in mid 2017 and seek Milestone B entry in FY 2018.

B. Program Change Summary (\$ in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	10.395	12.377	105.699	0.000	105.699
Current President's Budget	10.395	12.377	105.999	0.000	105.999
Total Adjustments	0.000	0.000	0.300	0.000	0.300
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.300	0.000	0.300

Change Summary Explanation

The FY 2016 budget does not reflect two reprogramming actions that occurred after 30 Sept 2016 in the amount of -\$6.263M. The purpose of the reprogramming actions are to improve program execution.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605223F I Advanced Pilot Training							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Title: Advanced Pilot Training (APT) Program										10.395	12.377	105.999
Description: The APT program office is developing an acquisition strategy and related documentation to meet the requirements of the Capabilities Development Document (CDD) for Milestone B entry. This includes studies, analysis, acquisition documentation, and market research activities to reduce risk and support the acquisition strategy and engineering and manufacturing development. Includes Program Management Administration (PMA) such as travel, Other Government Costs (OGC), and Advisory and Assistance Services (A&AS).												
FY 2016 Accomplishments: Completed studies, analysis, test and acquisition documentation and RFP development activities in support of RFP Release Decision DAB and Source Selection activities. Included APT PMA costs such as travel, OGC and A&AS in support of Milestone B approval.												
FY 2017 Plans: The APT Program Office is developing an acquisition strategy, related milestone documentation, and proposal documents. Studies, analysis, test and acquisition documentation and market research activities will be conducted to reduce risk in support of acquisition strategy, engineering and manufacturing development. Included APT PMA costs such as travel, OGC and A&AS in support of a Milestone B approval.												
FY 2018 Plans: Program plans to complete Milestone B, Contract award completion and contract kickoff activities to include System Requirements Review(SRR)/System Functional Review (SFR), Preliminary Design Review (PDR), and documentation updates post Milestone B. Plans also includes APT PMA costs such as travel, OGC, and A&AS.												
Accomplishments/Planned Programs Subtotals										10.395	12.377	105.999
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• APAF: BA03: Line Item APT000: Advanced Trainer Replacement T-X	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	573.881	15,467.703	16,089.030	
• APAF: BA03: APT000 Adv Proc: Advanced Trainer Replacement T-X	0.000	0.000	0.000	0.000	0.000	0.000	0.000	63.500	71.046	2,046.759	2,210.259	
Remarks												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605223F I Advanced Pilot Training	
<p>E. Acquisition Strategy</p> <p>This Advanced Pilot Training (APT) Program will develop, test, acquire and sustain an affordable, agile, and integrated APT System consisting of 350 aircraft, Ground Based Training System, Maintenance Training System, support, infrastructure, and personnel to meet Air Education and Training Command's initial need date of FY24.</p> <p>The APT Program has conducted extensive market research, concluding multiple interested and capable offerors exist supporting a vigorous competition. The program's acquisition strategy leverages market conditions by competing and awarding development, production, and initial sustainment in a single contract award. A single award Indefinite Delivery Indefinite Quantity contract will be awarded to provide for development, integration and test needed to meet existing APT requirements. Additional contract options are available for Low Rate Initial Production, Full Rate Production and initial sustainment transition.</p> <p>F. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Pilot Training Future Contracts	Various	TBD : TBD	0.000	0.000		1.309	Dec 2017	92.216	Dec 2017	0.000		92.216	1,040.462	1,133.987	-
Subtotal			0.000	0.000		1.309		92.216		0.000		92.216	1,040.462	1,133.987	-
Remarks															
As the acquisition strategy is developed and cost estimates mature, the amount in cost to complete will be allocated to the appropriate categories.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Pilot Training Studies and Analysis	Various	Various : Various	3.566	6.673	Jun 2016	5.034	Jan 2017	0.035	Jan 2018	0.000		0.035	64.471	79.779	-
Subtotal			3.566	6.673		5.034		0.035		0.000		0.035	64.471	79.779	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Pilot Training Test Support	MIPR	Edwards AFB : Edwards AFB, CA	0.029	0.204	Feb 2016	0.209	May 2017	0.855	Nov 2017	0.000		0.855	207.551	208.848	-
Subtotal			0.029	0.204		0.209		0.855		0.000		0.855	207.551	208.848	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Pilot Training PMA Government Costs	Various	AFLCMC : Dayton, OH	1.406	0.642	Oct 2015	2.285	Jan 2017	3.837	Oct 2017	0.000		3.837	10.725	18.895	-
Advanced Pilot Training A&AS	Various	AFLCMC : Dayton, OH	2.746	2.876	Mar 2016	3.540	Feb 2017	9.056	Mar 2018	0.000		9.056	35.308	53.526	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017		
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>				Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>				

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			4.152	3.518		5.825		12.893		0.000		12.893	46.033	72.421	-

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7.747	10.395	12.377	105.999	0.000	105.999	1,358.517	1,495.035	-

Remarks

Prior years amounts under Program 0604233F, Specialized Undergraduate Flight Training.

Advanced Pilot Training Studies and Analysis: \$0.935M

Advanced Pilot Training PMA Government Costs: \$1.383M

Advanced Pilot Training A&AS: \$2.676M

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
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 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cost Estimate Preparation Certification																												
Pre Milestone B (RFP Release) Decision Point																												
RFP Release																												
Source Selection																												
Milestone B																												
Engineering and Manufacturing Development Phase																												
Government Preliminary Design Review (PDR)																												
Post PDR Review																												
Government Critical Design Review (CDR)																												
Development, Test and Evaluation																												
Advanced Procurement (AP) Approval																												
AP Delivery Order																												
Milestone C																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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
Cost Estimate Preparation Certification	1	2016	4	2016
Pre Milestone B (RFP Release) Decision Point	1	2017	1	2017
RFP Release	1	2017	1	2017
Source Selection	2	2017	1	2018
Milestone B	1	2018	1	2018
Engineering and Manufacturing Development Phase	1	2018	3	2022
Government Preliminary Design Review (PDR)	3	2018	3	2018
Post PDR Review	1	2019	1	2019
Government Critical Design Review (CDR)	3	2019	3	2019
Development, Test and Evaluation	2	2020	2	2022
Advanced Procurement (AP) Approval	3	2021	3	2021
AP Delivery Order	4	2021	4	2021
Milestone C	3	2022	3	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605229F I Combat Rescue Helicopter							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	472.534	150.341	319.331	354.485	0.000	354.485	461.096	233.790	37.996	21.644	3.400	2,054.617
654364: Combat Rescue Helicopter	472.534	150.341	319.331	354.485	0.000	354.485	461.096	233.790	37.996	21.644	3.400	2,054.617
Quantity of RDT&E Articles	4	-	5	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 479												
A. Mission Description and Budget Item Justification												
<p>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.</p>												
<p>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.</p>												
<p>The CRH development effort will procure a total of four 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.</p>												
<p>The FY 2018 funding request was reduced by \$98.979 million to account for the availability of prior year execution balances.</p>												
<p>This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0605229F I Combat Rescue Helicopter				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	156.085	319.331	453.464	0.000	453.464	
Current President's Budget	150.341	319.331	354.485	0.000	354.485	
Total Adjustments	-5.744	0.000	-98.979	0.000	-98.979	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	-2.838	0.000				
• SBIR/STTR Transfer	-2.906	0.000				
• Other Adjustments	0.000	0.000	-98.979	0.000	-98.979	
Change Summary Explanation						
FY 2016 funding was reduced by \$5.744M. \$2.838M was reprogrammed to Compass Call and \$2.906M was used for SBIR.						
The FY 2018 funding request was reduced by \$98.979 million to account for the availability of prior year execution balances.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Combat Rescue Helicopter (CRH)				147.016	314.031	344.585
Description: Develop a new helicopter, associated training system and support elements that leverage fielded, non-developmental technologies to recapitalize the HH-60G fleet.						
FY 2016 Accomplishments: Conducted development work on Combat Rescue Helicopter aircraft, training systems and associated product support. Conducted required testing. Management services including studies and analyses, miscellaneous program office support, travel, office supplies, training courses and service contracts. Conducted Air Vehicle and Training Systems Preliminary Design Review.						
FY 2017 Plans: Conduct development work on Combat Rescue Helicopter aircraft, training systems and associated product support. Activate the CLIN to develop the five SDTA Aircraft and conduct required testing. Purchase Live Fire Test & Evaluation (LFT&E) Assets. Management services including studies and analyses, miscellaneous program office support, travel, office supplies, training courses and service contracts. Conduct both Air Vehicle and Training System Critical Design Reviews.						
FY 2018 Plans:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605229F I Combat Rescue Helicopter							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Conduct development work on Combat Rescue Helicopter aircraft, training systems and associate product support. Continue to develop the EMD and SDTA Aircrafts and conduct required testing. Initiate pre-operational support, aircrew training, and maintenance support for support and integration facilities. Initiate facilities and equipment design for Electronic Warfare Integrated Reprogramming (EWIR) capability. Management services including studies and analyses, miscellaneous program office support, travel, office supplies, training courses and service contracts. Plan to award TSA III Delta Training Device contract in Mar 2018.												
Title: Combat Rescue Helicopter Government Test and Evaluation										3.325	5.300	9.900
Description: Conduct test and evaluation on the Combat Rescue Helicopter and associated training systems to support Developmental Test and Evaluation planning, Operational Test and Evaluation planning, Live Fire Test and Evaluation, and other test planning and organizational support.												
FY 2016 Accomplishments: Conducted Developmental Test and Evaluation planning by participating in the Air Vehicle and Training System Preliminary Design Reviews, began Operational Test and Evaluation planning, and continued Live Fire Test and Evaluation (LFT&E) analysis, and other test planning and organizational support. Preliminary LFT&E analysis was conducted using the contractor's design information to determine the vulnerability of the overall system.												
FY 2017 Plans: Continue Developmental Test and Evaluation planning, Operational Test and Evaluation planning, Live Fire Test and Evaluation analysis, and other test planning and organizational support. Witness contractor qualification testing on subcomponents. Attend Air Vehicle and Training System Critical Design Reviews to further develop plans for Government testing.												
FY 2018 Plans: Continue Developmental Test and Evaluation planning, Operational Test and Evaluation planning, Live Fire Test and Evaluation, and other test planning and organizational support. Continue to witness contractor qualification testing on subcomponents. Support contractor's Test Readiness Review and First Flight Readiness Reviews in preparation for test conduct.												
Accomplishments/Planned Programs Subtotals										150.341	319.331	354.485
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• APAF:BA 04:Line Item #H060WH: Combat Rescue Helicopter	0.000	0.000	0.000	0.000	0.000	88.885	623.047	913.337	931.628	5,300.700	7,857.627	
Remarks												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0605229F <i>I Combat Rescue Helicopter</i>
E. Acquisition Strategy <p>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), Avionics Desktop Trainer (AVDTT), Airframe Systems Trainer (AST), other maintenance Part Task Trainers, 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.</p> <p>The contract type for this effort is Fixed Price Incentive Firm through Low Rate Initial Production.</p> <p>As originally planned following source selection, a formal HH-60W Training System Requirements Analysis (TSRA) was conducted in Sep 2015. This analysis identified some additional training requirements not accounted for in the original contract. Current approach is to acquire these additional training devices via the AFLCMC Simulator Program Office's Multiple Award Indefinite Delivery Indefinite Quantity (IDIQ) contract called TSA III.</p>		
F. Performance Metrics <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605229F / <i>Combat Rescue Helicopter</i>				Project (Number/Name) 654364 / <i>Combat Rescue Helicopter</i>					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CRH aircraft development, integration, test articles, trainers, support and contractor test	C/FPIF	Sikorsky Aircraft Corporation : Stratford, CT	451.905	138.224	May 2016	306.471	Dec 2016	329.343	Dec 2017	0.000		329.343	690.895	1,916.838	1,916.838
Acquisition of additional CRH training devices	C/FFP	TBD : TBD	0.000	0.000		0.000		6.600	Dec 2017	0.000		6.600	26.400	33.000	33.000
Subtotal			451.905	138.224		306.471		335.943		0.000		335.943	717.295	1,949.838	1,949.838
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CRH product support related to the aircraft development, integration, test articles, trainers, and contractor test.	Various	Various : TBD	2.056	2.617	Mar 2016	0.668	Jun 2017	0.846	Jun 2018	0.000		0.846	1.048	7.235	7.235
Subtotal			2.056	2.617		0.668		0.846		0.000		0.846	1.048	7.235	7.235
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CRH planning and testing to support developmental and operational test, live fire test and other weapon system testing and support	PO	413th Test Squadron : Eglin AFB, FL	2.567	3.325	Jun 2016	5.300	Dec 2016	9.900	Dec 2017	0.000		9.900	23.300	44.392	44.392
Subtotal			2.567	3.325		5.300		9.900		0.000		9.900	23.300	44.392	44.392

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605229F / Combat Rescue Helicopter	Project (Number/Name) 654364 / Combat Rescue Helicopter
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CRH A&AS Support	C/CPFF	EPASS : Dayton, OH	13.953	4.428	Mar 2016	4.447	Apr 2017	5.396	Apr 2018	0.000		5.396	11.283	39.507	39.507
CRH Other PMA	Various	Various : Various	2.053	1.747	Dec 2015	2.445	Dec 2016	2.400	Dec 2017	0.000		2.400	5.000	13.645	13.645
Subtotal			16.006	6.175		6.892		7.796		0.000		7.796	16.283	53.152	53.152
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			472.534	150.341		319.331		354.485		0.000		354.485	757.926	2,054.617	-

Remarks

FINANCIAL PERFORMANCE: CRH is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the CRH EMD contract is a FPIF contract with progress payments. Twenty percent of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations, progress payment restrictions and DFAS withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017			
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605229F / <i>Combat Rescue Helicopter</i>					Project (Number/Name) 654364 / <i>Combat Rescue Helicopter</i>			

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CRH EMD Development																												
Air Vehicle Preliminary Design Review																												
Air Vehicle Critical Design Review																												
CRH Training System EMD Development																												
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																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605229F / <i>Combat Rescue Helicopter</i>	Project (Number/Name) 654364 / <i>Combat Rescue Helicopter</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CRH EMD Development	1	2016	3	2020
Air Vehicle Preliminary Design Review	3	2016	3	2016
Air Vehicle Critical Design Review	3	2017	3	2017
CRH Training System EMD Development	1	2016	4	2020
Training Systems Preliminary Design Review	4	2016	4	2016
Training Systems Critical Design Review	4	2017	4	2017
CRH Test and Evaluation	1	2016	4	2020
Developmental Test and Evaluation	4	2018	2	2020
Milestone C	4	2019	4	2019
Required Assets Available for Initial Operational Capability	2	2020	2	2020

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

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					PE 0605431F I Advanced EHF MILSATCOM (SPACE)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	208.095	259.131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
657103: Advanced MILSATCOM	-	54.817	31.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
657104: Evolved AEHF MILSATCOM (EAM)	-	153.278	228.124	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

In FY2018, PE 0605431F, Advanced EHF MILSATCOM efforts were transferred to PE 1206431F, Advanced EHF MILSATCOM due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206431F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	208.095	259.131	0.000	0.000	0.000
Total Adjustments	208.095	259.131	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	208.095	259.131	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657103: <i>Advanced MILSATCOM</i>	-	54.817	31.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657104: <i>Evolved AEHF MILSATCOM (EAM)</i>	-	153.278	228.124	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
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)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	71.867	50.815	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
657105: Polar Satellite Communications	-	71.867	50.815	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0605432F, Polar MILSATCOM efforts were transferred to PE 1206432F, Polar MILSATCOM, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206432F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	71.867	50.815	0.000	0.000	0.000
Total Adjustments	71.867	50.815	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	71.867	50.815	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					PE 0605433F I Wideband Global SATCOM (SPACE)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	49.954	41.632	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
657102: Command & Control Sys-Consolidated (CCS-C)	-	8.249	12.248	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
657107: WGS Space Systems Resiliency Upgrade	-	41.705	29.384	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

In FY2018, PE 0605433F, Wideband Global SATCOM efforts were transferred to PE 1206433F, Wideband Global SATCOM due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206433F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	49.954	41.632	0.000	0.000	0.000
Total Adjustments	49.954	41.632	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	49.954	41.632	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605433F / Wideband Global SATCOM (SPACE)				Project (Number/Name) 657102 / Command & Control Sys-Consolidated (CCS-C)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657102: Command & Control Sys-Consolidated (CCS-C)	-	8.249	12.248	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657107: WGS Space Systems Resiliency Upgrade	-	41.705	29.384	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description not provided.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605458F I Air & Space Ops Center 10.2 RDT&E							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	86.444	55.333	28.911	119.745	0.000	119.745	103.441	38.918	4.300	0.000	0.000	437.092
654945: AOC 10.2 Development	86.444	55.333	28.911	119.745	0.000	119.745	103.441	38.918	4.300	0.000	0.000	437.092
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: N42												
A. Mission Description and Budget Item Justification												
<p>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.</p>												
<p>The AOC WS Increment 10.2 set of requirements 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 Global (formerly known as Functional) AOCs, as well as Support and Manpower Augmentation units. To keep the AOC current and interoperable with the Combatant Commands (CCMD), cyber requirements, and fifth generation weapon system/weapons, the AOC WS program plans to evolve the AOC through the integration and test of progressively improving capabilities by incremental and rapid delivery of requirements using commercial software development best practices. 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 WS 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. Additionally, this project supports development of 10.2.1 and 10.2.2 updates required to keep pace with evolving Commercial Off the Shelf (COTS)/Government Off the Shelf (GOTS)/Capital Equipment Replacement (CER) and cyber dependencies which enable an evolving and supportable AOC 10.2 baseline for fielding through Full Deployment (FD). Once at FD, subsequent AOC 10.2 Baseline Releases (BR) will be Operations and Maintenance funded via PE 0207410F, Air & Space Operations Center (AOC).</p>												
<p>Activities also include studies and analysis to support current program planning and execution, as well as future program planning, to include pathfinder efforts, and transition to production and sustainment contract.</p>												
<p>BA5 - This program is in Budget Activity 5, System Development and 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.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0605458F I Air & Space Ops Center 10.2 RDT&E				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	47.629	28.911	0.000	0.000	0.000	
Current President's Budget	55.333	28.911	119.745	0.000	119.745	
Total Adjustments	7.704	0.000	119.745	0.000	119.745	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	9.222	0.000				
• SBIR/STTR Transfer	-1.518	0.000				
• Other Adjustments	0.000	0.000	119.745	0.000	119.745	
Change Summary Explanation						
FY 2016 funding increased \$9.222M to incrementally fund the AOC 10.2 modernization Engineering and Manufacturing Development contract.						
FY 2018 funding increased 119.745 to fund the completion of AOC 10.2 development and testing as a result of the 2016 Critical Change due to the program slip beyond Milestone C threshold.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: AOC WS Inc 10.2 Development				53.963	28.222	113.807
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 2016 Accomplishments:						
- Closed out Critical Change Report						
- Re-verified the essentiality of the program to national security, re-verified program requirements, evaluated alternatives and determined none exist that deliver the required capability at lower cost, evaluated sufficiency of the program's management structure and identified a new cost and schedule baseline requiring an iterative approach to reaching AOC 10.2 Full Deployment, which now includes AOC 10.2.0, 10.2.1 and 10.2.2						
- Began contractor Design/Development and provided contractor support for Development Testing (DT), training, and initial site deployment						
- Enhanced AOC 10.2 developmental and test suite cyber security posture to prepare for obtaining Authority to Operate (ATO)						
- Continued resolving Deficiency Reports (DR) in preparation for supporting Government DT						
FY 2017 Plans:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Integrate 3rd Party Application updates - Continue to update infrastructure - Iteratively conduct combined Risk Reduction Testing (RRT) with the contractor and Test community to mature the system via operationally relevant test scenarios - Continue to resolve DRs in prep for Government DT - Begin work on 10.2.1 release which will be fielded to the Help Desk, 612th AOC, 609th AOC and FTU - Commence AOC 10.2.1 Baseline Release - Consolidate all patches into updated system build and invest in build/test automation to improve build repeatability and system maintainability - Re-initiate initial site deployments FY 2018 Plans: <ul style="list-style-type: none"> - Conduct DT and obtain an ATO - Continue to update 3rd Party Applications, infrastructure components and fix DRs as identified - Continue work on 10.2 set of requirements and initial site deployments - Explore future phases of pathfinder to deliver in a cloud-based environment 				
Title: AOC WS Inc 10.2 Test and Evaluation Description: Test and Evaluation FY 2016 Accomplishments: <ul style="list-style-type: none"> - Completed DT1 - Began DT2, but due to system problems, this was turned in to a Risk Reduction Event - Continued contractor Design/Development and provide contractor support for DT, training, and initial site deployment - Enhanced AOC 10.2 developmental and test suite cyber security posture to prepare for obtaining ATO - Continued resolving DRs in preparation for supporting Government DT FY 2017 Plans: <ul style="list-style-type: none"> - Iteratively conduct combined RRT with the contractor and Test community to mature the system via operationally relevant test scenarios FY 2018 Plans: <ul style="list-style-type: none"> - Execute DT / Operational Assessment (OA) event 		1.370	0.689	2.438
Title: AOC WS Inc 10.2 Training Description: Training		0.000	0.000	3.500

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605458F I Air & Space Ops Center 10.2 RDT&E							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
FY 2016 Accomplishments: - Training was not completed in FY 2016 due to the Critical Change												
FY 2017 Plans: - Training was not completed in FY 2017 due to the Critical Change												
FY 2018 Plans: - Effort includes, but is not limited to, support of the Modernization effort for AOC 10.2 requirements training analysis, planning, and development during EMD and Post Milestone C efforts (Production and Deployment) to include both contractor-developed capabilities and supplemental training for contractor modified 3rd Party capabilities - Effort includes curriculum and courseware/material development, instructor training, class/Computer Based Training conduct, and training surveys/analysis/updates/enhanced simulation capabilities												
Accomplishments/Planned Programs Subtotals										55.333	28.911	119.745
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA07: PE 0207410F: Air & Space Operations Center (AOC), Project 675117, Integration Development	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	197.833	
• RDTE: BA04: PE 0604458F: Air & Space Ops Center	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	66.970	
• OPAF: BA03: Line Item # 834560: Air Operations Center (AOC) 10.2	14.846	30.623	0.000	0.000	0.000	5.756	52.920	52.114	0.000	0.000	146.469	
Remarks												
For OPAF BA03 Line Item # 834560, the FY17 PB described the Geographic AOC fielding plan with installations of 1/2/3 in FYs 16/17/18. Due to the AOC 10.2 Critical Change, the new fielding plan calls for installations of 4/4 in FYs 20/21, including iterative installs of 10.2.1 and 10.2.2 at the help desk and FTU.												
E. Acquisition Strategy												
The acquisition strategy builds on existing capabilities using evolutionary acquisition to standardize, modernize and sustain the AOC. The initial capability was AOC WS Increment 10.0 which fielded the 10.0 configuration to five operational sites, plus a Help Desk and a Formal Training Unit. The second increment, Increment 10.1, upgraded these locations to an integrated baseline and fielded the baseline to additional operational and reserve units worldwide. The latest increment is AOC 10.2, which leverages the Cost Plus Incentive Fee (CPIF) AOC Modernization Contract, competitively awarded on 25 October 2011, covering initial development plus options												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0605458F / <i>Air & Space Ops Center 10.2 RDT&E</i>
<p>for fielding, Capital Equipment Replacement, help desk and sustainment. Following the 2016 Critical Change, the AOC 10.2 program now includes Baseline Releases 10.2.0, 10.2.1, and 10.2.2 to ensure supportable baseline configurations through Full Deployment (FD). The baseline release delivery approach are designed to mirror commercial software best practices to incrementally deliver capability to the warfighter at a rapid and efficient pace. The Modernization prime contractor is using a system of systems perspective and following systems engineering rigor to evolve AOC to a Net-Centric environment, compliant with DoD SOA standards. The AOC 10.2 Program Management Office (PMO) provides technical oversight to the AOC 10.2 Modernization effort, led by a Government AOC Weapon System (WS) Chief Engineer and a modernization Lead Engineer. Additionally, significant technical expertise is provided by MITRE, MIT Lincoln Laboratory, and Engineering & Technology Acquisition Support Services contractors.</p> <p>F. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AOC 10.2 Modernization Government Furnished Equipment	Various	Various : Various	2.027	0.000		1.140	Mar 2017	1.340	Mar 2018	0.000		1.340	0.000	4.507	-
AOC 10.2 Modernization Contract	C/CPIF	Northrop Grumman : Herndon, VA	68.641	45.746	Oct 2015	17.102	Nov 2016	101.357	Oct 2017	0.000		101.357	0.000	232.846	212.958
AOC 10.2 Training	C/Various	Various : Various	2.926	0.000		0.000		3.500	May 2018	0.000		3.500	0.000	6.426	-
Subtotal			73.594	45.746		18.242		106.197		0.000		106.197	0.000	243.779	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test	Various	Various : Various	3.303	1.370	Jan 2016	0.689	Apr 2017	2.438	Oct 2017	0.000		2.438	0.000	7.800	-
Subtotal			3.303	1.370		0.689		2.438		0.000		2.438	0.000	7.800	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering	C/Various	MITRE : Bedford, MA	5.035	4.401	Oct 2015	4.530	Oct 2016	4.380	Oct 2017	0.000		4.380	0.000	18.346	-
Program Management Adminstration	C/Various	Various : Hanscom AFB, MA	4.512	3.816	Oct 2015	5.450	Dec 2016	6.730	Nov 2017	0.000		6.730	0.000	20.508	-
Subtotal			9.547	8.217		9.980		11.110		0.000		11.110	0.000	38.854	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force											Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		86.444	55.333		28.911		119.745		0.000		119.745	0.000	290.433	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
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 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AOC Inc 10.2 Milestone C																												
AOC Inc 10.2 Full Deployment Decision																												
AOC Inc 10.2.0 Design / Development																												
AOC Inc 10.2.0 Fielding to CAOC-X, Help Desk and Geo #1 / Development Test (DT) / Initial Operational Test and Evaluation (IOTE)																												
AOC Inc 10.2.1 Design / Development																												
AOC Inc 10.2.1 Fielding to CAOC-X, Help Desk, Geo #1 and FTU / Development Test (DT) / Initial Operational Test and Evaluation (IOTE)																												
AOC Inc 10.2.2 Design / Development																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
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 C	2	2019	2	2019
AOC Inc 10.2 Full Deployment Decision	4	2019	4	2019
AOC Inc 10.2.0 Design / Development	1	2016	2	2019
AOC Inc 10.2.0 Fielding to CAOC-X, Help Desk and Geo #1 / Development Test (DT) / Initial Operational Test and Evaluation (IOTE)	1	2016	3	2019
AOC Inc 10.2.1 Design / Development	4	2017	2	2020
AOC Inc 10.2.1 Fielding to CAOC-X, Help Desk, Geo #1 and FTU / Development Test (DT) / Initial Operational Test and Evaluation (IOTE)	2	2020	1	2021
AOC Inc 10.2.2 Design / Development	3	2019	3	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605931F I B-2 Defensive Management System							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	726.260	261.162	315.615	194.570	0.000	194.570	213.844	136.704	20.809	0.181	0.000	1,869.145
653844: B-2 DMS	726.260	261.162	315.615	194.570	0.000	194.570	213.844	136.704	20.809	0.181	0.000	1,869.145
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 431												
A. Mission Description and Budget Item Justification												
<p>The Defensive Management System Modernization (DMS-M) program enhances the B-2 direct attack capability by addressing emerging and future 21st century threats and robust modern Integrated Air Defense Systems (IADS). By leveraging "state-of-the-art" electronic warfare antennae, processors, controllers and displays, B-2 aircrews will realize unprecedented situational battlespace awareness and dynamic, real-time threat avoidance in the most complex radio frequency emitter environments. The inherent increased sensitivity of the modernized DMS over the legacy system, with increased processing power, will build a battlespace picture that could be shared with joint force platforms by on-board communication systems. The current B-2 DMS was designed in the 1980s and has not received any upgrades to date. Also, many components of the legacy DMS are not supportable and will severely impact aircraft availability without significant investment in reliability and maintainability upgrades.</p>												
<p>During development, the engineering baseline will be finalized and four production representative kits will be procured to support integrated development/operational test and a pre-Milestone C Operational Assessment, as well as B-2 Nuclear Certification testing. After completion of the Milestone C decision, Low Rate Initial Production will begin in FY 2020. After a successful Operational Test and Evaluation, the Full Rate Production decision will occur in FY 2021. Diminishing manufacturing sources and materiel shortages for affected components and subassemblies, will be addressed to protect the planned production program by mitigating unplanned part redesign and requalification risks.</p>												
<p>Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.</p>												
<p>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.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 0605931F I B-2 Defensive Management System			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	271.961	315.615	265.910	0.000	265.910
Current President's Budget	261.162	315.615	194.570	0.000	194.570
Total Adjustments	-10.799	0.000	-71.340	0.000	-71.340
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-1.450	0.000			
• SBIR/STTR Transfer	-9.349	0.000			
• Other Adjustments	0.000	0.000	-71.340	0.000	-71.340
Change Summary Explanation					
FY16 was reduced \$1.450M for higher Air Force priorities by way of Below Threshold Reprogramming, and reduced \$9.349M for Small Business Innovation Research					
FY18 was reduced \$71.34M as part of updating the program's acquisition strategy.					
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: B-2 Defensive Management System Modernization (DMS-M) Tech Development Phase 2	29.000	0.000	0.000	0.000	0.000
Description: DMS Modernization program develops improved aircrew situational awareness through replacement of passive antennas, receiver/processors, and display processors. DMS-M also addresses critical system shortfalls, and improves legacy DMS component repair issues.					
FY 2016 Accomplishments: Completed the Technology Development Phase 2 effort.					
FY 2017 Plans: N/A					
FY 2018 Base Plans: N/A					
FY 2018 OCO Plans: N/A					
Title: B-2 Defensive Managment System Modernization (DMS-M) EMD	232.162	315.615	194.570	0.000	194.570

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605931F I B-2 Defensive Management System						
C. Accomplishments/Planned Programs (\$ in Millions)						FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
<p>Description: DMS Modernization program develops improved aircrew situational awareness through replacement of passive antennas, receiver/processors, and display processors. DMS-M also addresses critical system shortfalls, and improves legacy DMS component repair issues.</p> <p>FY 2016 Accomplishments: Awarded the EMD contract and initiated the EMD Phase.</p> <p>FY 2017 Plans: Install the first DMS-M kit on the test aircraft, conduct Low Observable baseline flights, accomplish the Integrated Functional Capability certification, and complete ground testing in preparation for the start of Developmental Test and Evaluation (DT&E) in FY18.</p> <p>FY 2018 Base Plans: Continue working EMD effort and start of Developmental Test and Evaluation (DT&E) in FY18.</p> <p>FY 2018 OCO Plans: N/A</p>											
Accomplishments/Planned Programs Subtotals						261.162	315.615	194.570	0.000	194.570	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APAF: BA07: Line Item #b2dms0: B-2 DMS	0.000	0.000	0.000	0.000	0.000	49.884	280.471	365.563	80.187	0.000	776.105
• APAF: BA07: Line Items # 000999: Acft Initial Spares & Repairs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.956	15.256	0.00	30.181
• APAF: BA07: Line Item #000075: Other Production Charges	0.000	0.000	0.000	0.000	0.000	0.000	1.515	12.522	12.772	0.00	26.759
Remarks											
E. Acquisition Strategy											
Key elements of the overall acquisition strategy include: use of sole source contract with a prime/integrating contractor (Northrop Grumman) who will perform subsystem and component competitions where appropriate, use of cost plus incentive fee (CPIF) development contracts, and the combination of developmental upgrades with											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
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>	
<p>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.</p> <p><u>F. Performance Metrics</u></p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Air Vehicle - Technology Development	SS/CPFF	Various : Various	700.500	29.000	Oct 2015	0.000		0.000		0.000		0.000	0.000	729.500	-
Air Vehicle - Engineering and Manufacturing Development (EMD)	SS/CPIF	Various : Various	0.000	216.859	Mar 2016	292.616	Dec 2016	150.008	Oct 2017	0.000		150.008	311.413	970.896	-
Subtotal			700.500	245.859		292.616		150.008		0.000		150.008	311.413	1,700.396	-
Remarks															
Northrop-Grumman, El Segundo, CA is the prime contractor and integrator.															
The Air Vehicle EMD contract was signed in March 2016 with an early effective date of February 2016.															
Major subsystem vendors are: Electronic Support Measures: BAE, Nashua NH Advanced Graphics Processor: Lockheed-Martin, Owego, NY Band 1 - 3 antennas: Randtron, Menlo Park CA Band 4 antenna: Ball Aerospace, Westminster, CO															
The acquisition phase formerly known as Technology Development (TD) is now referred to as Technology Maturation and Risk Reduction (TMRR)															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Trainers	C/CPIF	WPAFB : Dayton, OH	0.000	0.000		0.000		14.600	Dec 2017	0.000		14.600	14.000	28.600	-
Mission Planning	C/CPIF	Hanscom : Boston, MA	0.000	0.000		0.000		12.600	Nov 2017	0.000		12.600	0.000	12.600	-
Subtotal			0.000	0.000		0.000		27.200		0.000		27.200	14.000	41.200	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
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					
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Test	MIPR	AFFTC : Various	4.064	4.300	Jan 2016	13.062	Jan 2017	3.300	Oct 2017	0.000		3.300	38.057	62.783	-
Subtotal			4.064	4.300		13.062		3.300		0.000		3.300	38.057	62.783	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA	Various	Various : Various	21.696	11.003	Dec 2015	9.937	Dec 2016	14.062	Nov 2017	0.000		14.062	8.068	64.766	-
Subtotal			21.696	11.003		9.937		14.062		0.000		14.062	8.068	64.766	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			726.260	261.162		315.615		194.570		0.000		194.570	371.538	1,869.145	-
Remarks Northrop-Grumman, the prime contractor for the B-2 weapon system, is the integrator and major contractor for B-2 DMS activities.															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017
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 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DMS-M Milestone B Decision																												
DMS-M EMD Contract Award																												
DMS-M EMD																												
DMS-M Critical Design Review																												
DMS-M Combined Developmental Test / Operational Test (DT/OT)																												
DMS-M Milestone C - Low Rate Initial Production (LRIP) Decision																												
DMS-M Full Rate Production (FRP) Decision																												
DMS-M Certification of Airworthiness																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605931F / <i>B-2 Defensive Management System</i>	Project (Number/Name) 653844 / <i>B-2 DMS</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DMS-M Milestone B Decision	2	2016	2	2016
DMS-M EMD Contract Award	2	2016	2	2016
DMS-M EMD	2	2016	1	2020
DMS-M Critical Design Review	4	2017	4	2017
DMS-M Combined Developmental Test / Operational Test (DT/OT)	4	2018	1	2021
DMS-M Milestone C - Low Rate Initial Production (LRIP) Decision	1	2020	1	2020
DMS-M Full Rate Production (FRP) Decision	1	2021	1	2021
DMS-M Certification of Airworthiness	2	2021	3	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0101125F I Nuclear Weapons Modernization							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	285.271	204.358	137.909	91.237	0.000	91.237	120.598	36.437	0.000	0.000	0.000	875.810
657007: B61 LIFE EXTENSION PROGRAM	285.271	204.358	137.909	91.237	0.000	91.237	120.598	36.437	0.000	0.000	0.000	875.810
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 468												
A. Mission Description and Budget Item Justification												
The purpose of this program element is to conduct and support United States Air Force (USAF) and Joint Department of Defense (DoD) / Department of Energy (DOE) acquisition activities for the modernization of nuclear weapons.												
B61-12 Life Extension Program (LEP): The B61-12 LEP will integrate DOE efforts to extend the service life of the warhead with DoD efforts to develop a guided Tail Kit Assembly (TKA) required to maintain current B61 mission characteristics. Programmatic integration of the Air Force-led, joint DoD-DOE program is accomplished through the B61 LEP Project Officers Group (POG) and its subgroups. In accordance with Air Force Materiel Command mission assignment memo (dated 17 Feb 11) and National Nuclear Security Administration (NNSA)-Air Force Nuclear Weapons Center (AFNWC) Memorandum of Understanding (MOU dated 28 Jun 12), the USAF is responsible for development, acquisition and delivery of a guided TKA and All Up Round (AUR) technical integration, system qualification and fielding of the B61-12 variant on multiple platforms.												
Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues.												
This program is in Budget Activity 5, System Development and Demonstration (SDD), because it is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0101125F I Nuclear Weapons Modernization				
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		212.121	137.909	150.974	0.000	150.974
Current President's Budget		204.358	137.909	91.237	0.000	91.237
Total Adjustments		-7.763	0.000	-59.737	0.000	-59.737
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		-7.763	0.000			
• Other Adjustments		0.000	0.000	-59.737	0.000	-59.737
Change Summary Explanation						
No significant program changes in FY16 and FY17						
FY18 \$59.7M addressing higher Air Force priorities						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Engineering & Manufacturing Development Contract (B61)				92.722	70.827	25.402
Description: Prime contract to develop, test, integrate and nuclear certify a guided TKA in support of the B61-12 LEP.						
FY 2016 Accomplishments:						
Continued B61-12 TKA development, design, test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Continued design, integration and testing of the B61-12 system and verification of requirements and validation of TKA performance. Continued flight testing to verify aircraft flight environments in support of weapon development. Continued B61-12 TKA program practices that ensure the following were met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, producibility and supportability. Provided support to the DOE flight tests in support of the Baseline Design Review (BDR) for the Bomb Assembly (BA). Provided support to aircraft Operational Flight Plan (OFP) development and integration to deliver the OFP test tapes in support of flight testing. Continued TKA Developmental Test (DT) drops, and preparation work for FY17 System Qualification drops.						
FY 2017 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						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
B61-12 TKA program practices that ensure the following are met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, producibility and supportability. Provides support to aircraft OFP development and integration to deliver the OFP test tapes in support of flight testing. Continues TKA Developmental Test (DT) drops, and provides support to the FY17 System Qualification drops. FY 2018 Plans: Continues B61-12 TKA development, design, test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Continues design, integration and testing of the B61-12 system and verification of requirements and validation of TKA performance. Continues flight testing to verify aircraft flight environments in support of weapon development. Continues B61-12 TKA program practices that ensure the following are met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, producibility and supportability. Provides support to aircraft Operational Flight Plan (OFP) development and integration to deliver the OFP test tapes in support of flight testing. Continues TKA Developmental Test (DT) drops, and provides support to the FY18 System Qualification drops.				
Title: All Up Round (AUR) Technical Integration (B61) Description: Covers all system engineering tasks in support of AUR technical integration, qualification & fielding, including program support to the B61 LEP POG. FY 2016 Accomplishments: Continued B61-12 system qualification plan, warhead component qualification, TKA qualifications, and B61-12 AUR integration activities. Continued support to maintain technical and programmatic schedules and program documents that support the AUR technical integration. Continued to develop warhead-to-TKA interface requirements and design. Continued to provide technical expertise to maintain B61-12 aircraft compatibility with platforms through completion of the test and evaluation program. Continued to develop test assets to support integration efforts at the aircraft system integration laboratories. Included B61-12 AUR technical and programmatic reviews, including design reviews, systems reviews, technical interchange meetings, and test reviews. Also included test assessments to validate modeling and simulation results in support of system qualification; configuration management of B61-12 AUR drawings, interface control documents, and system specifications; and support of trainers and other USAF configurations. Provided AUR integration support to the DOE flight tests in support of the BDR for the BA. Provided for management of system security requirements. Provided AUR integration support to the DOE in preparation for System Qualification drops. Completed joint DoD-DOE acquisition Phase 6.3, Developmental Engineering, and entered Phase 6.4, Production Engineering. FY 2017 Plans:		12.276	15.768	12.158

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
<p>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 maintenance of warhead-to-TKA interface requirements and design. Continues to provide technical expertise to maintain B61-12 aircraft compatibility with platforms through completion of the test and evaluation program. Continues to develop test assets to support integration efforts at the aircraft system integration laboratories. Includes B61-12 AUR technical and programmatic reviews, including design reviews, systems reviews, technical interchange meetings, and test reviews. Also includes test assessments to validate modeling and simulation results in support of system qualification; configuration management of B61-12 AUR drawings, interface control documents, and system specifications; and support of trainers and other USAF configurations. Provides for management of system security requirements. Provides AUR integration support to the DOE in support of System Qualification drops. Specifically, provides for design and prototyping of Fault Insertion Device to be used in aircraft software integration laboratories. Additionally, provides for pre-production drawings for peculiar nuclear support equipment.</p> <p>FY 2018 Plans:</p> <p>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 maintenance of warhead-to-TKA interface requirements and design. Continues to provide technical expertise to maintain B61-12 aircraft compatibility with platforms through completion of the test and evaluation program. Continues to develop test assets to support integration efforts at the aircraft system integration laboratories. Includes B61-12 AUR technical and programmatic reviews, including design reviews, systems reviews, technical interchange meetings, and test reviews. Also includes test assessments to validate modeling and simulation results in support of system qualification; configuration management of B61-12 AUR drawings, interface control documents, and system specifications; and support of trainers and other USAF configurations. Provides for management of system security requirements. Provides AUR integration support to the DOE in support of System Qualification drops. Efforts culminate in the AUR Final Design Review in 4QFY18.</p>				
<p>Title: Aircraft Integration (B61)</p> <p>Description: B61-12 activities associated with integration on threshold aircraft, including mission planning system upgrades to accommodate the new weapon variant. Also includes activities related to weapon design compatibility with both threshold and objective aircraft.</p> <p>FY 2016 Accomplishments:</p> <p>Continued meeting participation/membership and integration activities for aircraft. Continued test tapes development and demonstration/validation of the OFP. Continued design compatibility with aircraft. Continued mission planning upgrades. Continued OFP development and integration to deliver the OFP test tapes in support of flight testing. Completed 2nd phase</p>		74.696	33.775	36.394

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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) of F-15E developmental OFP. Delivered B61-12 AUR flight simulators, which established baseline for B-2 Integration Test Readiness Review. Demonstrated F-16 and PA-200 B61-12 AUR compatibility. FY 2017 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. Delivers B-2 developmental OFP for flight test. Provides production OFP for F-15E flight test. FY 2018 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. Completes B-2 production OFP in 1QFY18. Completes F-15E integration in 3QFY18.		FY 2016	FY 2017	FY 2018
Title: Test Support (B61) Description: Test activities and support for TKA design validation & verification and nuclear certification, as well as B61-12 AUR system qualification (includes design and operational certification activities). FY 2016 Accomplishments: Continued test planning and execution activities to support B61-12 weapon development, AUR technical integration and aircraft integration. Continued flight testing to verify aircraft flight environments and TKA and AUR design verification, including initial TKA DT drops and preparation for AUR System Qualification drops. Continued development and delivery of necessary BAs to accomplish TKA test and trainer activities. Provided support to the DOE flight tests in support of the BDR for the bomb assembly. Tested delivered OFP for F-15E using compatibility test units in ground and captive carry flight test. FY 2017 Plans: Continues test planning and execution activities to support B61-12 weapon development, AUR technical integration and aircraft integration. Continues flight testing to verify aircraft flight environments and TKA and AUR design verification, including initial TKA DT drops and preparation for TKA Operational Test (OT) drops and AUR System Qualification drops. Continues development and delivery of necessary BAs to accomplish TKA test and trainer activities. Provides support to the DOE flight tests for the bomb assembly. Plans and executes B61-12 AUR system qualification on F-15E and F-16. FY 2018 Plans: Continues test planning and execution activities to support B61-12 weapon development, AUR technical integration and aircraft integration. Continues flight testing to verify aircraft flight environments and TKA and AUR design verification, including initial TKA		24.664	17.539	17.283

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0101125F I Nuclear Weapons Modernization							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
DT drops and preparation for TKA Operational Test (OT) drops and AUR System Qualification drops. Continues development and delivery of necessary BAs to accomplish TKA test and trainer activities. Provides support to the DOE flight tests for the bomb assembly. Continues execution of F-15E and F-16 system qualification testing for B61-12 AUR. Starts B-2 planning and execution of B61-12 AUR system qualification testing.												
Accomplishments/Planned Programs Subtotals										204.358	137.909	91.237
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• PAAF: BA01 Line Item # 354040: B61	0.000	0.000	88.307	0.000	88.307	110.084	164.139	18.886	0.000	0.000	381.416	
Remarks												
E. Acquisition Strategy												
The Milestone Decision Authority directed a three-fold competitive acquisition strategy at the 30 April 2012 Materiel Development Decision. 1) A single prime contractor was chosen to develop the B61-12 TKA through Engineering Manufacturing and Development (EMD) using full and open competition. EMD consists of two phases; 2) the prime contractor is to maintain competition at the subcomponent level; and 3) a sole source contract will be awarded for production to the EMD contractor. B61-12 AUR integration, qualification and acceptance will be conducted through the joint DoD-DOE/NNSA Phase 6.X process and managed through the B61 LEP POG. Sandia National Laboratory will conduct the TKA/BA technical integration on behalf of the Air Force.												
F. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>						Project (Number/Name) 657007 / <i>B61 LIFE EXTENSION PROGRAM</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
B61 LEP EMD Contracts	C/CPIF	Boeing : St Charles, MO	159.724	87.506	Dec 2015	61.694	Nov 2016	21.491	Jan 2018	0.000		21.491	43.337	373.752	0.000
Subtotal			159.724	87.506		61.694		21.491		0.000		21.491	43.337	373.752	0.000
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AUR Technical Integration	MIPR	Various : various	29.717	12.276	Jan 2016	15.768	Jan 2017	12.158	Jan 2018	0.000		12.158	7.914	77.833	-
Aircraft Integration	MIPR	Various : various	59.491	74.696	Nov 2015	33.775	Nov 2016	36.394	Nov 2017	0.000		36.394	87.458	291.814	-
Subtotal			89.208	86.972		49.543		48.552		0.000		48.552	95.372	369.647	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support for B61 LEP Development	PO	96 TW : Eglin, FL	18.215	24.664	Dec 2015	17.539	Nov 2016	17.283	Nov 2017	0.000		17.283	16.756	94.457	-
Subtotal			18.215	24.664		17.539		17.283		0.000		17.283	16.756	94.457	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA	Various	various : various	18.124	5.216	Oct 2015	9.133	Oct 2016	3.911	Oct 2017	0.000		3.911	1.570	37.954	-
Subtotal			18.124	5.216		9.133		3.911		0.000		3.911	1.570	37.954	-
Project Cost Totals			285.271	204.358		137.909		91.237		0.000		91.237	157.035	875.810	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force							Date: May 2017			
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 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 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Engineering & Manufacturing Development Phase 1																												
Engineering & Manufacturing Development Phase 2																												
All-Up-Round Developmental/System Qualification Testing																												
Ground Test/WTT/Flight Test																												
CDR																												
Aircraft Integration																												
TKA Milestone C Decision																												
TKA Production																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>	Project (Number/Name) 657007 / <i>B61 LIFE EXTENSION PROGRAM</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering & Manufacturing Development Phase 1	1	2016	4	2017
Engineering & Manufacturing Development Phase 2	1	2016	2	2019
All-Up-Round Developmental/System Qualification Testing	1	2016	1	2020
Ground Test/WTT/Flight Test	1	2016	4	2020
CDR	2	2016	2	2016
Aircraft Integration	1	2016	2	2020
TKA Milestone C Decision	1	2019	1	2019
TKA Production	1	2019	2	2022

Note

USD AT&L directed B61-12 TKA to enter acquisition process at Milestone B based on maturity of the technology required for this program. Therefore, a separate Technology Development phase is not required. (Source: Materiel Development Decision (MDD) Acquisition Decision Memorandum (ADM), signed 30 April 2012)

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	174.439	256.669	209.847	0.000	209.847	138.127	67.828	21.585	39.277	0.146	907.918
657108: EPAWSS DEVELOPMENT	0.000	174.439	256.669	209.847	0.000	209.847	138.127	67.828	21.585	39.277	0.146	907.918
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 485

Note

In FY 2016, PE 0207171F, F-15 EPAWSS, Project 676038, EPAWSS, Budget Activity 07, Operational Systems Development was transferred to PE 0207171F, F-15 EPAWSS, Project 657108, EPAWSS Development, Budget Activity 05, System Development and Demonstration to align the program in the correct budget activity.

In FY 2015, PE 0207134F, F-15E Squadrons, Project 670131, Initial Operational Test and Evaluation, F-15 EPAWSS development efforts were transferred to PE 0207171F, F-15 EPAWSS, Project 676038, EPAWSS in order to provide budget transparency.

Prior Years funding in FY 2013 and FY 2014 of \$15.100M was executed in PE 0207134F.

Prior Year funding in FY 2015 of \$37.726M was executed in PE 0207171F, Project 676038.

A. Mission Description and Budget Item Justification

The F-15 is the most versatile fighter in the world today. The F-15C continues to provide air superiority with an undefeated and unmatched aerial combat record. The F-15E retains this air superiority capability and adds systems, such as advanced imaging and targeting systems, to meet the requirement for all-weather, deep penetration, and night / under-the-weather, air-to-surface attack. A mainstay in operations both domestic and abroad, upgrades to the F-15 (avionics, armament, airframe and engines) are critical to maintaining combat viability (lethality, survivability and supportability). Projected to remain in service past 2040, avionics modernization is key to long-term weapon system viability. This modernization is built on a foundation of technical and acquisition support studies (both internal to the Air Force and through outside contractors). The proliferation of fourth generation enemy aircraft, sophisticated "double-digit" anti-aircraft missile systems and other enemy systems pose a significant threat to F-15 survivability. The F-15 Eagle Passive Active Warning and Survivability System (EPAWSS) will replace the F-15's functionally obsolete self-defense Tactical Electronic Warfare System (TEWS) to enhance weapon system situational awareness and survivability against enemy threats. F-15 EPAWSS will also improve reliability and sustainability. F-15 EPAWSS is linked to an aircraft operational flight program update schedule that works to integrate new capabilities with the airframe. Incorporation of corresponding spiral and / or phased technology / equipment improvements that include support equipment, mission planning systems, and training device upgrades will improve performance, supportability and aircrew training.

The F-15 EPAWSS upgrade will significantly improve the F-15's capability to autonomously and automatically detect, identify and locate radio frequency (RF) threats as well as provide the ability to deny, degrade, deceive, disrupt and defeat RF and electro-optical / infrared (EO / IR) threat systems in contested and unplanned operations

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017				
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS						
within highly contested environments through 2040. The F-15 EPAWSS will provide indication, type and position of ground-based RF threats as well as the indication, type and bearing of airborne threats with the situational awareness needed to avoid, engage or negate the threat. The F-15 EPAWSS will prevent RF and IR threat systems from detecting or acquiring accurate targeting information prior to threat engagement to complicate and / or negate an enemy threat targeting solution--and effectively counter enemy missiles / weapons if adversary threat systems engage and employ weapons against friendly forces--through components such as chaff, flares, decoys / angle countermeasures and jamming.								
Increment 1 replaces the obsolete TEWS. Increment 2 adds a towed decoy/angled countermeasure capability.								
This program is in Budget Activity 5, System Development and Demonstration, passed Milestone B approval, and has begun engineering and manufacturing development activities. This program element provides funding for the development of the F-15 EPAWSS to address current and future threats.								
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total		
Previous President's Budget		180.681	256.669	194.843	0.000	194.843		
Current President's Budget		174.439	256.669	209.847	0.000	209.847		
Total Adjustments		-6.242	0.000	15.004	0.000	15.004		
• Congressional General Reductions		0.000	0.000					
• Congressional Directed Reductions		0.000	0.000					
• Congressional Rescissions		0.000	0.000					
• Congressional Adds		0.000	0.000					
• Congressional Directed Transfers		0.000	0.000					
• Reprogrammings		0.000	0.000					
• SBIR/STTR Transfer		-6.242	0.000					
• Other Adjustments		0.000	0.000	15.004	0.000	15.004		
Change Summary Explanation								
FY2018 Funding increased 15.004M to reconcile to EPAWSS Milestone B Service Cost Position.								
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Eagle Passive/Active Warning Survivability System (EPAWSS)				174.439	256.669	209.847	0.000	209.847
Description: Planned replacement of the existing F-15 self-protection, Tactical Electronic Warfare System (TEWS). This includes technical and acquisition- related studies.								
FY 2016 Accomplishments:								

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS						
C. Accomplishments/Planned Programs (\$ in Millions)					FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total		
Completed Increment 1 TMRR PDR-level design to support Milestone B decision. Refined design for FY17 CDR. Continued acquisition planning for EMD and Milestone B. Awarded EMD development and test contract for Increment 1. This includes technical and acquisition-related studies. FY 2017 Plans: Complete Increment 1 TMRR CDR-level design. Continue acquisition planning for Milestone C. Execute Increment 1 EMD. Produce EMD test assets. Execute risk reduction, development test activities, and continue acquisition and technical-related studies for Increments 1 and 2. Funds may be used to resolve emerging safety of flight issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness. FY 2018 Base Plans: Continue acquisition planning for Milestone C. Execute Increment 1 EMD. Produce EMD test assets. Execute characterization flight test demo for Increment 2. Execute risk reduction, development test activities, and continue acquisition and technical-related studies for Increments 1 and 2. Funds may be used to resolve emerging safety of flight issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness. FY 2018 OCO Plans: N/A											
Accomplishments/Planned Programs Subtotals					174.439	256.669	209.847	0.000	209.847		
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APAF: BA05: Line Item # F15EWS: Aircraft Modification	0.000	0.000	0.000	0.000	0.000	186.096	31.998	116.693	311.421	1,395.100	2,041.308
• APAF: BA07: Line Item #000999: Aircraft Spares and Repair Parts	0.000	0.000	0.000	0.000	0.000	4.067	4.219	8.114	10.300	44.400	71.100
• RDT&E: BA07: PE0207171F: F-15 EPAWSS BA07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	37.726
Remarks											
FY 19 - FY 21 funding is for F-15 C & F-15 E Procurement.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0207171F I F-15 EPAWSS	
E. Acquisition Strategy The MDA approved acquisition approach is to design a solution that leverages mature non-developmental components that integrate into the existing footprint on the F-15 aircraft left behind by the legacy F-15 electronic warfare system. To further improve schedule, affordability and program risk outcomes, and consistent with the JROC approved CDD, the F-15 EPAWSS program will pursue a two-increment acquisition approach. Increment 1 replaces the existing Radar Warning Receiver, Internal Countermeasures System and Countermeasures Dispenser System. Increment 2 adds a towed decoy / angle countermeasure capability.		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS	Project (Number/Name) 657108 / EPAWSS DEVELOPMENT
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
F-15 EPAWSS TMRR	SS/ Various	Boeing : St. Louis, MO	0.000	97.404	Feb 2016	43.806	Oct 2016	0.000		0.000		0.000	0.000	141.210	177.341
F-15 EPAWSS EMD	SS/ Various	Boeing : St. Louis, MO	0.000	56.705	Sep 2016	163.992	Nov 2016	173.100	Oct 2017	0.000		173.100	172.689	566.486	625.830
F-15 EPAWSS	Various	Various : Various	0.000	18.934	Feb 2016	47.068	Dec 2017	28.133	Dec 2017	0.000		28.133	64.828	158.963	199.895
Subtotal			0.000	173.043		254.866		201.233		0.000		201.233	237.517	866.659	1,003.066

Remarks

FY16PB- EPAWSS efforts were transferred from Budget Activity 7, Operational Systems Development, PE 0207171F, Project Number 676038 to Budget Activity 5, Engineering and Manufacturing Development, PE 0207171F, Project Number 657108 per OSD direction. The individual program reference to "various" contract methods addresses other government costs for trainers, test, hardware, special studies, etc., that are required to meet F-15 EPAWSS program objectives. The execution vehicles between these DoD entities vary by effort.

F-15 EPAWSS EMD includes contractor costs for EPAWSS Increment 2 Characterization flight test demonstration effort starting in FY18.

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support Costs	Various	Various : Various	0.000	1.396	Jan 2016	1.803	Dec 2016	8.614	Oct 2017	0.000		8.614	29.446	41.259	40.655

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS				Project (Number/Name) 657108 / EPAWSS DEVELOPMENT					
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	1.396		1.803		8.614		0.000		8.614	29.446	41.259	40.655
Remarks															
The individual program reference to "various" contract methods addresses other government costs for trainers, test, hardware, special studies, etc. that are required to meet F-15 EPAWSS program objectives. The execution vehicles between these DoD entities vary by effort.															
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	174.439		256.669		209.847		0.000		209.847	266.963	907.918	-
Remarks															
Prior Years funding in FY 2013 and FY 2014 of \$15.100M was executed in PE 0207134F.															
Prior Year funding in FY 2015 of \$37.726M was executed in PE 0207171F, Project 676038.															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / <i>F-15 EPAWSS</i>	Project (Number/Name) 657108 / <i>EPAWSS DEVELOPMENT</i>
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	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EPAWSS MS B																												
EPAWSS EMD Contract Award																												
EPAWSS MS C																												
EPAWSS Increment 1 testing																												

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

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EPAWSS MS B	4	2016	4	2016
EPAWSS EMD Contract Award	1	2017	1	2017
EPAWSS MS C	4	2019	4	2019
EPAWSS Increment 1 testing	1	2019	3	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					PE 0207328F I Stand In Attack Weapon							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	3.400	0.000	3.400	0.000	0.000	0.000	0.000	Continuing	Continuing
653133: Stand In Attack Weapon	-	0.000	0.000	3.400	0.000	3.400	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
This program, BA 05, PE 0207328F, project 653133, Stand in Attack Weapon, is a new start.												
A. Mission Description and Budget Item Justification												
This project provides a strike capability to defeat rapidly relocatable targets that create the Anti-Access/Area Denial environment. Initial aircrafts to integrate are F-35, B-21. MDD approved in Apr 2017, currently in the Materiel Solution Analysis phase. AFLCMC/EBZ is currently conducting the Analysis of Alternatives which is scheduled to be complete in 3Q18. Currently working documentation for Milestone-A which is scheduled for FY19.												
This program is in Budget Activity 5, System Development & Demonstration (SDD)												
B. Program Change Summary (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Previous President's Budget				0.000	0.000	0.000	0.000	0.000				
Current President's Budget				0.000	0.000	3.400	0.000	3.400				
Total Adjustments				0.000	0.000	3.400	0.000	3.400				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				0.000	0.000							
• SBIR/STTR Transfer				0.000	0.000							
• Other Adjustments				0.000	0.000	3.400	0.000	3.400				
C. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: Program Stand-up									-	-	3.400	
Description: Stand-up program office to include facility upgrades and other program support.												
FY 2018 Plans:												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)						R-1 Program Element (Number/Name) PE 0207328F I Stand In Attack Weapon					

C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Stand-up program office to include facility upgrades and other program support.												
Accomplishments/Planned Programs Subtotals										-	-	3.400

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 0604200F: Future Advance Weapons Analysis and Programs	0.000	0.000	5.100	0.000	5.100	0.000	0.000	0.000	0.000	0.00	5.100
• 0604602F: ARMORD	0.000	0.000	0.000	0.000	0.000	7.500	15.500	198.800	110.500	0.00	332.300

Remarks

E. Acquisition Strategy

Planning for competitive prototyping through MS-B EMD phase with a down-select to one contractor for MS-C production phase. Analysis of Alternatives, to be completed 3Q18, will aid in shaping the formal acquisition strategy.

F. Performance Metrics

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

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

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0207701F I Full Combat Mission Training							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	17.290	12.051	16.727	0.000	16.727	19.480	19.016	18.737	19.047	Continuing	Continuing
655012: Full Combat Mission Training	-	2.572	2.775	6.851	0.000	6.851	6.885	6.939	6.989	7.060	Continuing	Continuing
655354: F-16 Block 40/50 MTC	-	14.718	9.276	9.876	0.000	9.876	12.595	12.077	11.748	11.987	Continuing	Continuing

A. Mission Description and Budget Item Justification

Full Combat Mission Training (FCMT) supports Air Force Distributed Mission Operations (DMO) and Live-Virtual-Constructive (LVC) integration. DMO is an operational readiness initiative enabling the USAF to exercise and train at the operational and strategic levels of war while facilitating unit-level training. Networked LVC components form the integrated DMO battlespace by linking geographically distributed high fidelity combat and combat support training devices, including Command and Control (C2) and Intelligence, Surveillance, and Reconnaissance (ISR) systems.

Project 655012, FCMT, efforts are focused on development, demonstration, and transitioning of critical functions associated with the DMO/LVC network and linked simulators.

Project 655354, F-16 Block 40/50 Mission Training Center (MTC), efforts are focused on development and demonstration of the F-16 Block 40/50 MTC. Funds will be used to provide capability upgrades such as concurrent OFP software development. In addition, funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues. DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

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 enhancing F-16 MTC units.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 0207701F I Full Combat Mission Training			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	18.082	12.051	15.679	0.000	15.679
Current President's Budget	17.290	12.051	16.727	0.000	16.727
Total Adjustments	-0.792	0.000	1.048	0.000	1.048
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.158	0.000			
• SBIR/STTR Transfer	-0.634	0.000			
• Other Adjustments	0.000	0.000	1.048	0.000	1.048
Change Summary Explanation					
- The FY 2018 funding request was increased by 1.048 million to provide for increases in DMO research and studies.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
655012: Full Combat Mission Training	-	2.572	2.775	6.851	0.000	6.851	6.885	6.939	6.989	7.060	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 2016	FY 2017	FY 2018
Title: FCMT Cross Domain Solutions (CDS)	0.970	1.003	2.251
Description: Development, demonstration and insertion of multi-level security capability.			
FY 2016 Accomplishments:			
<ul style="list-style-type: none"> - Started Multi-Level Security (MLS) testbed development and support for MLS testing and implementation on, but not limited to, the F-22 and F-35 Trainers - Began development of fourth to fifth generation coalition rule set development for US and UK training integration - Initiated evaluation of commercial and government off-the-shelf Cross Domain Solution (CDS) advanced devices and capabilities. 			
FY 2017 Plans:			
<ul style="list-style-type: none"> - Continue Multi Level Security (MLS) testbed development and support for MLS testing for fourth and fifth generation trainers. - Continue fourth to fifth generation Cross Domain Solution (CDS) rule set development. - Continue evaluation of commercial and government off-the-shelf CDS devices and capabilities. - Begin fourth to fifth generation MLS rule development for routine Live, Virtual and Constructive (LVC) environment integration. 			
FY 2018 Plans:			
<ul style="list-style-type: none"> - Complete Multi Level Security (MLS) research testbed development and support for MLS testing for fourth and fifth generation trainers. - Continue fourth to fifth generation Cross Domain Solution (CDS) rule set prototype development. 			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017		
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 2016	FY 2017	FY 2018
<ul style="list-style-type: none">- Begin accreditation for coalition rule sets.- Conclude evaluation of commercial and government off-the-shelf CDS devices and capabilities.- Continue fourth to fifth generation MLS rule development for routine Live, Virtual and Constructive (LVC) environment integration.- Perform accreditation for cross domain rule sets- Develop gateways and cross domain solutions to integrate high-fidelity trainers with Air Force, joint, and coalition networks.				
<p>Title: FCMT Develop DMO Capabilities</p> <p>Description: Development, demonstrations, studies and insertions of DMO/LVC related technologies and proficiency based continuation training strategies.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none">- Started integration of research-developed scenarios and syllabi across DMO environments.- Initiated development of in-mission and cross-mission metrics for routine proficiency evaluations of individual and small team readiness. <p>FY 2017 Plans:</p> <ul style="list-style-type: none">- Continue integration of research-developed scenarios and syllabi across DMO environments.- Continue development of in-mission and cross-mission metrics for routine proficiency evaluations of individual and small team readiness.- Create and evaluate alternative data formats for routinely tracking and storing performance and proficiency data.- Begin integration of learning management tools into routine Distributed Mission Operations (DMO) training events.- Demonstrate learning managed DMO scenario and syllabus adaptation across two Mission Training Centers (MTCs). <p>FY 2018 Plans:</p> <ul style="list-style-type: none">- Conclude integration of research-developed scenarios and syllabi across DMO environments.- Conclude development of in-mission and cross-mission metrics for routine proficiency evaluations of individual and small team readiness.- Continue evaluation of alternative data formats and implement in multiple domains.- Verify and validate integration of learning management tools into routine Distributed Mission Operations (DMO) training events.- Refine learning managed scenario and integrate with live, virtual, and constructive events.		0.571	0.572	1.700
<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>		0.971	1.000	1.200

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0207701F / <i>Full Combat Mission Training</i>		Project (Number/Name) 655012 / <i>Full Combat Mission Training</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
<i>FY 2016 Accomplishments:</i> - Initiated training assessment and performance measurement tools for readiness studies. - Started studies for training environment credibility assessments for an identified set of ACC Virtual and Constructive environments. - Began integration of performance evaluation and After Action Review (AAR) tools for the operational Mission Training Centers (MTCs). <i>FY 2017 Plans:</i> - Implement training assessment and performance measurement tools for readiness studies. - Validate training environment credibility assessments for an identified set of ACC Virtual and Constructive environments. - Continue integration of performance evaluation and After Action Review (AAR) tools for the operational Mission Training Centers (MTCs) - Begin Validation of integration and demonstration of performance evaluation and after action tools. - Begin development of standards for baselining environment credibility of virtual and constructive environments. <i>FY 2018 Plans:</i> - Complete integration and demonstration of performance evaluation and after action tools. - Complete Validation of training environment credibility assessments for an identified set of ACC Virtual and Constructive environments. - Demonstrate persistent performance measurement and readiness assessment in fourth to fifth LVC training events. - Develop metrics and tools to measure training proficiency gained during live, virtual, constructive events					
<i>Title:</i> FCMT Other Network Studies <i>Description:</i> Research and development to provide for the integration of fielded and newly introduced, Air Force, Joint and Coalition high-fidelity flight and mission trainers. <i>FY 2016 Accomplishments:</i> - Started research and development for the integration of F-35, Joint and Coalition Trainers into the Combat Air Forces (CAF) Distributed Mission Operations (DMO) network. - Commenced interoperability studies to evaluate the training value of fifth generation interoperable coalition training on the CAF DMO network. <i>FY 2017 Plans:</i> - Perform research and development for the integration of F-35, Joint and Coalition Trainers into the Combat Air Forces (CAF) Distributed Mission Operations (DMO) network.			0.060	0.200	1.700

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / <i>Full Combat Mission Training</i>	Project (Number/Name) 655012 / <i>Full Combat Mission Training</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
<ul style="list-style-type: none"> - Conduct interoperability studies to evaluate the training value of fifth generation interoperable coalition training on the CAF DMO network. - Begin development of common Joint and Coalition data standards for secure, interoperable training at joint and coalition levels of analysis. - Begin evaluation of the integration of different data management and tracking methods to support large scale, secure and persistent Joint and Coalition LVC events. - Begin evaluation of alternative network architectures and typologies for globally distributed secure LVC training and rehearsal. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue development of common Joint and Coalition data standards for secure, interoperable training at joint and coalition levels of analysis. - Conclude evaluation of the integration of different data management and tracking methods to support large scale, secure and persistent Joint and Coalition LVC events. - Demonstrate persistent performance measurement and readiness assessment in fourth to fifth generation LVC events. - Develop rule sets for routine live, virtual, and constructive environment integration. - Evaluate network architectures and typologies for distributed secure, live, virtual, constructive events. 			
Accomplishments/Planned Programs Subtotals		2.572	2.775
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
<p>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. To accomplish this, AFRL will conduct research/studies to Develop/implement Cross Domain Solutions, develop DMO capabilities, Validate warfighter seasoning and develop objective performance enhancements and conduct other network studies.</p>			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
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
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
655354: F-16 Block 40/50 MTC	-	14.718	9.276	9.876	0.000	9.876	12.595	12.077	11.748	11.987	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 integration 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. Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues. DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: F-16 MTC Modification Development									14.718	9.276	9.876	
Description: Development and testing of modifications to the F-16 MTC to maintain concurrency with F-16 aircraft.												
FY 2016 Accomplishments:												
-- Began Development, testing and fielding of F-16 MTC Operational Flight Program (OFP) M7.1+ ensuring the MTC is non-concurrent for only 12 months with the M7.1+ operational capability resident in the aircraft as of 4th quarter FY16. Cost of Development, test and fielding estimated at 12.1M												
-- Defined initial OFP M7.2+ concurrency modifications. Definition of requirements in FY16 ensured the MTC will achieve concurrency with the capabilities resident in the aircraft when the aircraft upgrades to OFP 7.2 2nd quarter of FY19.												
FY 2017 Plans:												
-- Develop, test and field F-16 MTC Operational Flight Plan (OFP) M7.1+ to ensure the MTC achieves concurrency with the M7.1+ operational capability resident in the aircraft as of 4th quarter FY16. -- Begin Development, test, and fielding F-16 MTC Operational Flight Plan (OFP) M7.2+ concurrency modifications. Ensures the MTC will achieve concurrency with the capabilities resident in the aircraft when the aircraft upgrades to OFP 7.2 2nd quarter of FY19.												
FY 2018 Plans:												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training				Project (Number/Name) 655354 / F-16 Block 40/50 MTC				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
-- Continue to Develop, test, and field F-16 MTC Operational Flight Plan (OFP) M7.2+ concurrency modifications. Ensures the MTC will achieve concurrency with the capabilities resident in the aircraft when the aircraft upgrades to OFP 7.2 2nd quarter of FY19.												
Accomplishments/Planned Programs Subtotals										14.718	9.276	9.876
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• APAF: BA05: Line Item	2.459	1.694	5.468	0.000	5.468	5.713	1.975	2.011	2.047	Continuing	Continuing	
#OTHACF: Other Aircraft												
• APAF: BA06: Line item #	0.279	0.214	0.219	0.000	0.219	0.212	0.216	0.220	0.224	Continuing	Continuing	
000999: Initial Spares/Repair Parts												
Remarks												
D. Acquisition Strategy												
F-16 Block 40/50 MTCs are being developed, fielded, and modified under a competitively awarded Federal Acquisition Regulation (FAR) Part 15 Supply contract with RDT&E and APAF funds. The MTCs are sustained by Contract Logistic Support (CLS) using Operations and Maintenance funds. Physical changes to the MTC cockpits required by any OFP update will be funded in the OTHACF APAF Line.												
E. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					PE 0303267F I Auctioned Spectrum Relocation Fund							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	40.571	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
658062: Auctioned Spectrum Relocation Fund	-	40.571	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Funding supports Spectrum relocation and sharing activities.												
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Previous President's Budget				0.000	0.000	0.000	0.000	0.000				
Current President's Budget				40.571	0.000	0.000	0.000	0.000				
Total Adjustments				40.571	0.000	0.000	0.000	0.000				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				40.571	0.000							
• SBIR/STTR Transfer				0.000	0.000							
• Other Adjustments				0.000	0.000	0.000	0.000	0.000				
Change Summary Explanation												
Receive funds during execution year through a transfer from OMB												
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Title: Auctioned Spectrum Relocation Fund										40.571	-	-
Description: Funding supports Spectrum relocation and sharing activities												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0303267F I Auctioned Spectrum Relocation Fund						

C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
FY 2016 Accomplishments: Funding supports Spectrum relocation and sharing activities												
Accomplishments/Planned Programs Subtotals										40.571	-	-

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks E. Acquisition Strategy N/A F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0303367F I Spectrum Access Research and Development							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.383	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
658063: Spectrum Access R&D	-	0.383	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Development of new methods for the sharing of spectrum or reducing DoD's overall footprint.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.383	0.000	0.000	0.000	0.000
Total Adjustments	0.383	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.383	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

Change Summary Explanation

Receive funds during execution year through a transfer from OMB

<u>C. Accomplishments/Planned Programs (\$ in Millions)</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>
<i>Title:</i> Spectrum Access R&D	0.383	-	-
<i>Description:</i> Development of new methods for the sharing of spectrum or reducing DoD's overall footprint.			
<i>FY 2016 Accomplishments:</i>			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0303367F / <i>Spectrum Access Research and Development</i>							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Development of new methods for the sharing of spectrum or reducing DoD's overall footprint.												
Accomplishments/Planned Programs Subtotals										0.383	-	-
D. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>	
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	
Remarks												
E. Acquisition Strategy												
N/A												
F. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0305176F I Combat Survivor Evader Locator							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.958	29.253	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
654522: CSAR EMD	-	0.958	29.253	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0305176F, Combat Survivor Evader Locator efforts were transferred to PE 1203176F, Combat Survivor Evader Locator, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203176F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.958	29.253	0.000	0.000	0.000
Total Adjustments	0.958	29.253	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.958	29.253	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0307581F I JSTARS Recap							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	85.879	51.306	128.019	417.201	0.000	417.201	623.248	594.270	485.047	348.357	480.300	3,213.627
650003: JSTARS Recapitalization	85.879	51.306	128.019	417.201	0.000	417.201	623.248	594.270	485.047	348.357	480.300	3,213.627
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	2	1		
Program MDAP/MAIS Code: 513												
A. Mission Description and Budget Item Justification												
The Joint Surveillance Target Attack Radar System Recapitalization (JSTARS Recap) is an acquisition program to recapitalize the current Legacy E-8C at a significantly reduced operational cost by executing the current system capabilities with a modern aircraft and mission systems suite.												
The JSTARS Recap weapon system will replace the E-8C JSTARS which is a mature Command and Control (C2) weapon system that provides forward deployed battle management, robust communications, and stand-off target surveillance, detection, tracking, and combat identification of objects within specified combat engagement areas. JSTARS Recap will interact with all elements of the Theater Air Control System (TACS), including other JSTARS, Airborne Warning and Control System (AWACS), Control and Reporting Centers (CRC), Air Operations Centers (AOC), and Brigade Combat Teams (BCT), through multiple Line of Sight (LOS) and Beyond Line of Sight (BLOS) communications paths.												
The JSTARS Recap solution will incorporate currently available technology to recapitalize the Joint STARS BMC2 Mission capability on a smaller, more efficient airframe, thereby reducing life cycle costs of the weapon system. JSTARS Recap will be comprised of four integrated subsystems: the aircraft, the radar, a communications suite, and a BMC2 suite. Additionally, JSTARS Recap will include mission and maintenance trainers, and a Full Flight Simulation (FFS) Level D-equivalent flight training capability. The JSTARS Recap solution will integrate high Technology Readiness Level (TRL) components, and will utilize Open Systems Architecture (OSA) to reduce integration risk and lifecycle cost. The Government defines OSA as a system for which major interfaces are collaboratively defined and maintained by an established community of interest (COI) for unconstrained usage by all who require them, and are subject to the review and approval of the Government program office.												
Activities may also include studies, analysis, and risk reduction activities addressing all subsystems to support both current program planning/execution and future AF program planning.												
This program is in budget Activity 5, System Development and Demonstration (SDD) because it is projected to receive Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0307581F I JSTARS Recap				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	44.343	128.019	413.991	0.000	413.991	
Current President's Budget	51.306	128.019	417.201	0.000	417.201	
Total Adjustments	6.963	0.000	3.210	0.000	3.210	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	8.551	0.000				
• SBIR/STTR Transfer	-1.588	0.000				
• Other Adjustments	0.000	0.000	3.210	0.000	3.210	
Change Summary Explanation						
FY16: Below Threshold Reprogramming applied to Radar Risk Reduction effort						
FY18: Change due to AF funding to the approved MS-A Independent Cost Estimate						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Technology Maturation and Risk Reduction (TMRR)				51.306	128.019	-
Description: JSTARS Recap TMRR/Pre-Engineering and Manufacturing Development (EMD) Contract activities leverage DoD's prior investments and Industry's Independent Research and Development (IR&D) investments to conduct technical reviews and subsystem prototype demonstrations. The goal of TMRR/Pre-EMD activities is to validate industry's system-level design readiness/maturity with respect to top integration risks and use of Open Systems Architecture (OSA) and Open Mission System (OMS) standards. The TMRR/Pre-EMD activities inform the government about the integration complexity and associated lifecycle risks involved with different system-level design solutions including radar risk reduction. Activities also include studies, analyses, and risk reduction addressing all subsystems to support current program planning/execution and future program planning.						
FY 2016 Accomplishments:						
- Received MS A decision 10 December 2015						
- Exercised contract option in 1QFY16 for Industry Teams to complete system level designs						
- Conducted multiple system-level technical reviews (to include System Functional Reviews (SFRs) and Preliminary Design Reviews (PDRs))						
- Conducted subsystem prototype demonstrations						
- Awarded two UCAs for radar risk reductions (Raytheon Space and Airborne Systems and Northrop Grumman Mission Systems)						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Conducted Radar Risk Reduction in process Reviews - Completed Development Request For Proposal (RFP) release decision review 4QFY16 FY 2017 Plans: <ul style="list-style-type: none"> - Released EMD RFP to industry - Conducting Radar Risk Reduction activities to mature radar designs specific to JSTARS Recap - Continuing other subsystem and weapon systems risk reduction activities - Continuing associated activities to obtain MS B - Continuing EMD source selection 				
Title: Engineering Manufacturing Development (EMD) Description: JSTARS Recap EMD activities include the modification of mature technology (radar, BMC2, and communications subsystems) and integration onto a commercial derivative aircraft. Three RECAP EMD/Test Articles (missionized aircraft) will be procured to support Initial Operational Capability (IOC) in 4QFY24. Additional activities include, but not limited to: studies, analyses, and risk reduction activities addressing all subsystems to support current program planning/execution and future program planning. FY 2018 Plans: <ul style="list-style-type: none"> - Complete Radar Risk Reductions Activities - Award EMD Contract - Conduct Post Award Conference - Conduct Integrated Baseline Review (IBR) - Conduct System Requirements Review / System Functional Review (SRR / SFR) - Procure Green Aircraft and Mission Systems (Radar, BMC2, and Communications) and associated Group A hardware. - May perform studies, analyses, and risk reduction activities addressing all subsystems to support current program planning/execution and future program planning. 		-	-	417.201
Accomplishments/Planned Programs Subtotals		51.306	128.019	417.201
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap
E. Acquisition Strategy <p>The JSTARS Recap program (hereinafter, the "Program") is a pre-Major Defense Acquisition Program (MDAP). The Program achieved Milestone (MS) A approval on 10 December 2015 and MS B is currently planned for FY18. JSTARS Recap is comprised of a business-class Commercial Derivative Aircraft (CDA) with integrated Battle Management Command and Control (BMC2) along with radar and communication subsystems. The Program will leverage available systems and mature technologies using Open Systems Architecture (OSA) to minimize the risks during the Engineering and Manufacturing Development (EMD) phase, thus, lowering life cycle costs.</p> <p>The Program developed a Government Reference Architecture (GRA) intended to define the functional capabilities of the JSTARS Recap Weapon System (WS). The GRA enabled subsystem technical analysis and risk reduction to validate technical maturity. The GRA also supports the Program's strategy to Own the Technical Baseline (OTB) aimed to reduce cost throughout the system's life cycle, foster competition during Operations and Support acquisition phase, and allow flexibility to readily incorporate new technologies and capabilities.</p> <p>Prior to MS A, the Program executed three (3) contracts to conduct system-level System Requirements Reviews (SRR) (collectively, the "Pre-EMD Contracts"). The Pre-EMD Contracts focused on requirements analysis, assessing the WS design, design maturity, and risk reduction. Upon receiving the MS A approval, the Program exercised the Technology Maturation and Risk Reduction (TMRR) options for system-level design reviews and subsystems prototype demonstrations. In parallel with the Pre-EMD Contracts, the Program also executed contracts with the two (2) viable radar Original Equipment Manufacturers (OEMs) that focused on advancing radar design, assessing manufacturing readiness, and mitigating both technical and schedule risk during the EMD Phase. Subsequent to the Pre-EMD Contracts and a successful Development RFP Release Decision Point Review, the Program will conduct a separate, full and open competition for the EMD phase of the Program (hereinafter, the "EMD Contract"). The EMD Contract award is planned for FY18 and will include the EMD effort as well as options for Low-Rate Initial Production (LRIP) and Full-Rate Production (FRP) Lots #1-3.</p> <p>The Program will develop a total of seventeen (17) JSTARS Recap WSs. The first three (3) WSs produced during EMD will be instrumented to support Developmental Test and Evaluation (DT&E). Subsequent to DT&E, two (2) of these instrumented WSs will be reconfigured to production representative WSs in support of Initial Operational Capability (IOC); the one (1) remaining WS will maintain instrumentation for testing purposes. Two (2) LRIP WSs will be developed to meet the four (4) WSs required for IOC. Full-Rate Production (FRP) will consist of three (3) production lots to procure an additional twelve (12) WSs to support Full Operational Capability (FOC) by 2QFY28.</p>		
F. Performance Metrics <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap	Project (Number/Name) 650003 / JSTARS Recapitalization
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JSTARS Recap Pre-EMD Contract #1	C/FFP	Boeing Service Co. : Richardson, TX	17.695	9.685	Jan 2016	0.000		0.000		0.000		0.000	0.000	27.380	27.380
JSTARS Recap Pre-EMD Contract #2	C/FFP	Northrop Grumman Systems Corp : Melbourne, FL	17.695	7.055	Dec 2015	0.000		0.000		0.000		0.000	0.000	24.750	24.750
JSTARS Recap Pre-EMD Contract #3	C/FFP	Lockheed Martin Corp : King of Prussia, PA	17.695	7.028	Dec 2015	0.000		0.000		0.000		0.000	0.000	24.723	24.723
JSTARS Recap Radar Risk Reduction Contract #1	C/CPFF	Raytheon : McKinney, TX	5.188	5.277	Mar 2016	26.000	Oct 2016	0.000		0.000		0.000	0.000	36.465	60.465
JSTARS Recap Radar Risk Reduction Contract #2	C/CPFF	Northrop Grumman Systems Corp : Linthicum Heights, MD	5.400	5.090	Mar 2016	42.000	Oct 2016	0.000		0.000		0.000	0.000	52.490	63.408
JSTARS Recap EMD	Various	TBD : TBD	0.000	0.000		0.000		373.600	Oct 2017	0.000		373.600	2,348.283	2,721.883	2,721.883
Subtotal			63.673	34.135		68.000		373.600		0.000		373.600	2,348.283	2,887.691	2,922.609

Remarks

Pre-Engineering and Manufacturing Development (EMD) contracts will be incrementally funded with the basic contract (Materiel Solution Analysis) awarded on 7 August 2015 and options for Technology Maturation and Risk Reduction (TMRR) activities exercised in FY16. Two Radar Risk Reduction contracts were awarded in FY17. EMD contract is planned for 2QFY18.

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap				Project (Number/Name) 650003 / JSTARS Recapitalization					
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Responsible Test Organization (RTO)	MIPR	Various : Various	1.217	1.467	Oct 2015	2.070	Oct 2016	5.251	Oct 2017	0.000		5.251	27.015	37.020	37.020
Subtotal			1.217	1.467		2.070		5.251		0.000		5.251	27.015	37.020	37.020
Remarks															
Activities include, but not limited to, detailed test planning and provisioning to include the writing of a detailed test and safety plans, setting up the test execution data and documentation management infrastructure, developing data analysis tools, provisioning for test assets, instrumentation and ranges. Activities will be accomplished utilizing the DoD Major Ranges & Test Facilities which include, but not limited to, the AFTC (412TW and 96TH), Joint Interoperability Test Center (JITC), the 346th TS, Live Fire Test Organizations (AFLMC/EZJA and 96th TG Det 1), and Operational Test Agencies (AFOTEC).															
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Various : Bedford, MA	11.125	8.941	Oct 2015	11.080	Oct 2016	12.100	Oct 2017	0.000		12.100	56.840	100.086	100.086
PASS Support (A and AS)	Various	Various : Bedford, MA	5.395	0.951	Nov 2015	2.608	Nov 2016	5.200	Nov 2017	0.000		5.200	12.500	26.654	26.654
ETASS Support (A and AS)	Various	Various : Bedford, MA	1.484	2.115	Nov 2015	2.200	Nov 2016	6.200	Nov 2017	0.000		6.200	12.750	24.749	24.749
PMA and additional risk reduction activities	Various	Various : Bedford, MA	2.985	3.697	Dec 2015	42.061	Dec 2016	14.850	Oct 2017	0.000		14.850	73.834	137.427	102.509
Subtotal			20.989	15.704		57.949		38.350		0.000		38.350	155.924	288.916	253.998
Remarks															
High percentage of management services are a result of FFRDC and other contractor support required to conduct studies and other risk reducing analysis to better inform the government about integration risks, use of Open System Architecture (OSA), and subsystem performance towards Service Acquisition Executive (SAE) initiative "owning the technical baseline." Specific activities include modeling and analysis/simulation to better understand/anticipate performance, establishment of System Integration Lab (SIL) for development/integration, and Open Mission Systems (OMS) compliance testing. In addition, contractor support is necessary for all the required acquisition documentation.															
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			85.879	51.306		128.019		417.201		0.000		417.201	2,531.222	3,213.627	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force							Date: May 2017			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap			Project (Number/Name) 650003 / JSTARS Recapitalization			
	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap			Project (Number/Name) 650003 / JSTARS Recapitalization

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestone A (DEC 2015)	■																											
Pre Engineering and Manufacturing Development activities	■																											
Technology Maturation and Risk Reduction		■	■	■																								
System Requirements Review	■																											
System Functional Review		■																										
Preliminary Design Review - TMRR			■																									
Capability Development Document (AUG 2016)				■																								
Development RFP Release Decision Point (SEP 2016)				■																								
Engineering and Manufacturing Development RFP Release (DEC 2016)		■	■	■																								
Radar Risk Reduction Activities		■	■	■	■	■	■	■																				
Milestone B										■	■																	
Engineering and Manufacturing Development													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
T1, T2, and T3 Article buys/deliveries													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Developmental Test and Evaluation																	■	■	■	■	■	■	■	■	■	■	■	■

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap	Project (Number/Name) 650003 / JSTARS Recapitalization	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone A (DEC 2015)	1	2016	1	2016
Pre Engineering and Manufacturing Development activities	1	2016	1	2016
Technology Maturation and Risk Reduction	2	2016	4	2016
System Requirements Review	1	2016	1	2016
System Functional Review	2	2016	2	2016
Preliminary Design Review - TMRR	3	2016	3	2016
Capability Development Document (AUG 2016)	4	2016	4	2016
Development RFP Release Decision Point (SEP 2016)	4	2016	4	2016
Engineering and Manufacturing Development RFP Release (DEC 2016)	2	2016	1	2017
Radar Risk Reduction Activities	2	2016	1	2018
Milestone B	2	2018	3	2018
Engineering and Manufacturing Development	3	2018	4	2022
T1, T2, and T3 Article buys/deliveries	3	2018	2	2022
Developmental Test and Evaluation	4	2019	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0401310F I C-32 Executive Transport Recapitalization							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	6.017	0.000	6.017	8.003	10.005	10.001	10.025	Continuing	Continuing
654019: C-32 Executive Transport Recap	-	0.000	0.000	6.017	0.000	6.017	8.003	10.005	10.001	10.025	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0401310F, project 654019, C-32A Executive Transport Recapitalization Analysis of Alternatives, is a new start.
This program, BA 05 PE 0401310F, project 654019, C-32A Executive Transport Recapitalization Program Office Standup, is a new start.

A. Mission Description and Budget Item Justification

The C-32A Executive Transport Recapitalization program will replace the current C-32A aircraft fleet which will reach its planned 25-year service life in 2023. Recapitalization efforts need to begin to better align with the current Presidential Aircraft Recapitalization and the E-4B National Airborne Operations Center Recapitalization efforts.

The C-32A mission is to provide Executive Airlift transportation for the President, Vice President, Cabinet, Congress, and other US and foreign officials.

The C-32A recap aircraft would be a more robust aircraft that would mitigate many capability gaps that exist when the current C-32A aircraft serve as a backup to VC-25A and PAR. The C-32A replacement aircraft would have increased range, passenger capacity, enhanced senior leader communications and a private work space.

This budget supports initial funding to complete a combined Analysis of Alternatives (AoA) with the E-4B Recapitalization AoA. Funding also allows for the completion of early acquisition activities, allows the Air Force to establish a program office, begin acquisition strategy development, and conduct market research. Funding also supports initial risk reduction activities and conduct performance trade studies.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0401310F I C-32 Executive Transport Recapitalization						
B. Program Change Summary (\$ in Millions)					FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total		
Previous President's Budget					0.000	0.000	0.000	0.000	0.000		
Current President's Budget					0.000	0.000	6.017	0.000	6.017		
Total Adjustments					0.000	0.000	6.017	0.000	6.017		
• Congressional General Reductions					0.000	0.000					
• Congressional Directed Reductions					0.000	0.000					
• Congressional Rescissions					0.000	0.000					
• Congressional Adds					0.000	0.000					
• Congressional Directed Transfers					0.000	0.000					
• Reprogrammings					0.000	0.000					
• SBIR/STTR Transfer					0.000	0.000					
• Other Adjustments					0.000	0.000	6.017	0.000	6.017		
Change Summary Explanation											
FY18 funding initiates the C-32 Recapitalization program. This funding will standup the program office to support the AoA activates and early acquisition activates.											
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018	
Title: C-32A Executive Transport Recapitalization Analysis of Alternatives								-	-	3.017	
Description: AoA activities to assesses potential materiel solutions to mitigate current capability gaps.											
FY 2018 Plans:											
Complete AoA activities to assesses potential materiel solutions to mitigate current capability gaps.											
Title: C-32A Executive Transport Recapitalization Program Office Standup								-	-	3.000	
Description: Standup of Program Office to support AoA and early acquisition activities.											
FY 2018 Plans:											
Standup Program Office to support AoA and early acquisition activities.											
Accomplishments/Planned Programs Subtotals								-	-	6.017	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cos
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
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 0401310F / <i>C-32 Executive Transport Recapitalization</i>						
D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
Remarks E. Acquisition Strategy The C-32A Executive Transport Recapitalization effort acquisition strategy will be fully developed after completion of the Analysis of Alternatives. The program will integrate technologically mature subsystems into a commercial derivative aircraft. F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0401319F I Presidential Aircraft Recapitalization (PAR)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	11.006	82.420	351.220	434.069	0.000	434.069	737.096	835.479	649.636	540.659	Continuing	Continuing
655250: Presidential Aircraft Recap (PAR)	11.006	82.420	351.220	434.069	0.000	434.069	737.096	835.479	649.636	540.659	Continuing	Continuing
Quantity of RDT&E Articles	-	-	2	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 425												
<p>Note</p> <p>PE 0401319F, Presidential Aircraft Recapitalization, changed from incorrect name of Presidential Aircraft Replacement. FY10-14 Prior Years Funding \$27.29M was executed in PE 0401314F, BPAC 675355.</p> <p>A. Mission Description and Budget Item Justification</p> <p>The Presidential Aircraft Recapitalization (PAR) Program will replace the Presidential VC-25A fleet which faces capability gaps, rising maintenance costs, and parts obsolescence as it reaches the end of its planned 30-year life-cycle. The PAR Program Office will deliver a new fleet of aircraft to meet the requirements for the President to execute the duties of Head of State, Chief Executive, and Commander-in-Chief. The PAR Program will uniquely modify Boeing 747-8 commercial aircraft to provide the President, staff, and guests with safe and reliable air transportation with the equivalent level of communications capability and security available in the White House. The modifications to the 747-8 aircraft will include an electrical power upgrade with dual Auxiliary Power Units that are usable in flight, mission communication system, work and rest environment, executive interior, military avionics, self-defense system, autonomous enplaning and deplaning, and autonomous baggage loading. No significant changes to the existing VC-25A Concept of Operations or Concept of Employment are expected.</p> <p>In August 2012, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) approved the PAR Materiel Development Decision. The Capability Development Document (CDD) was validated by the Joint Requirements Oversight Council in November 2014. In January 2015, the Secretary of the Air Force’s Determination and Findings designated the Boeing 747-8 aircraft as the PAR platform, and the USD (AT&L)’s Acquisition Decision Memorandum authorized Pre-Milestone B (Pre-MS B) contracts aimed at improving affordability and reducing program execution risk. In February 2015, the Assistant Secretary of the Air Force for Acquisition approved a Justification and Approval designating Boeing as the sole source for PAR Pre-MS B activities and Post-MS B design, integration, modification, and test activities. The acquisition strategy was approved by USD(AT&L) in September 2015. In March 2017, the White House reaffirmed the minimum set of requirements necessary to meet Presidential mission needs; these requirements are codified in the March 2017 CDD.</p> <p>This budget supports Pre-MS B risk reduction activities and studies, as well as Post-MS B design, integration, modification, and test of two aircraft to make them Presidential mission ready. Pre-MS B efforts are the first step in a deliberate process to control program risks and life-cycle costs. These activities include the definition of detailed requirements and design trade-offs required to support informed decisions, leading to a lower risk Engineering and Manufacturing Development program and lower life cycle costs. MS B certification occurred in September 2016. In FY17, the program will purchase two Boeing 747-8 commercial aircraft and begin Preliminary Design. The FY 2018 funding request was reduced by \$191.562 million to account for the availability of prior year execution balances.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0401319F I Presidential Aircraft Recapitalization (PAR)				
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		82.420	351.220	625.631	0.000	625.631
Current President's Budget		82.420	351.220	434.069	0.000	434.069
Total Adjustments		0.000	0.000	-191.562	0.000	-191.562
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	0.000	-191.562	0.000	-191.562
Change Summary Explanation						
The FY 2018 funding request was reduced by \$191.562 million to account for the availability of prior year execution balances.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: PAR Pre-MS B Risk Reduction, Commercial A/C, Prelim Design, EMD, & PMA				82.354	350.697	433.219
Description: Pre-MS B activities to refine requirements and reduce risk; begin Preliminary Design activities and utilize modeling and simulation, system integration labs, and mockups to assist in the design; EMD activities; and Program Management Administration to support the Program Office. In FY17, the Program Office will begin incrementally funding 2 commercial 747-8 aircraft which will enable PAR test activities. EMD activities will include the management, detailed design, integration, modification, test/verification, certification, and pre-operational support to deliver two PAR Aircraft to be Presidential mission ready.						
FY 2016 Accomplishments: Funds in FY 2016 continued Pre-MS B activities and supported Program Management Administration.						
FY 2017 Plans: Funds in FY 2017 will complete Pre-MS B activities, begin Preliminary Design activities, and support Program Management Administration. The Program Office will also begin incrementally funding 2 aircraft which will support PAR developmental activities.						
FY 2018 Plans:						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0401319F I Presidential Aircraft Recapitalization (PAR)							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Funds in FY 2018 will continue Preliminary Design activities, incrementally fund 2 aircraft, begin EMD, and support Program Management Administration.												
Title: PAR Government Test										0.066	0.523	0.850
Description: Government test activities to prepare for, oversee, and conduct test events.												
FY 2016 Accomplishments: Funds in FY 2016 were used to prepare for government test activities.												
FY 2017 Plans: Funds in FY 2017 will be used to prepare for and participate in initial test planning and events leading to PDR.												
FY 2018 Plans: Funds in FY 2018 will be used for SIL development and design discussions for the events leading to CDR.												
Accomplishments/Planned Programs Subtotals										82.420	351.220	434.069
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• MILCON: PE	0.000	22.220	271.500	0.000	271.500	37.000	0.000	0.000	0.000	0.00	330.720	
0401319F: PAR Facilities												
• OPAF: BA04: Lineitem #843050: PAR Mechanized Material Handling Equip	0.000	0.000	0.000	0.000	0.000	41.403	0.000	0.000	0.000	0.00	41.403	
• OPAF: BA03: Lineitem #8347240: PAR CCTV/Audiovisual Equipment	0.000	0.000	0.000	0.000	0.000	4.039	0.000	0.000	0.000	0.00	4.039	
• OPAF: BA03: Lineitem #837300: PAR Base Comm Infrastructure	0.000	0.000	0.000	0.000	0.000	0.000	4.040	0.000	0.000	0.00	4.040	
• O&M: PE 0401319F: PAR Furnishings and Equipment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.002	0.000	0.00	2.002	
Remarks												
E. Acquisition Strategy												
The USD(AT&L) PAR Acquisition Strategy was approved in September 2015. The PAR Program will integrate technologically mature subsystems into commercial Boeing 747-8 aircraft. The PAR Program will design, integrate, modify, and test two aircraft to make them Presidential mission ready. Boeing will be the prime												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	PE 0401319F I Presidential Aircraft Recapitalization (PAR)	
<p>integrator for PAR development activities. However, the Air Force intends to incorporate competition for subsystems for the modified aircraft as much as practicable and will participate substantively in selected Boeing-led subsystem competitions. The PAR Program will have a single contract with multiple planned major contract modifications which include 747-8 commercial aircraft, Preliminary Design, and EMD. The contract for risk reduction activities was awarded on 29 January 2016.</p>		
<p>F. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0401319F / Presidential Aircraft Recapitalization (PAR)						Project (Number/Name) 655250 / Presidential Aircraft Recap (PAR)			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PAR Contract Activities	SS/ Various	The Boeing Company : Seattle, WA	7.660	77.246	Feb 2016	343.135	Mar 2017	425.732	Jan 2018	0.000		425.732	Continuing	Continuing	-
Subtotal			7.660	77.246		343.135		425.732		0.000		425.732	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PAR Developmental Test and Evaluation	MIPR	412 TW, JITC : Various	0.165	0.066	Jan 2016	0.523	Jan 2017	0.850	Jan 2018	0.000		0.850	Continuing	Continuing	-
Subtotal			0.165	0.066		0.523		0.850		0.000		0.850	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PAR Other Government Costs	Various	AFLCMC/WLJ : WPAFB, OH	1.357	1.571	Mar 2016	2.600	Nov 2016	2.537	Nov 2017	0.000		2.537	Continuing	Continuing	-
PAR A&AS	C/T&M	AFLCMC/WL : WPAFB, OH	1.824	3.537	Feb 2016	4.962	Mar 2017	4.950	Feb 2018	0.000		4.950	Continuing	Continuing	-
Subtotal			3.181	5.108		7.562		7.487		0.000		7.487	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force										Date: May 2017			
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0401319F / <i>Presidential Aircraft Recapitalization (PAR)</i>					Project (Number/Name) 655250 / <i>Presidential Aircraft Recap (PAR)</i>			
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	11.006	82.420		351.220		434.069		0.000		434.069	-	-	-
Remarks FY 2010-2014 RDT&E Funding (\$27.3M) was executed in PE 0401314F, Project 675355, BA07.													

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0401319F / <i>Presidential Aircraft Recapitalization (PAR)</i>		
			Project (Number/Name) 655250 / <i>Presidential Aircraft Recap (PAR)</i>		

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Pre-MS B Risk Reduction Activities																												
Commercial A/C RFP Release																												
Milestone B and EMD RFP Release Decision																												
Commercial A/C Award																												
Preliminary Design Award & Activities																												
In Process Review, FY17																												
PDR																												
In Process Review, FY18																												
EMD Award & Activities																												
CDR																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0401319F / <i>Presidential Aircraft Recapitalization (PAR)</i>	Project (Number/Name) 655250 / <i>Presidential Aircraft Recap (PAR)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Pre-MS B Risk Reduction Activities	2	2016	2	2018
Commercial A/C RFP Release	2	2016	2	2016
Milestone B and EMD RFP Release Decision	4	2016	4	2016
Commercial A/C Award	3	2017	3	2017
Preliminary Design Award & Activities	4	2017	2	2019
In Process Review, FY17	3	2017	3	2017
PDR	4	2018	4	2018
In Process Review, FY18	3	2018	3	2018
EMD Award & Activities	3	2018	4	2022
CDR	3	2019	3	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0701212F I Automated Test Systems							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	14.422	19.062	18.528	0.000	18.528	13.756	0.000	0.000	0.000	Continuing	Continuing
6506TE: Test And Evaluation Support Budget Authority	-	14.422	19.062	18.528	0.000	18.528	13.756	0.000	0.000	0.000	Continuing	Continuing
Program MDAP/MAIS Code: 6506												
Note This program, BA 05 PE 0701212F, project 6506TE, CAPRE, is a new start. The Automatic Test System program office is responsible for developing, acquiring and sustain Automatic Test Systems for the United Stated Air Force (USAF). The Bomber Armament Tester is replacing six legacy testers and combining their capabilities into one tester. The Bomber Armament Tester will support the B-2, B-1 and B-52 platforms. The Common Aircraft Portable Reprogramming Equipment (CAPRE) is a secure common Memory Loader Verifier (MLV) that loads operational flight programs for 32 USAF weapons systems. Weapon Systems include but are not limited to A-10, B-1, B-52, C-5, C-17, C-130, CV-22, F-15, F-16, H-60 and KC-46.												
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 providing a reliable, cyber secure, and sustainable tester. The tasks are to develop a common bomber armament tester and the Test Program Sets (Software, Hardware, and Documentation) to test the armament release equipment on the bombers. RDT&E efforts support development, testing, and producibility of the Bomber Armament Tester and Test Program Sets. The program will utilize an incremental development approach with B-2 plus most complex B-1 and B-52 test program sets as Increment 1, B-1 as Increment 2, and B-52 as Increment 3. Currently increment 2 and 3 are unfunded in FYDP. The Common Aircraft Portable Reprogramming Equipment (CAPRE) is a common memory loader verifier that loads operational flight programs for weapon systems. CAPRE leads the fleet on Cyber initiatives and is government owned and developed. RDT&E effort includes developing a Network Interface Module (NIM) that provides additional cyber hardening to the CAPRE system and redesigning the current CAPRE system to adapt to the NIM. The NIM enables validation of digital signature prior to loading the OFP to the aircraft. RDT&E effort also includes software development												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0701212F / <i>Automated Test Systems</i>
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for MIM interfaces and new weapons systems moving to the CAPRE system from other MLV systems. The goal is to provide one common cyber secure MLV for the Air Force.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	14.563	19.062	11.800	0.000	11.800
Current President's Budget	14.422	19.062	18.528	0.000	18.528
Total Adjustments	-0.141	0.000	6.728	0.000	6.728
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-0.141	0.000	6.728	0.000	6.728

Change Summary Explanation

-\$4.5M increase in FY 17 will continue increment 1 efforts of the Bomber Armament Tester program. Increment one includes core tester and test program sets for B-2 aircraft and the most complex B-1 and B-52 test program sets. Increment two will begin the test program set development for the B-1 aircraft and B-52 test program sets. FY 18 funding will continue increment 1 efforts. Increments 2 and 3 are unfunded in the FYDP.

-\$6.78M increase in FY 18 includes \$6.650M increase for increasing cyber hardening of the Common Aircraft Portable Reprogramming Equipment (CAPRE). Funding will start development on the Network interface module and start the software development.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
6506TE: Test And Evaluation Support Budget Authority	-	14.422	19.062	18.528	0.000	18.528	13.756	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0701212F, project 6506TE, CAPRE, is a new start.

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 providing a reliable, cyber secure, and sustainable tester. The tasks are to develop a common bomber armament tester and the Test Program Sets (Software, Hardware, and Documentation) to test the armament release equipment on the bombers.

RDT&E efforts support development, testing, and producibility of the Bomber Armament Tester and Test Program Sets. The program will utilize an incremental development approach with B-2 as Increment 1, B-1 as Increment 2, and B-52 as Increment 3. Increment 1 is funded and will consists of up to 5 test articles. Increment 2 and Increment 3 are currently unfunded in the FYDP.

The Common Aircraft Portable Reprogramming Equipment (CAPRE) is a secure common memory loader verifier that loads operational flight programs to the weapon systems. . CAPRE leads the fleet on Cyber initiatives and is government owned and developed. CAPRE supports 32 USAF weapon systems including but not limited to A-10, B-1, B-52, C-5, C-17, C-130, CV-22, F-15, F-16, H-60 and KC-46.

RDT&E effort includes developing a Network Interface Module (NIM) that provides additional cyber hardening to the CAPRE system and redesigning the current CAPRE system to adapt to the NIM. RDT&E effort also includes software development for NIM interfaces and new weapons systems moving to the CAPRE system from other MLV systems. The goal is to provide one common cyber secure MLV for the Air Force that minimizes cyber vulnerabilities in weapon systems.

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

	FY 2016	FY 2017	FY 2018
Title: Bomber Armament Tester	14.422	19.062	11.878
Description: New Common Bomber Armament Tester for B-1, B-2, and B-52.			
FY 2016 Accomplishments: Acquisition Strategy Plan approved per AFPEO/Agile Combat Support on November 12, 2015. Request for proposal was released May 2016.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600 / 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 2016	FY 2017
<ul style="list-style-type: none"> - Develop Bomber Armament Tester and Test Program Sets for use with B-2 - Conduct initial test with B-2 - Requirements analysis for increments 1 and 2. This will include the most complex B-1 and B-52 test program set development. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Develop Bomber Armament Tester and Test Program Sets for use with B-2 - Conduct initial test with B-2 - Requirements analysis for increments 1 and 2. This will include the most complex B-1 and B-52 test program set development. 			
<p>Title: CAPRE</p> <p>Description: Development of a common cyber secure Memory Loader Verifier for the Air Force.</p> <p>FY 2018 Plans: Complete Network Interface Module (NIM) development and complete prototyping. Start development of Software for NIM and other weapons system transition.</p>		-	-
Accomplishments/Planned Programs Subtotals		14.422	19.062
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
<p>Acquisition Strategy for the Bomber Armament Tester (BAT) was approved by AFPEO/ Agile Combat Support on 12 November 2015 . The BAT program will use an incremental approach based on customer needs to satisfy this requirement. Increment 1 includes the development of the core test set, the B-2A requirements and development of the most complex B-1B and B-52 test program sets. Increment 2 consist of the B-1B development and Increment 3 consists of the B-52H requirements. Currently increments 2 and 3 are unfunded through the FYDP. The BAT program will utilize full and open competition to award the contract. Contract award is anticipated in June 2017.</p> <p>The Acquisition strategy for CARPE is to use the original government manufacturer to develop the NIM , software and hardware development. Acquisition Strategy for CAPRE has not been formally approved by Milestone Decision Authority.</p>			

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

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CAPRE Development	TBD	Not specified. : TBD	-	0.000		0.000		6.300	Dec 2017	0.000		6.300	Continuing	Continuing	-
BAT Development	C/CPIF	Not specified. : TBD	-	11.383	Jun 2017	13.802	Jun 2017	7.444	Feb 2018	0.000		7.444	Continuing	Continuing	-
Subtotal			-	11.383		13.802		13.744		0.000		13.744	-	-	-
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. Development efforts include developing a Network Interface Module (NIM) that provides additional cyber hardening to the CAPRE system and redesigning the current CAPRE system to adapt to the NIM. Development effort also include software development for NIM interfaces and new weapons systems moving to the CAPRE system from other MLV systems. The goal is to provide one common cyber secure MLV for the Air Force.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Logistic Support	C/CPIF	Not specified. : TBD	-	1.439	Jun 2017	3.160	Jul 2017	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	1.439		3.160		0.000		0.000		0.000	-	-	-
Remarks Support Cost include Independent verification and validation support, Nuclear Certification Support and Cyber Security authority support.															
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development and Operation Testing support	C/CPIF	Not specified. : TBD	-	0.000		0.000		2.834	Jan 2019	0.000		2.834	Continuing	Continuing	-
Subtotal			-	0.000		0.000		2.834		0.000		2.834	-	-	-

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

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks Environmental testing of the Bomber Armament Tester and operational testing of the test program sets for the B-2 and most complex B-1 and B-52															

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BAT Travel	Various	Not specified. : TBD	-	0.100	Sep 2016	0.100	Sep 2017	0.100	Sep 2018	0.000		0.100	Continuing	Continuing	-
BAT Program Management Support	C/FFP	Not specified. : TBD	-	1.500	Jun 2016	2.000	Mar 2017	1.500	Mar 2018	0.000		1.500	Continuing	Continuing	-
CAPRE Travel	Various	Not specified. : TBD	-	0.000		0.000		0.050	Sep 2018	0.000		0.050	Continuing	Continuing	-
CAPRE Program Management Support	C/FFP	Not specified. : TBD	-	0.000		0.000		0.300	Jun 2018	0.000		0.300	Continuing	Continuing	-
Subtotal			-	1.600		2.100		1.950		0.000		1.950	-	-	-
Remarks PMA costs include travel to support the development of the Bomber Armament Tester. PMA cost also include an Information Assurance expert and Assistance and advisory service contractors to provide support to the program office during the development of the program. The program element may include necessary civilian pay expenses required to manage, execute and deliver Automatic Test System capability.															

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	14.422	19.062	18.528	0.000	18.528	-	-	-
Remarks									

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

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BAT Request for Proposal Release																												
BAT Milestone B Decision																												
BAT Contract Award																												
BAT Initial Nuclear Certification Impact Statement																												
BAT System Functional Review																												
BAT Preliminary Design Review																												
BAT Critical Design Review																												
BAT System Verification Review																												
BAT Developmental Testing																												
BAT Operational Testing																												
BAT Final Nuclear Certification Impact Statement																												
BAT Completed Prototype																												
BAT Authority To Operate Issued																												
BAT Operational Test and Readiness Review																												
BAT Physical Configuration Audit																												
BAT Production Readiness Review																												
BAT Milestone C Decision																												
CAPRE NIM Initial prototyping																												
CAPRE CDR																												
CAPRE NIM Baseline Design/Drawing and Software																												
CAPRE Software Development (Weapon System Transition)																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																							Date: May 2017								
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									
				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cable Design																															

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

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BAT Request for Proposal Release	3	2016	3	2016
BAT Milestone B Decision	3	2017	3	2017
BAT Contract Award	3	2017	3	2017
BAT Inital Nuclear Cerification Impact Statement	2	2018	2	2018
BAT System Functional Review	2	2018	2	2018
BAT Preliminary Design Review	3	2018	3	2018
BAT Critical Design Review	4	2018	4	2018
BAT System Verification Review	2	2019	2	2019
BAT Developmental Testing	2	2019	2	2019
BAT Operational Testing	2	2019	2	2019
BAT Final Nuclear Certification Impact Statement	4	2018	4	2018
BAT Completed Prototype	4	2018	4	2018
BAT Authority To Operate Issued	2	2019	2	2019
BAT Operational Test and Readiness Review	2	2019	2	2019
BAT Physical Configuration Audit	2	2019	2	2019
BAT Production Readiness Review	3	2019	3	2019
BAT Milestone C Decision	3	2019	3	2019
CAPRE NIM Initial prototyping	1	2018	3	2018
CAPRE CDR	3	2018	3	2018
CAPRE NIM Baseline Design/Drawing and Software	3	2018	2	2019
CAPRE Software Development (Weapon Sytem Transition)	1	2018	4	2019
Cable Design	1	2018	4	2019

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

Note

Schedule reflects increment one EMD. Increments two and three are currently unfunded.

CAPRE is government designed and development. Plan is to have original government manufacturer to handle this development effort.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1203176F I Combat Survivor Evader Locator							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.958	29.253	24.967	0.000	24.967	0.946	0.000	0.000	0.000	Continuing	Continuing
654522: CSAR EMD	-	0.958	29.253	24.967	0.000	24.967	0.946	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0305176F, Combat Survivor Evader Locator (CSEL) efforts were transferred to PE 1203176F (Combat Survivor Evader Locator (CSEL) due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for the 1203176F.

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 radio is required as part of the mandatory aircrew survival gear. CSEL is the Joint Program of Record. CSEL supports four of five Personnel Mission Phases: Report, Locate, Support, and Recover.

A NSA Cryptographic Modernization mandate and the Ultra High Frequency Follow-On satellite constellation are at the end of life and are driving upgrades to 60,000+ hand held radios and base stations. FY18 includes \$24.967M for the development effort to modernize the system to integrate common waveforms, integrate broadcast reception for non-CSEL devices, provide for cryptographic modernization, leverage software defined capabilities based on the FY16 cryptographic study, and to procure intellectual property. This funding will also be used to perform various studies and analysis in support of the CSEL Enterprise.

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 validate requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.993	29.253	0.785	0.000	0.785
Current President's Budget	0.958	29.253	24.967	0.000	24.967
Total Adjustments	-0.035	0.000	24.182	0.000	24.182
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.035	0.000			
• Other Adjustments	0.000	0.000	24.182	0.000	24.182

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1203176F I Combat Survivor Evader Locator							
Change Summary Explanation FY18 \$24.182M for the continuation of the cryptographic modernization effort.												
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Title: CSEL Next Generation Cryptographic Architecture (NGCA)										0.958	29.253	24.967
Description: A NSA cryptographic modernization mandate and the Ultra High Frequency Follow-On satellite constellation at end of life are both driving upgrades to 60,000 handheld CSEL rescue radios and base station.												
FY 2016 Accomplishments: Conducted an abbreviated analysis detailing the development effort required to integrate common waveforms, cryptographic modernization, and leverage software defined solutions.												
FY 2017 Plans: Modernization of the system to integrate common waveforms, integrate broadcast reception for non-CSEL devices, provide for cryptographic modernization, leverage software defined capabilities based on the FY16 cryptographic study, and to obtain intellectual property. This funding will also be used to perform various studies and analysis in support of the CSEL Enterprise.												
FY 2018 Plans: Continue cryptographic modernization development and begin testing.												
Accomplishments/Planned Programs Subtotals										0.958	29.253	24.967
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cos	
• P-54: OPAF: BA03: Line Item # 837170: Combat Survivor Evader Locator	0.000	0.000	3.004	0.000	3.004	0.000	0.000	0.000	0.000	0.000	0.000	
Remarks												
E. Acquisition Strategy Every effort will be made to use full and open competition and evolutionary acquisition strategies.												
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1203176F / Combat Survivor Evader Locator				Project (Number/Name) 654522 / CSAR EMD					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Crypto Modernization - HW/SW Development	SS/CPIF	The Boeing Company : Huntington Beach, CA	-	0.000	Apr 2016	28.053	Feb 2017	22.315	Feb 2018	0.000		22.315	0.000	50.368	-
Subtotal			-	0.000		28.053		22.315		0.000		22.315	0.000	50.368	-
Remarks Adjusted by \$0.072 for inflation per PEM's request 6Dec16.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Crypto Modernization Developmental Testing	SS/CPIF	Then Boeing Company : Huntington Beach, CA	-	0.000		0.000		1.452	Feb 2018	0.000		1.452	Continuing	Continuing	-
Subtotal			-	0.000		0.000		1.452		0.000		1.452	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advisory & Assistance Services	C/Various	Various : Hill AFB, UT	-	0.363	Jan 2016	0.400	Jan 2017	0.400	Jan 2018	0.000		0.400	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017		
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1203176F / <i>Combat Survivor Evader Locator</i>				Project (Number/Name) 654522 / <i>CSAR EMD</i>				

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	C/Various	Various : Hill AFB, UT	-	0.595	Jan 2016	0.800	Jan 2017	0.800	Jan 2018	0.000		0.800	Continuing	Continuing	-
Subtotal			-	0.958		1.200		1.200		0.000		1.200	-	-	-

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.958	29.253	24.967	0.000	24.967	-	-	-

Remarks

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

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1203176F / Combat Survivor Evader Locator	Project (Number/Name) 654522 / CSAR EMD

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Crypto Modernization Analysis of Alternatives (AoA)																												
Crypto Modernization Development																												
Crypto Modernization Test & Evaluation (T&E)																												
Crypto Modernization Fielding																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1203176F / <i>Combat Survivor Evader Locator</i>	Project (Number/Name) 654522 / <i>CSAR EMD</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Crypto Modernization Analysis of Alternatives (AoA)	3	2016	4	2016
Crypto Modernization Development	2	2017	4	2018
Crypto Modernization Test & Evaluation (T&E)	3	2018	4	2019
Crypto Modernization Fielding	1	2019	1	2020

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1203940F I Space Situation Awareness Operations							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	10.029	0.000	10.029	50.020	100.045	30.003	5.013	Continuing	Continuing
65A037: Space Surveillance Telescope	-	0.000	0.000	10.029	0.000	10.029	50.020	100.045	30.003	5.013	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 1203940F, project 65A037, Space Surveillance Telescope(SST), is a new start.

A. Mission Description and Budget Item Justification

Space Situational Awareness (SSA) is knowledge of all aspects of space related to operations. As the foundation for space control, SSA encompasses surveillance of all space objects and activities; detailed surveillance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; gathering indications and warning on adversary space operations; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities. This program element fields, upgrades, operationalizes, operates and maintains Air Force sensors and information integration capabilities within the SSA network while companion program element 1206425F, Space Situational Awareness Systems, develops new network sensors and improved information integration capabilities across the network. Funds also support efforts such as engineering studies and analysis, architectural engineering studies, trade studies, technology needs forecasting, modernization initiatives, systems engineering, system development, and test & evaluation. Activities funded in this program element (1203940F) focus on surveillance of objects in earth orbit to aid tasks including satellite tracking; space object identification; tracking and cataloging; satellite attack warning; notification of satellite flyovers to U.S. forces; space treaty monitoring; and technical intelligence gathering.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	10.029	0.000	10.029
Total Adjustments	0.000	0.000	10.029	0.000	10.029
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	10.029	0.000	10.029

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>				R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>							
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018	
Title: Space Surveillance Telescope(SST)								-	-	10.029	
Description: This capability provides global SST-like/equivalent performance for sensitivity, search rate, track of non-cooperative launches, precise tagging of clustered objects, and detection of closely space dim objects. This effort includes locating SST-like capabilities in optimal global locations, upgrading existing SSAO sensors to improve sensitivity and search rates, and may acquire new advanced technology sensor(s) to improve global electro-optical sensor resilience and persistence. The effort will coordinate with the Joint Space Operations Center (JSpOC) Mission System (JMS) program to ensure integration with enterprise data fusion and dissemination to support space battle management and command, control and communications (BMC3).											
FY 2018 Plans: Starts with locating SST-like capabilities in optimal global locations; initiate design activity to improve sensitivity on existing SSAO sensors; initiate design for the advanced technology sensor. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. Continue prototyping efforts to develop tools to fill capability gaps uncovered in experimentation.											
Accomplishments/Planned Programs Subtotals								-	-	10.029	
D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
E. Acquisition Strategy SST - Acquisition strategy TBD											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>						Project (Number/Name) 65A037 / <i>Space Surveillance Telescope</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SST design, development and life extension	SS/CPIF	Harris : Colorado Springs, CO	-	0.000		0.000		9.629	Mar 2018	0.000		9.629	Continuing	Continuing	-
Subtotal			-	0.000		0.000		9.629		0.000		9.629	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS	Various	Various: Various : TBD	-	0.000		0.000		0.400	Mar 2018	0.000		0.400	Continuing	Continuing	-
Subtotal			-	0.000		0.000		0.400		0.000		0.400	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		0.000		10.029		0.000		10.029	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force																Date: May 2017			
Appropriation/Budget Activity 3600 / 5								R-1 Program Element (Number/Name) PE 1203940F / Space Situation Awareness Operations								Project (Number/Name) 65A037 / Space Surveillance Telescope			

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1203940F / Space Situation Awareness Operations	Project (Number/Name) 65A037 / Space Surveillance Telescope	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SST Phase I Development	3	2018	1	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 1206421F / <i>Counterspace Systems</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	24.134	34.819	66.370	0.000	66.370	0.000	24.946	19.218	19.527	Continuing	Continuing
65A001: <i>Counter Satellite Communications System</i>	-	14.615	28.862	57.432	0.000	57.432	0.000	15.891	9.920	10.095	0.000	136.815
65A005: <i>Offensive Counterspace (OCS) C2</i>	-	7.737	3.961	7.052	0.000	7.052	0.000	7.134	7.337	7.432	Continuing	Continuing
65A013: <i>BOUNTY HUNTER</i>	-	1.782	1.996	1.886	0.000	1.886	0.000	1.921	1.961	2.000	Continuing	Continuing

Note

In FY2018, PE 0604421F, Counterspace Systems efforts were transferred to PE 1206421F, Counterspace Systems due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206421F.

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. Funds allow the program to continue spiral upgrades of critical battle management command and control (BMC2) functions in concert with the incremental updates to the counterspace systems it supports.

Bounty Hunter supports the Defensive Space Control of US systems in a specific Area of Responsibility and provides the capacity to prevent effective adversary use of Command, Control, Communications, Computers, and Intelligence (C4I).

This program is in Budget Activity 5, System Development and Demonstration, because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 1206421F I Counterspace Systems			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	24.134	34.819	40.762	0.000	40.762
Current President's Budget	24.134	34.819	66.370	0.000	66.370
Total Adjustments	0.000	0.000	25.608	0.000	25.608
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	25.608	0.000	25.608
Change Summary Explanation					
FY 2018 increase due to higher Air Force prioritization to meet critical mission need. Accelerates CCS Block 20 CCD capabilities, supports delivery of CCS B10.3 development for Active Duty and Air National Guard, supports transition to a Forward Garrison CONOPs, and supports CCS mission specific emulators and integration of emulators into existing test and training ranges.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206421F / Counterspace Systems				Project (Number/Name) 65A001 / Counter Satellite Communications System			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A001: Counter Satellite Communications System	-	14.615	28.862	57.432	0.000	57.432	0.000	15.891	9.920	10.095	0.000	136.815
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Acquisition Decision Memorandum (24 April 2009) directed all capabilities identified in the October 2006 CCS Block 20, Joint Requirements Oversight Council (JROC) approved Capability Development Document (CDD) shall be accomplished as a Pre-planned Product Improvement Program (P3I) upgrades to the Counter Communications System (CCS) Block 10.

CCS provides expeditionary, deployable, reversible offensive space control (OCS) effects applicable across the full spectrum of conflict. It prevents adversary Satellite Communications (SATCOM) in Area of Responsibility (AOR) including Command & Control (C2), Early Warning and Propaganda, and hosts Rapid Reaction Capabilities in response to Urgent Needs. This program effort includes architecture engineering and studies, 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 2016	FY 2017	FY 2018
Title: Counter Communications System (CCS) Pre-planned Product Improvement (P3I) Program	14.615	28.862	57.432
Description: Develop, integrate, test and field the CCS P3I program. This is an incremental approach to deliver Block 20 CCS capabilities.			
FY 2016 Accomplishments: Continued development, integration and testing of Increment 2 of Block 10 P3I program (CCS B10.2).			
FY 2017 Plans: Continue development, integration and testing of Increment 2 of Block 10 P3I program (CCS B10.2). Planned delivery of one system with a Development Support Facility. Begin development of Increment 3 of Block 10 P3I program (CCS B10.3).			
FY 2018 Plans: Continue development, integration and testing of Increment 3 of Block 10 P3I program (CCS B10.3). Include additional CCS B20 CDD capabilities in CCS B 10.3, design Forward Garrison systems, and mission specific emulators. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.			
Accomplishments/Planned Programs Subtotals	14.615	28.862	57.432

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206421F / Counterspace Systems	Project (Number/Name) 65A001 / Counter Satellite Communications System	

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SPAF:BA01:Line Item CTRSPC: Counterspace Systems	43.065	46.884	28.798	0.000	28.798	1.130	0.000	0.000	0.000	0.000	99.916

Remarks

D. Acquisition Strategy

All contracts in this program element will be awarded using competitive procedures to the maximum extent possible, to upgrade existing capabilities as well as to acquire next generation capabilities through incremental acquisitions.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206421F / Counterspace Systems						Project (Number/Name) 65A001 / Counter Satellite Communications System			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 10 P3I Development	Various	Various : El Segundo, CA	-	8.581	May 2016	22.070	May 2017	50.109	May 2018	0.000		50.109	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	-	0.955	Oct 2015	0.568	Oct 2016	0.578	Oct 2017	0.000		0.578	Continuing	Continuing	11.144
Enterprise Systems Engineering and Integration	C/FFP	AT&T : El Segundo, CA	-	0.378	Apr 2016	0.519	Apr 2017	0.528	Apr 2018	0.000		0.528	Continuing	Continuing	-
Subtotal			-	9.914		23.157		51.215		0.000		51.215	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Security	C/CPAF	Mantech : El Segundo, CA	-	2.062	Nov 2015	2.100	Nov 2016	2.138	Nov 2017	0.000		2.138	0.000	6.300	-
Miscellaneous Support Services	Various	Various : TBD	-	0.008	May 2016	0.007	Nov 2016	0.007	Nov 2017	0.000		0.007	Continuing	Continuing	-
Subtotal			-	2.070		2.107		2.145		0.000		2.145	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Aerospace Corp : El Segundo, CA	-	0.175	Oct 2015	0.719	Oct 2016	0.732	Oct 2016	0.000		0.732	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206421F / Counterspace Systems				Project (Number/Name) 65A001 / Counter Satellite Communications System					

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS	Various	Various : El Segundo, CA	-	2.351	Nov 2015	2.767	Apr 2017	3.225	May 2018	0.000		3.225	Continuing	Continuing	-
Other Support	Various	Various : El Segundo, CA	-	0.105	Oct 2015	0.112	Oct 2016	0.115	Oct 2017	0.000		0.115	Continuing	Continuing	-
Subtotal			-	2.631		3.598		4.072		0.000		4.072	-	-	-

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	14.615	28.862	57.432	0.000	57.432	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 1206421F / <i>Counterspace Systems</i>		
			Project (Number/Name) 65A001 / <i>Counter Satellite Communications System</i>		

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
10.2 System Verification Test (SVT)				■																								
10.2 System Verification Review (SVR)					■																							
10.2 Development Test/Operational Test (DT/OT)							■																					
10.2 System Delivery: #1-2						■																						
10.2 System Deliveries : #3-16																												
10.3 Authority To Proceed (ATP)																												
10.3 System Deliveries # 1-4																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A001 / <i>Counter Satellite Communications System</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
10.2 System Verification Test (SVT)	4	2016	4	2016
10.2 System Verification Review (SVR)	1	2017	1	2017
10.2 Development Test/Operational Test (DT/OT)	2	2017	2	2017
10.2 System Delivery: #1-2	2	2017	2	2017
10.2 System Deliveries : #3-16	3	2018	1	2020
10.3 Authority To Proceed (ATP)	3	2018	3	2018
10.3 System Deliveries # 1-4	3	2020	3	2020

Note

For CCS B10.2, 14 systems delivered plus 2 trainers.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206421F / Counterspace Systems				Project (Number/Name) 65A005 / Offensive Counterspace (OCS) C2			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A005: Offensive Counterspace (OCS) C2	-	7.737	3.961	7.052	0.000	7.052	0.000	7.134	7.337	7.432	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This effort supports the evolution of command and control (C2) and mission planning capabilities in support of the fielding and employment of Counterspace Systems. It provides for the integration and upgrade of collaborative tools to link deployable counterspace systems with Joint Warfighting C2 systems and to enable integrated planning and execution of the counterspace mission. Upgraded capabilities will be integrated into current and future command and control systems. This program will leverage the Joint Execution and Tasking System for Space (JETSS) effort in C2 for future space control and counterspace mission capabilities. Requirements for this program are derived from AFSPC prioritized AF IMT 1067 IAW AFSPCI 63-104.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: Joint Execution and Tasking System for Space (JETSS)									7.737	3.961	7.052	
Description: Evolve with upgrades the counterspace mission planning and C2 capability to support counterspace systems space control warfighter activities.												
FY 2016 Accomplishments: Completed Spiral 4 development, test and delivery which included mandated Windows 7 migration. Continued Spiral 5 development and incremental delivery of Deconfliction Product Generation and Historical Data Intel analysis tool.												
FY 2017 Plans: Continue Spiral 5 development, test and incremental delivery including Voice Chat record, Electronic Preparation of the Battlespace application, increase machine to machine document sharing, and increase C2 Integrated Space Picture Capability.												
FY 2018 Plans: Continue Spiral 5 development. Begin upgrades to the JETSS Graphic User Interface (GUI), develop a more robust security architecture to support multiple security classification levels. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.												
Accomplishments/Planned Programs Subtotals									7.737	3.961	7.052	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• None: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206421F / <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 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

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D. Acquisition Strategy

All contracts will be awarded using competitive procedures to the maximum extent possible to acquire next generation capabilities through incremental acquisitions.

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206421F / Counterspace Systems				Project (Number/Name) 65A013 / BOUNTY HUNTER			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A013: BOUNTY HUNTER	-	1.782	1.996	1.886	0.000	1.886	0.000	1.921	1.961	2.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Bounty Hunter (BH) supports the Defensive Space Control of US systems in a specific AOR and provides the capacity to prevent effective adversary use of Command, Control, Communications, Computers, and Intelligence (C4I). Continuing yearly spiral development is needed to meet new user needs in an ever changing threat environment.

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

	FY 2016	FY 2017	FY 2018
Title: Bounty Hunter	1.782	1.996	1.886
Description: Develop new capabilities for the Bounty Hunter program to maintain operational capability. Specific accomplishments are classified.			
FY 2016 Accomplishments: Developed Spiral 1 upgrades based on verified warfighter needs (which are classified).			
FY 2017 Plans: Develop and deliver Spiral 2 upgrades based on verified warfighter need (which are classified)			
FY 2018 Plans: Develop and deliver Spiral 3 upgrades based on verified warfighter need (which are classified)			
Accomplishments/Planned Programs Subtotals			1.886

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• CTRSPC / Counterspace Systems: <i>Bounty Hunter Investment</i>	0.000	0.000	6.061	0.000	6.061	1.130	0.000	0.000	0.000	0.00	0.000
Remarks											

D. Acquisition Strategy

Contracts funded for this program shall be awarded to the MITRE Federally Funded Research and Development Center (FFRDC).

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206421F / Counterspace Systems	Project (Number/Name) 65A013 / BOUNTY HUNTER

E. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1206425F I Space Situation Awareness Systems							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	30.116	23.945	48.448	0.000	48.448	83.075	108.621	29.967	30.579	0.000	354.751
65A006: Space Based Space Surveillance	0.000	28.404	23.945	48.448	0.000	48.448	83.075	108.621	29.967	30.579	0.000	353.039
65A026: C-Band Radar	0.000	1.712	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.712

Program MDAP/MAIS Code: 328

Note

In FY2018, PE 0604425F, Space Situational Awareness Systems efforts were transferred to PE 1206425F, Space Situational Awareness Systems due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206425F.

In FY2016, Project 65A026, C-Band Radar AML-exempt activity was completed.

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, 1203940F, Space Situational Awareness Operations, fields, upgrades, operationalizes, operates, and sustains existing sensors and information integration capabilities within the SSA network. An additional companion program element, 1203614F, 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 and identifying threats, tracking the expanding number of debris objects on orbit, as well as the increasing number of satellites launched by other nations, many of which are smaller and more capable than previous spacecraft. These activities are also required to better integrate the disparate elements of SSA in order to enable rapid and responsive space operations.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 1206425F I Space Situation Awareness Systems			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	29.288	23.945	48.309	0.000	48.309
Current President's Budget	30.116	23.945	48.448	0.000	48.448
Total Adjustments	0.828	0.000	0.139	0.000	0.139
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	2.800	0.000			
• SBIR/STTR Transfer	-1.972	0.000			
• Other Adjustments	0.000	0.000	0.139	0.000	0.139

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A006: <i>Space Based Space Surveillance</i>	0.000	28.404	23.945	48.448	0.000	48.448	83.075	108.621	29.967	30.579	0.000	353.039
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 with a design life through 2018 and an extended operational capability through 2020. The SBSS Follow-On (SBSS FO) program will develop and deliver a system to continue providing space object surveillance from space post SBSS Block 10 End-of-Life. SBSS FO requirements are based upon the current Space Situational Awareness (SSA) Initial Capabilities Document (ICD) architectural requirements focused on protecting High Value Assets (HVAs). SBSS FO will provide the capability to search, detect, and track objects from a space-based sensor for timely custody and event detection. Surveillance from space augments and overcomes existing ground sensor limitations with timely 24-hour above the weather collection of satellite metric data only possible with a space-based sensor and then communicates its findings to the Joint Space Operations Center (JSpOC), National Space Defense Center (NSDC), and other classified users.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>Title: SBSS Follow-On (SBSS FO) Design & Development</p> <p>Description: Performs space based SSA analysis, research, and development for the SBSS FO system.</p> <p>FY 2016 Accomplishments: Conducted Pre-Milestone B activities and received acquisition strategy approval.</p> <p>FY 2017 Plans: Conduct Pre-Milestone activities, complete Single Best Estimate, release RFP, and begin source selection.</p> <p>FY 2018 Plans: Award contract and hold preliminary design review. Begin development of SBSS FO with entry into Engineering and Manufacturing Development phase. Perform risk reduction activities and analyses based on threat paradigm analyzed/out-briefed by the Space Security and Defense Programs (SSDP).</p>	28.404	23.945	48.448
Accomplishments/Planned Programs Subtotals	28.404	23.945	48.448

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>
<p><u>D. Acquisition Strategy</u></p> <p>The Acquisition Strategy was approved to minimize the space-based SSA gap post-SBSS Block 10. The SBSS FO anticipates Initial Launch Capability (ILC) in FY 2022 with Full Operational Capability (FOC) by FY 2022. The SBSS FO Material Development Decision was approved by the Milestone Decision Authority on 5 April 2016. The Acquisition Strategy Panel (ASP) was completed with the MDA on 29 August 2016. To satisfy the SSA architecture needs, the SBSS FO program requirements have changed to become more focused and operationally challenging and were updated in August 2016 and December 2016. The SBSS FO program remains an Air Force program but will leverage another acquisition organization to fulfill SBSS FO space segment and telemetry, tracking, and commanding (TT&C) portions of the program in order to further National Security Space objectives. Mutual investment for the non-recurring engineering (NRE) cost enables the potential for a larger initial constellation buy and lower unit costs. The Air Force will determine the approach to meet mission processing requirements and will develop the ground architecture in collaboration with various organizations.</p> <p><u>E. Performance Metrics</u></p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SBSS Follow On Prime Development	TBD	TBD : TBD	0.000	0.000	Mar 2016	14.094	Sep 2017	36.824	Dec 2017	0.000		36.824	196.859	247.777	-
Technical Mission Analysis	Various	Various : Various	0.000	21.424	Oct 2015	3.309	Oct 2016	3.385	Dec 2017	0.000		3.385	13.351	41.469	-
Subtotal			0.000	21.424		17.403		40.209		0.000		40.209	210.210	289.246	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	C/FFP	Aerospace Corp. : Los Angeles, CA	0.000	0.260	Oct 2015	0.784	Oct 2016	0.808	Oct 2017	0.000		0.808	4.712	6.564	-
A&AS	Various	Various : TBD	0.000	6.698	Oct 2015	5.703	Oct 2016	7.376	Oct 2017	0.000		7.376	36.897	56.674	-
Other Support	Various	Various : TBD	0.000	0.022	Oct 2015	0.055	Oct 2016	0.055	Oct 2017	0.000		0.055	0.423	0.555	-
Subtotal			0.000	6.980		6.542		8.239		0.000		8.239	42.032	63.793	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	28.404		23.945		48.448		0.000		48.448	252.242	353.039	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force							Date: May 2017			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 1206425F / Space Situation Awareness Systems		Project (Number/Name) 65A006 / Space Based Space Surveillance				
	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>			Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Pre-Phase B Acquisition Planning	■																											
Acq Strategy, RFP Dev and Source Selection	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
MDD			■	■																								
Contract Award										■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Tech Dev / Engineering and Manufacturing Development / Production										■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Preliminary Design Review (PDR)														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Milestone B															■	■	■	■	■	■	■	■	■	■	■	■	■	■
Critical Design Review (CDR)																	■	■	■	■	■	■	■	■	■	■	■	■
Launch																											■	■

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206425F / <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 B Acquisition Planning	1	2016	1	2016
Acq Strategy, RFP Dev and Source Selection	1	2016	2	2018
MDD	3	2016	3	2016
Contract Award	2	2018	2	2018
Tech Dev / Engineering and Manufacturing Development / Production	3	2018	4	2022
Preliminary Design Review (PDR)	3	2019	3	2019
Milestone B	4	2019	4	2019
Critical Design Review (CDR)	3	2020	3	2020
Launch	4	2022	4	2022

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A026 / <i>C-Band Radar</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
65A026: <i>C-Band Radar</i>	0.000	1.712	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.712
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 2016	FY 2017	FY 2018
Title: C-Band Radar	1.712	-	-
Description: Relocates a C-Band Radar to Harold E. Holt Naval Communications Station (HEH NCS) in Australia and upgrades it to perform a Space Situational Awareness (SSA) mission.			
FY 2016 Accomplishments: Completed Developmental Test and Evaluation in March; completed Operational Test and Evaluation in August, and Initial Operating Capability (IOC) in December 2016.			
Accomplishments/Planned Programs Subtotals	1.712	-	-

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SPAF: BA01: SSPARE: <i>Spares and Repairs</i>	4.868	7.613	4.873	0.000	4.873	0.000	0.000	0.000	0.000	0.000	17.354

Remarks

D. Acquisition Strategy
This project will utilize a mix of experienced contractors, Federally Funded Research and Development Companies, and Air National Guard resources to relocate the C-Band Radar to Australia and upgrade to perform SSA mission.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A026 / <i>C-Band Radar</i>
<p>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 FY2013 as Australian funding became available.</p> <p><u>E. Performance Metrics</u></p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5							R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A026 / <i>C-Band Radar</i>				
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C-Band Radar Upgrades	Various	Various : TBD	0.000	0.818	Oct 2016	0.000		0.000		0.000		0.000	0.000	0.818	15.665
Subtotal			0.000	0.818		0.000		0.000		0.000		0.000	0.000	0.818	15.665
Remarks															
Funding provided to Instrumentation Radar Support Program (IRSP) contract, Radar Open Systems Architecture (ROSA) and Space Surveillance Support Software (S4) upgrades contract, Massachusetts Institute of Technology/Lincoln Laboratory contract, and Air National Guard support to complete the C-Band Radar Project.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DISA	WR	DISA : Ft. Meade, MD	0.000	0.005	Jun 2016	0.000		0.000		0.000		0.000	0.000	0.005	0.005
Subtotal			0.000	0.005		0.000		0.000		0.000		0.000	0.000	0.005	0.005
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test, Operational Test, & Initial Operating Capability Test	Various	Various : Various	0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	0.613
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	0.613
Remarks															
Test support is being provided by the 96th Test Wing Eglin AFB and 17th Test Squadron Schriever AFB.															

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 5							R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A026 / <i>C-Band Radar</i>				

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract	
FFRDC	MIPR	Aerospace : Los Angeles, CA	0.000	0.189	Oct 2015	0.000		0.000		0.000		0.000		0.000	0.000	0.189	-
A&AS	Various	Various : Los Angeles, CA	0.000	0.525	Oct 2015	0.000		0.000		0.000		0.000		0.000	0.525	2.889	
Other Support	Various	Various : Various	0.000	0.175	Oct 2015	0.000		0.000		0.000		0.000		0.000	0.175	-	
Subtotal			0.000	0.889		0.000		0.000		0.000		0.000		0.000	0.889	-	

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	1.712	0.000	0.000	0.000	0.000	0.000	1.712	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)		Project (Number/Name)	
3600 / 5		PE 1206425F / Space Situation Awareness Systems		65A026 / C-Band Radar	

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Test																												
Operational Acceptance (Sep 2016)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A026 / <i>C-Band Radar</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Test	1	2016	4	2016
Operational Acceptance (Sep 2016)	4	2016	4	2016

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1206426F I Space Fence							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	240.692	168.364	35.937	0.000	35.937	5.267	0.000	0.000	0.000	0.000	450.260
65A009: Space Fence	0.000	240.692	168.364	35.937	0.000	35.937	5.267	0.000	0.000	0.000	0.000	450.260
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 438												
Note In FY2018, PE 0604426F, Space Fence efforts were transferred to PE 1206426F, Space Fence due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206426F.												
A. Mission Description and Budget Item Justification The Space Fence effort will develop a system of ground-based sensors to improve upon the former Air Force Space Surveillance System (AFSSS), a Very High Frequency (VHF) radar operational from 1961 to 2013. The Space Fence will provide a more accurate and timely detection capability of smaller orbiting objects, primarily in low-earth orbit (LEO). The system will use higher frequency S-band radars at globally dispersed sites. As a result, it will greatly expand the uncued detection and tracking capacity of the Space Surveillance Network, from around 20,000 to 100,000+ objects, while working in concert with other network sensors. Requirements are identified in the June 2012 approved Space Fence Capabilities Development Document (CDD). This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.												
B. Program Change Summary (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO		FY 2018 Total			
Previous President's Budget				240.692	168.364	50.217	0.000		50.217			
Current President's Budget				240.692	168.364	35.937	0.000		35.937			
Total Adjustments				0.000	0.000	-14.280	0.000		-14.280			
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				0.000	0.000							
• SBIR/STTR Transfer				0.000	0.000							
• Other Adjustments				0.000	0.000	-14.280	0.000		-14.280			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017				
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1206426F I Space Fence							
Change Summary Explanation FY 2018: -\$14.280M Reduction due to higher Air Force priorities.												
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018		
Title: Space Fence								240.692	168.364	35.937		
Description: Develops S-band SSA radar system to provide detection and tracking capability of objects in Low Earth Orbit.												
FY 2016 Accomplishments: Continued system manufacture, software builds, integration and test, training, technical orders, and technical manual development. This included the majority of radar facility and operations building construction as well as power plant annex construction and commissioning. Completed construction of the Space Fence Operations Center (SOC) at the Reagan Test Site Operations Center, Huntsville, AL (ROC-H).												
FY 2017 Plans: Complete on-island assembly of the Receive and Transmit arrays. Conduct contractor installation, checkout and test of the system at the Kwajalein Atoll, Marshall Islands and the SOC at the ROC-H. Conduct cybersecurity vulnerability assessments in support of Interim Authority to Test (IATT). Obtain IATT and Authorization to Connect (ATC). Conduct Deputy Assistance Secretary of Defense (DASD)/Development Test & Evaluation (DT&E) and Director, Operational Test and Evaluation (DOT&E) assessments of system level capabilities. Conduct formal in plant contractor test.												
FY 2018 Plans: Complete contractor installation, checkout and formal on-site contractor test of the system at the Kwajalein Atoll, Marshall Islands and the SOC at the ROC-H. Conduct Developmental Test Readiness Review (DTRR) to confirm and certify readiness to enter DT&E. Conduct government DT&E and enter into dedicated Initial Operational Test and Evaluation (IOT&E). Secure test assets and test support for government testing. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. Initiate preparations for the second radar site, including studies, investigations, and site surveys in support of Full Operational Capability (FOC).												
Accomplishments/Planned Programs Subtotals								240.692	168.364	35.937		
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• SPAF: BA01: Line Item	0.000	0.000	0.000	0.000	0.000	45.982	50.199	0.000	0.000	0.000	96.181	
SPCFNC: Space Fence												
Remarks												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 1206426F / Space Fence
E. Acquisition Strategy A single Engineering Manufacturing and Development (EMD) Production and Deployment contract was awarded on 2 June 2014 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 on the Kwajalein Atoll and the SOC at ROC-H. Increment 2 (contract option)/Full Operational Capability (FOC) will include completion of the second radar at a location which is to be determined pending a separate Memorandum of Agreement (MOA) decision approval and negotiations with the proposed host nation.		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206426F / <i>Space Fence</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Space Fence Development	C/FPIF	Lockheed Martin : Moorestown, NJ	0.000	226.280	Nov 2015	139.707	Nov 2016	18.264	Dec 2017	0.000		18.264	1.716	385.967	911.115
Various (Independent Program Assessment, site survey, software, Site Activation Task Force (SATAF), Space Fence Operations Center (SOC))	Various	Various : Various	0.000	2.832	Oct 2015	11.415	Jan 2017	5.937	Oct 2017	0.000		5.937	0.000	20.184	-
Design Oversight and Management	SS/FP	MIT Lincoln Laboratory : Lexington, MA	0.000	1.150	Nov 2015	0.682	Jan 2017	0.640	Dec 2017	0.000		0.640	0.000	2.472	-
Subtotal			0.000	230.262		151.804		24.841		0.000		24.841	1.716	408.623	-

Remarks

Prior to FY15 all funds were executed and reported in PE 0604225F (Space Situational Awareness Systems)
Product Development: \$774.994

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test - 46th Test Squadron	PO	46th Test Squadron : Eglin AFB, FL	0.000	1.128	Dec 2015	2.400	Dec 2016	2.392	Dec 2017	0.000		2.392	0.000	5.920	-
Test - Joint Interoperability Test Command	MIPR	Joint Interoperability Test Command : Fort Huachuca, AZ	0.000	0.025	Jan 2016	0.064	Feb 2017	0.185	Jan 2018	0.000		0.185	0.000	0.274	-
Subtotal			0.000	1.153		2.464		2.577		0.000		2.577	0.000	6.194	-

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PE 1206426F: *Space Fence*
Air Force

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206426F / <i>Space Fence</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>
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	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Increment 1 EMD																												
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																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206426F / <i>Space Fence</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Increment 1 EMD	1	2016	2	2019
Development Test and Evaluation	3	2018	4	2018
Initial Operational Test and Evaluation	4	2018	1	2019
Initial Operational Capability (IOC) Increment 1	2	2019	2	2019
Increment 1 Interim Contractor Support Option 1	3	2019	2	2020
Increment 1 Interim Contractor Support Option 2	3	2020	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1206431F I Advanced EHF MILSATCOM (SPACE)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	372.471	208.095	259.131	145.610	0.000	145.610	129.946	47.179	38.773	14.852	Continuing	Continuing
657103: Advanced MILSATCOM	372.471	54.817	31.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	458.295
657104: MILSATCOM Space Modernization Initiative (SMI)	0.000	153.278	228.124	145.610	0.000	145.610	129.946	47.179	38.773	14.852	Continuing	Continuing
Program MDAP/MAIS Code: 261												
<p>Note</p> <p>In FY2018, PE 0605431F, Advanced EHF MILSATCOM efforts were transferred to PE 1206431F, Advanced EHF MILSATCOM due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206431F.</p> <p>In FY 2018, Project 657103, Advanced MILSATCOM, will complete.</p> <p>A. Mission Description and Budget Item Justification</p> <p>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).</p> <p>With SV-1 and SV-2 launched and Initial Operational Capability (IOC) declared on 28 July 2015, the AEHF program has completed its development phase and is now addressing obsolescence, ground control enhancements, and operational resiliency issues via MILSATCOM Space Modernization Initiative.</p> <p>Develop and conduct systems engineering, integration and test of the Protected SATCOM Key Management Architecture (PKMA). Enable testing and integration of AEHF Local Key Management functionality within the Key Management Infrastructure (KMI) client with the AEHF system. Initiate PKMA integration activities with the AEHF prime contractor and the Enhanced Polar System (EPS) Control and Planning Segment (CAPS) contractor. FY 2017 was the last year of PKMA funds in Project 657103.</p> <p>MILSATCOM SMI efforts are funded in Project 657104, MILSATCOM Space Modernization Initiative (SMI).</p> <p>The Space Modernization Initiative (SMI) strategy is to evolve current and future Protected MILSATCOM (i.e., strategic, tactical, and polar) systems and develop a more affordable and resilient MILSATCOM enterprise capable of meeting near term and emerging MILSATCOM requirements. A significant thrust for this initiative is to demonstrate technologies and Concepts of Operations (CONOPS) that lead to a future Protected Anti-Jam Tactical SATCOM (PATs) capability that provides tactical-level MILSATCOM users protected, anti-jam satellite communications while operating in a contested environment.</p>												

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>
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A Materiel Development Decision meeting was held in November 2016 to formally initiate the Protected Tactical Enterprise Service (PTES) program. Beginning in FY18, the PTES funds have been transferred from the MILSATCOM SMI project to PE 1206760F.

The Protected SATCOM Services (PSCS) Analysis of Alternatives completed and the report was delivered to Congress on 18 April 2016. The AoA concluded that an aggregated satellite proved the most cost effective. Beginning in FY18, the Evolved AEHF funds have been transferred from the MILSATCOM SMI project to PE 1206855F, PSCS - Aggregated. The Evolved Strategic SATCOM (ESS) system being developed under PE 1206855F will include a strategic payload, the capability to integrate a hosted Protected Tactical Waveform (PTW) payload, and on-board resilience features.

Beginning in FY18, the hosted PTW payload, a new start effort, will be developed under PE 1206761F, Protected Tactical Service (PTS).

The PSCS AoA Follow-on For Resiliency (PAFR) study recommended an Enhanced Polar System (EPS)-like system for midterm (2023-2030) polar tactical coverage as a risk mitigation between EPS and a 2030+ solution. Beginning in FY18, MILSATCOM SMI funds have been transferred to the EPS recapitalization program, funded in PE 1206434F, Midterm Polar MILSATCOM System.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	228.095	259.131	237.784	0.000	237.784
Current President's Budget	208.095	259.131	145.610	0.000	145.610
Total Adjustments	-20.000	0.000	-92.174	0.000	-92.174
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-10.000	0.000			
• SBIR/STTR Transfer	-10.000	0.000			
• Other Adjustments	0.000	0.000	-92.174	0.000	-92.174

Change Summary Explanation

FY2016: -\$10.000M, transferred for higher Air Force priorities

FY2018: -\$92.174M: -\$119.175, transferred to new Program Elements: 1) PE 1206760F, Protected Tactical Enterprise Service (PTES), 2) PE 1206855F, Protected SATCOM Services Aggregated (PSCS Aggregated), and 3) PE 1206434F, Midterm Polar MILSATCOM; +\$5.000M for AEHF Resiliency; and + \$21.600M for AEHF Mission Control Segment Increment 8.3; and +\$0.401M inflation adjustment

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)				Project (Number/Name) 657103 / Advanced MILSATCOM			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657103: Advanced MILSATCOM	372.471	54.817	31.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	458.295
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
As of the December 2015 Selected Acquisition Report, Prior Years dollars total \$7,433.9M and include \$270.5M of International Partners funding.												
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).												
AEHF Initial Operational Capability (IOC) was declared on 28 July 2015.												
Advanced EHF and Enhanced Polar System (EPS) Key Management Architectures (KMA) are not compatible with the National Security Agency's new enterprise system, Key Management Infrastructure (KMI). Per the Acquisition Decision Memorandum signed by (USD)AT&L on June 2013, the Air Force shall transition the AEHF and EPS KMA from the Electronic Key Management System (EKMS) to the KMI by March 2018. 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 March 2018.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: AEHF Key Management Infrastructure (KMI) transition									54.817	31.007	0.000	
Description: Develop and conduct systems engineering, integration and test of the Protected SATCOM Key Management Architecture (PKMA). National Security Agency (NSA) will lead the development of the PKMA centralized elements. Enable testing and integration of AEHF Local Key Management functionality within the KMI client with the AEHF system. Initiate PKMA integration activities with the AEHF prime contractor and the Enhanced Polar System (EPS) Control and Planning Segment (CAPS) contractor.												
FY 2016 Accomplishments:												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>				Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Transferred funds to NSA to develop Protected SATCOM Key Management Architecture (PKMA) critical factory components (FY2016) and supported Risk Reduction Tests and deficiency resolution of PKMA elements. Started testing AEHF Local Key Management functionality, with the KMI client, and AEHF system. FY 2017 Plans: Continue KMI transition. Develop and execute transition and testing with Lead Developmental Test Organization (LDTO), AEHF prime contractor, Lockheed Martin, and EPS CAPS contractor, Northrop Grumman Information Systems. Start operational test period, and transition AEHF & EPS operations to Protected SATCOM Key Management Architecture (PKMA). Begin pre-operational support of PKMA centralized elements. FY 2018 Plans: N/A												
Accomplishments/Planned Programs Subtotals										54.817	31.007	0.000
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• SPAF: BA01: Line Item # ADV555: <i>Advanced EHF</i>	327.366	645.569	56.974	0.000	56.974	29.299	31.180	31.742	0.000	0.000	1,122.130	
• RDT&E: BA05: PE 0605433F: <i>Wideband Global SATCOM (Space)</i>	8.249	12.248	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20.497	
• RDT&E: BA05: PE 1206433F: <i>Wideband Global SATCOM (Space)</i>	0.000	0.000	4.263	0.000	4.263	4.000	1.934	0.000	0.000	0.000	10.197	
Remarks Wideband Global SATCOM (Space) funding is within the Command and Control System - Consolidated (CCS-C) project.												
D. Acquisition Strategy The Advanced MILSATCOM, also known as Advanced EHF (AEHF), program is a sole source acquisition to a contractor team comprised of Lockheed Martin (prime/integrator) and Northrop Grumman (provider of the satellite payload). This team performed the Advanced Component Development and Prototypes (ACD&P) and Systems Development and Demonstration (SDD) of two RDT&E-funded satellites and associated mission command and control ground capabilities under Cost Plus Award Fee line items on the contract. AEHF incorporated lessons learned and improvements from Milstar and commercial SATCOM practices into the next generation EHF secure, anti-jam military communications satellite system.												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>
<p>The Protected SATCOM Key Management Architecture (PKMA) acquisition is a software development effort to update DoD secure satellite communication encryption systems and become compatible with the National Security Agency's enterprise Key Management Infrastructure (KMI). The Acquisition Decision Memorandum was signed by USD(AT&L) on 17 June 2013. The prime contractor for the PKMA development under the NSA is Leidos with subcontracts to L3 Communications and General Dynamics. The acquisition strategy is managed by NSA.</p> <p>E. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>				Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Crypto Interim Contractor Support	MIPR	Cryptologic Sys Group : San Antonio, TX	10.100	0.000		0.000		0.000		0.000		0.000	0.000	10.100	20.300
AEHF SVs 1-2 and MCS Interim Contractor Support	SS/CPIF	Lockheed Martin : Sunnyvale, CA	214.139	0.000		0.000		0.000		0.000		0.000	0.000	214.139	207.561
GFP - AEHF Calibration Facility (ACF)	Various	Lincoln Labs : Lexington, MA	3.286	0.000		0.000		0.000		0.000		0.000	0.000	3.286	3.286
PKMA MIT/LL Test Support	Various	Lincoln Labs : Lexington, MA	0.200	0.496	Apr 2016	0.509	Apr 2017	0.000		0.000		0.000	0.000	1.205	-
New KMI Component Development	MIPR	NSA : Ft Meade, MD	107.044	38.640	Dec 2015	8.864	Dec 2016	0.000		0.000		0.000	0.000	154.548	158.861
Enterprise SE&I	C/CPIF	Linquest Corp : Los Angeles, CA	1.141	1.662	Jul 2017	1.662	Jul 2018	0.000		0.000		0.000	0.000	4.465	-
NSA Interim Contractor Support	MIPR	NSA : Ft Meade, MD	0.000	0.000		11.089	Dec 2016	0.000		0.000		0.000	0.000	11.089	10.000
Install/Integrate/Test New AEHF KMI Components	SS/CPIF	Lockheed Martin : Sunnyvale, CA	9.804	2.659	Apr 2016	0.000		0.000		0.000		0.000	0.000	12.463	12.464
Install/Integrate/Test New EPS KMI Components	SS/CPIF	Northrop Grumman Information Systems : Redondo Beach, CA	6.959	1.871	Apr 2016	0.000		0.000		0.000		0.000	0.000	8.830	13.442
Test New KMI Hardware/ Software	MIPR	AFLCMC : San Antonio, TX	7.446	4.964	Apr 2016	7.042	Apr 2017	0.000		0.000		0.000	0.000	19.452	21.893
Operational Test Support	Various	17th Test Sqd : Peterson, CO	0.050	0.323	Nov 2015	0.344	Nov 2016	0.000		0.000		0.000	0.000	0.717	-
Subtotal			360.169	50.615		29.510		0.000		0.000		0.000	0.000	440.294	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>						Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>			

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test and Evaluation Support	Various	Various : Various	0.250	0.000		0.000		0.000		0.000		0.000	0.000	0.250	-
Subtotal			0.250	0.000		0.000		0.000		0.000		0.000	0.000	0.250	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	The Aerospace Corporation : El Segundo, CA	3.146	0.000		0.000		0.000		0.000		0.000	0.000	3.146	-
A&AS	Various	Various : Various	8.830	2.719	Dec 2015	1.417	Dec 2016	0.000		0.000		0.000	0.000	12.966	-
Other Support	Various	Various : Various	0.076	1.483	Oct 2015	0.080	Oct 2016	0.000		0.000		0.000	0.000	1.639	-
Subtotal			12.052	4.202		1.497		0.000		0.000		0.000	0.000	17.751	-

			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			372.471	54.817		31.007		0.000		0.000		0.000	0.000	458.295	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			Project (Number/Name)
3600 / 5		PE 1206431F / Advanced EHF MILSATCOM (SPACE)			657103 / Advanced MILSATCOM

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PKMA Development Complete																												
Operations Transition/Acceptance of PKMA																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)	Project (Number/Name) 657103 / Advanced MILSATCOM	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
PKMA Development Complete	1	2017	1	2017
Operations Transition/Acceptance of PKMA	2	2018	1	2019

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)				Project (Number/Name) 657104 / MILSATCOM Space Modernization Initiative (SMI)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657104: MILSATCOM Space Modernization Initiative (SMI)	0.000	153.278	228.124	145.610	0.000	145.610	129.946	47.179	38.773	14.852	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space Modernization Initiative (SMI) strategy is to evolve current and future Protected MILSATCOM systems, replenish the existing AEHF system (Milstar) capability and develop a more affordable and resilient MILSATCOM enterprise capable of meeting near term and emerging MILSATCOM requirements. A significant thrust for this initiative is to demonstrate technologies and Concepts of Operations (CONOPS) that lead to a future Protected Anti-Jam Tactical SATCOM (PATs) capability that provides tactical-level MILSATCOM users protected, anti-jam satellite communications while operating in a contested environment. PATs will provide tactical users significantly higher data rates than AEHF and a security architecture that enables forward deployed users to have protected satellite communications in scenarios where AEHF terminals cannot be deployed. Under this construct the SMI will: 1) Reduce parts/obsolescence risk to future AEHF space vehicles, 2) Continue the AEHF Capabilities Insertion Program (CIP) to enhance the current AEHF constellation performance, and improve system operational resiliency, and 3) Invest in technologies/demonstrations (e.g. Protected Tactical Service Field Demonstration)/CONOPS that enable a future Protected Tactical Service capability by continued development of the Protected Tactical Waveform (PTW) technologies, maturing the Protected Tactical Testbed, and demonstrating resilient and affordable wideband protected technologies and CONOPS.

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

	FY 2016	FY 2017	FY 2018
Title: AEHF Capabilities Insertion Program (CIP)	32.116	31.900	57.194
Description: Develop software that will increase the current AEHF constellation capacity by 10%, broaden overall user base, and accommodate a larger user population through improved resource utilization efficiencies. Develop modifications that will improve the system's operational resiliency. Develop software to increase current AEHF terminal data rates with adaptive coding algorithms. These efforts are included in PNO 261.			
FY 2016 Accomplishments: Completed Phase II (INC 8.0) development and began verification. Awarded Phase III (INC 8.1) and began development to deliver faster tactical planning, improved international partner communication planning and terminal lock-on, and developed other software-based improvements to increase the system's operational resiliency.			
FY 2017 Plans: Complete Phase II (INC 8.0) verification. Continue Phase III (INC 8.1) development. Award and begin Phase IV (INC 8.2) development to accommodate a larger user population through improved communication planning, frequency planning and other improvements.			
FY 2018 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)	Project (Number/Name) 657104 / MILSATCOM Space Modernization Initiative (SMI)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Complete Phase III INC (8.1) development and verifications. Continue Phase IV INC (8.2) development. Award and begin Phase V INC (8.3) development to enable endurance mission replan and other improvements. Develop modifications to increase the system's operational resiliency. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
Title: Evolved AEHF Description: The Evolved AEHF (E-AEHF) provides nuclear survivable, protected MILSATCOM to eXtended Data Rate (XDR) users only. E-AEHF supports strategic mission requirements such as Presidential and National Voice Conferencing (PNVC), Nuclear Command and Control (NC2) strategic networks, terminal report back, and Emergency Action Message (EAM) dissemination. FY 2016 Accomplishments: Continued requirements, architecture, and acquisition strategy development activities. Conducted threat analysis, ground architecture assessments and identified opportunities for improving system resiliency. Supported Protected Analysis of Alternatives (AoA) Follow-on for Resiliency (PAFR) Study and Space Enterprise Vision (SEV) tiger team efforts. FY 2017 Plans: Engage industry with market research, begin applicable risk reduction activities, and continue requirements, architecture, and acquisition strategy development. Develop and coordinate approvals for statutory and regulatory documentation to achieve DoD 5000.02 milestones. FY 2018 Plans: Effort has transitioned to PE 1206855F.		14.323	36.000	0.000
Title: Protected Testbed Description: Perform demonstrations and technology risk reduction on critical technology elements for the space payload, terminals and networking segments, with a focus on the PTW. Continue to develop the Protected Tactical testbed in support of PATS efforts. FY 2016 Accomplishments: Conducted Preliminary Design Review (PDR) on Mission Management System (MMS) for Protected Testbed 5 Feb 16. Continued development and enhancement of MMS, Key Management System (KMS), and ground hub segments of Protected Testbed. Performed multiple compatibility test events using simulators between MMS, KMS, and ground hub segments of Protected Testbed in 2QFY16-4QFY16. Completed three testbed simulators in 2QFY16 for 1QFY17 delivery to Protected Tactical Service		21.509	37.406	13.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)		Project (Number/Name) 657104 / MILSATCOM Space Modernization Initiative (SMI)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
<p>Field Demonstration (PTSFD) contractors. Integrated PTW modems with two different airborne terminals and conducted over-the-air tests on commercial satellites in 2QFY16 and 3QFY16 in preparation of airborne flight technology demonstration in 1QFY17.</p> <p>FY 2017 Plans:</p> <p>Deliver three testbed simulators to PTSFD contractors in 1QFY17 for early risk reduction and developmental testing in preparation for laboratory and over-the-air technology demonstrations. Perform PDR of KMS and ground hub segments of Protected Testbed in 1QFY17 in support of PTSFD. Perform Critical Design Review (CDR) of entire Protected Testbed in 3QFY17 in support of PTSFD and finalize hardware baseline in preparation to support three PTSFD contractor modem-to-testbed PTW compatibility technology demonstrations. Conduct airborne technology demonstration over-the-air on commercial satellite to validate efficacy of PTW for airborne platforms in 2QFY17. Enhance network functionality of testbed to increase ability to perform integration tests with Service networks. Support further definition and refinement of PTW Interface Control Document (ICD) and other interface documents and standards in preparation for operation use of PTW over wideband systems.</p> <p>FY 2018 Plans:</p> <p>Conduct Protected Testbed test readiness-review in preparation for PTSFD contractor compatibility testing. Support three PTSFD contractor modem-to-testbed PTW compatibility technology demonstrations. Finalize Protected Testbed baseline configuration to support over-the-air technology demonstrations over Wideband Global SATCOM (WGS) and commercial satellites for PTSFD. Prepare Protected Testbed for over-the-air WGS certification testing. Enhance Protected Testbed capabilities to support Protected Tactical Enterprise Services (PTES) and Protected Tactical Satellite (PTS) risk-reduction efforts.</p>					
<p>Title: Protected Tactical Service Field Demonstration (PTSFD)</p> <p>Description: PTSFD is a technology demonstration that 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 MMS simulator. Develop PTW components, protected tactical terminal modems that will be capable of being fully integrated into existing wideband terminals, and a new End Cryptographic Unit (ECU) that will support the PTW. The ECUs will be integrated with the PTW modem and certified by NSA. The PTSFD will demonstrate an Anti-Jam (AJ) and Low Probability of Intercept (LPI)/Low Probability of Detection (LPD) communications capability that can be provided to tactical users in all Services through fielded terminals, existing wideband MILSATCOM assets, and potential COMSATCOM assets. Conduct trade space and requirements definition to support future PTW-related capabilities. Identify potential assets such as ground hubs and information assurance components that can be further developed by future PTW-related programs for wideband users and explore releasability of PTW-related technologies to International Partners.</p> <p>FY 2016 Accomplishments:</p> <p>Conducted source selection activities for PTSFD in 1QFY16-4QFY16. Awarded three contracts for the development of TM LRUs to support PTSFD in 4QFY16. Reviewed system/functional requirements, prepared for a System Functional and Requirements</p>			85.330	93.518	75.416

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
<p>Review (SFRR), a PDR, and a CDR. Conducted PDR for the MMS segment of government testbed in 2QFY16. Began development of PTSFD contractor prototype PTW terminal modems and ECUs in 4QFY16. Continued to develop/mature requirements and ICDs for PTSFD system components.</p> <p>FY 2017 Plans: Baseline terminal modem and ECU requirements in preparation for contractor-built modem and ECU test articles. Conduct SFRR and PDR. Provide oversight of PTSFD contractor design and development of TM LRUs and ECU certification process. Provide oversight of preparations for contractor-led factory test events of TM LRU and ECU. Deliver government testbed simulators to three PTSFD contractors for use in contractor modem and ECU development and risk-reduction testing.</p> <p>FY 2018 Plans: Conduct Protected Testbed test readiness-review in preparation for PTSFD contractor compatibility testing. Support three PTSFD contractor modem-to-testbed PTW compatibility technology demonstrations. Finalize Protected Testbed baseline configuration to support over-the-air technology demonstrations over WGS and commercial satellites for PTSFD. Prepare Protected Testbed for over-the-air WGS certification testing. Enhance Protected Testbed capabilities to support Protected Tactical Enterprise Services (PTES) and Protected Tactical Satellite (PTS) risk-reduction efforts. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p>			
<p>Title: Protected Tactical Enterprise Service (PTES)</p> <p>Description: The PTES will utilize the PTW to provide a protected anti-jam communications capability over the WGS system. The PTES system will consist of three segments: a MMS, a KMS, and Joint Hubs integrated into existing SATCOM gateways. PTES will enable, along with the TM LRU's developed during the PTSFD, an anti-jam communications capability over WGS for tactical users in all Services and International Partners.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: Develop technical baseline and system requirements. Develop PTES Acquisition Strategy and associated documentation. Develop the documents required for the PTES Development Request for Proposal (RFP) Decision Point. Release PTES RFP to industry.</p> <p>FY 2018 Plans: Effort has transitioned to PE 1206760F.</p>		0.000	19.800
Title: Enterprise Ground Services (EGS)		0.000	9.500
			0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>Description: EGS is envisioned to provide a robust enterprise ground architecture for Air Force space systems, which leverages mission commonality and automation to reduce sustainment costs and re-focus manpower on warfighting capabilities. In addition, EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status, indications, and warnings for Air Force satellites. The end-state will be a modern technical infrastructure which is cyber-secure and resilient against the Advanced Persistent Threat and employs streamlined architecting, acquisition, and operational processes. Through early architecture studies and prototyping, the government will establish clear ownership of the technical baseline to meet Better Buying Power principles as the EGS effort evolves through development. This effort provides focus and expertise for the development, test, certification and enforcement of standards and interfaces for all AFSPC satellite ground systems to enable transition planning for legacy ground systems, new capability demonstrations, and systems acquisition leading to an enterprise ground architecture for Air Force space systems.</p> <p>FY 2016 Accomplishments: N/A.</p> <p>FY 2017 Plans: Conduct developmental planning, mature technologies, and develop initial small-scale prototype capability for the enterprise ground architecture. Efforts in 2017 will include, but not be limited to, systems engineering, special studies, cyber security planning and implementation, standards and interface development and codification, integration and test efforts in support of demonstrations, and operational architecture planning. In addition, this effort will build the technical and programmatic roadmap to enable a phased enterprise transition in the future.</p> <p>FY 2018 Plans: In FY18, Enterprise Ground Services has been consolidated under Space and Missile Test and Evaluation Center; PE 1203173F.</p>			
Accomplishments/Planned Programs Subtotals	153.278	228.124	145.610

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SPAF: BA01: Line Item # ADV555: <i>Advanced EHF</i>	327.366	645.569	56.974	0.000	56.974	29.299	31.180	31.742	0.000	0.000	1,122.130
Remarks											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>
<p>D. Acquisition Strategy</p> <p>MILSATCOM SMI includes parts obsolescence redesign and incremental capability upgrades contracted with current Prime contractor team. Enterprise studies, system design for affordability, protected tactical awards and risk reduction efforts for next generation capabilities.</p> <p>The PTSFD is a technology maturation and risk reduction effort that will demonstrate the ability to provide wideband anti-jam communications to tactical users using the WGS constellation and Commercial SATCOM by developing production-representative Terminal Modem Line Replaceable Units (TM LRUs) that implement the government-developed PTW, and integrating and demonstrating them with existing WGS-certified terminals. The effort includes the design, development, factory testing and fabrication of PTW-enabled TM LRU prototypes for integration, compatibility testing and Type-1 cryptographic certification evaluation by the NSA to support potential future acquisitions by the service Terminal Program Offices (TPOs). The acquisition strategy includes the award of up to three TM LRU contracts; each a four-year, Cost-Plus Incentive Fee, Cost-Plus Fixed Fee with a Firm Fixed Price option contract, awarded through a full and open competitive, best-value source selection process. The PTSFD will use a Government-built ground test bed to facilitate the demonstrations and to allow for compatibility and integration testing for the TM LRU.</p> <p>E. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>						Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AEHF Capabilities Insertion Program (CIP)	SS/CPIF	Lockheed Martin : Sunnyvale, CA	0.000	24.243	Jun 2016	31.900	Jun 2017	57.194	Jun 2018	0.000		57.194	Continuing	Continuing	56.151
Protected Tactical Demonstration (Modem)	Various	Various : various	0.000	5.149	May 2016	7.328	Jan 2017	6.415	Jan 2018	0.000		6.415	Continuing	Continuing	-
Protected Tactical Demonstration (Modem) Contractor 1	C/CPIF	L3 : Camden, NJ	0.000	18.500	Aug 2016	20.044	Jan 2017	14.869	Jan 2018	0.000		14.869	Continuing	Continuing	35.700
Protected Tactical Demonstration (Modem) Contractor 2	C/CPIF	VIASAT : Carlsbad, CA	0.000	16.000	Aug 2016	20.044	Jan 2017	14.868	Jan 2018	0.000		14.868	Continuing	Continuing	31.400
Protected Tactical Demonstration (Modem) Contractor 3	C/CPIF	Raytheon : Marlborough, MA	0.000	20.000	Aug 2016	20.044	Jan 2017	14.868	Jan 2018	0.000		14.868	Continuing	Continuing	37.500
Protected Tactical Demonstration (Mission Management System simulator)	Various	Aerospace : El Segundo, CA	0.000	10.245	Jan 2016	10.955	Jan 2017	1.254	Jan 2018	0.000		1.254	Continuing	Continuing	-
Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	0.000	0.669	Oct 2015	2.033	Oct 2016	3.175	Oct 2017	0.000		3.175	Continuing	Continuing	-
Evolved AEHF (E-AEHF)	Various	Various : Various	0.000	3.689	Jan 2016	33.102	Jan 2017	0.000		0.000		0.000	0.000	36.791	-
Protected Testbed	Various	MIT/LL : Various	0.000	18.638	Jan 2016	19.792	Jan 2017	11.960	Jan 2018	0.000		11.960	Continuing	Continuing	-
Protected Tactical Enterprise Services (PTES)	TBD	TBD : TBD	0.000	0.000		18.595	Jul 2017	0.000		0.000		0.000	0.000	18.595	-
Enterprise SE&I	C/CPAF	Linquest : Los Angeles, CA	0.000	17.323	Jan 2016	11.542	Jan 2017	14.205	Jan 2018	0.000		14.205	Continuing	Continuing	-
Enterprise Ground Services (EGS)	Various	Various : Various	0.000	0.000		9.500	Jan 2017	0.000		0.000		0.000	0.000	9.500	-
Subtotal			0.000	134.456		204.879		138.808		0.000		138.808	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206431F / Advanced EHF MILSATCOM (SPACE)						Project (Number/Name) 657104 / MILSATCOM Space Modernization Initiative (SMI)			
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Various : Various	0.000	6.109	Jan 2016	10.526	Jan 2017	0.167	Jan 2018	0.000		0.167	Continuing	Continuing	-
Other Support	Various	Various : Various	0.000	0.173	Dec 2015	0.100	Dec 2016	0.050	Dec 2017	0.000		0.050	Continuing	Continuing	-
A&AS	Various	Various : Various	0.000	12.540	Jan 2016	12.619	Jan 2017	6.585	Jan 2018	0.000		6.585	Continuing	Continuing	-
Subtotal			0.000	18.822		23.245		6.802		0.000		6.802	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	153.278		228.124		145.610		0.000		145.610	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>			Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AEHF CIP: Award Phase III Contract 8.1																												
AEHF CIP: Award Phase IV Contract 8.2																												
AEHF CIP: Award Phase V Contract 8.3																												
AEHF CIP: Award Operational Resiliency																												
PTW Demo (PTSFD) : Award Demo (Modem) Contracts																												
PTW Demo (PTSFD) : Factory Tests (TM LRU, MMS, KMS)																												
Protected Testbed : Factory Tests (TM LRU, MMS, KMS)																												
PTW Demo (PTSFD) : Conduct End to End OTA Demonstration																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>MILSATCOM Space Modernization Initiative (SMI)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AEHF CIP: Award Phase III Contract 8.1	3	2016	3	2016
AEHF CIP: Award Phase IV Contract 8.2	3	2017	3	2017
AEHF CIP: Award Phase V Contract 8.3	3	2018	3	2018
AEHF CIP: Award Operational Resiliency	2	2018	2	2018
PTW Demo (PTSFD) : Award Demo (Modem) Contracts	4	2016	4	2016
PTW Demo (PTSFD) : Factory Tests (TM LRU, MMS, KMS)	2	2018	4	2018
Protected Testbed : Factory Tests (TM LRU, MMS, KMS)	1	2018	4	2018
PTW Demo (PTSFD) : Conduct End to End OTA Demonstration	1	2019	2	2020

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1206432F I Polar MILSATCOM (SPACE)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	201.189	71.867	50.815	33.644	0.000	33.644	0.000	0.000	0.000	0.000	0.000	357.515
657105: Polar Satellite Communications	201.189	71.867	50.815	33.644	0.000	33.644	0.000	0.000	0.000	0.000	0.000	357.515
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 121												
<p>Note</p> <p>In FY2018, PE 0605432F, Polar MILSATCOM efforts were transferred to PE 1206432F, Polar MILSATCOM due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206432F.</p> <p>As of the December 2015 Selected Acquisition Report, Prior Years dollars total \$1,187.0M.</p> <p>A. Mission Description and Budget Item Justification</p> <p>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.</p> <p>Through FY 2005, 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.</p> <p>In FY 2006, 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 CY 2015 and CY 2017. EPS is comprised of four segments: Payload, Ground Control, Gateway, and Terminal (acquired by each Service's Terminal Program Office). Milestone B review was completed 2 April 2014.</p> <p>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.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 1206432F I Polar MILSATCOM (SPACE)				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	71.867	50.815	24.487	0.000	24.487	
Current President's Budget	71.867	50.815	33.644	0.000	33.644	
Total Adjustments	0.000	0.000	9.157	0.000	9.157	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	0.000	9.157	0.000	9.157	
Change Summary Explanation						
FY 2018: +\$9.157M for timely execution of payload on orbit test, Lead Development Test Organization (LDTO), PEO Certification, Authority to Operate (ATO) and Multiservice Operational Test and Evaluation (MOT&E) events						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: EPS				71.867	50.815	33.644
Description: Develop and acquire EPS MILSATCOM which consists of: 1) two Extremely High Frequency payloads, using AEHF's eXtended Data Rate (XDR) waveform, on hosted spacecraft; 2) a standalone Control and Planning Segment (CAPS) to provide command and control and XDR mission planning capability; and 3) one gateway to provide connectivity between polar and mid-latitude users through the Global Information Grid.						
FY 2016 Accomplishments: Continued Integration & Test, completed Gateway installation and Installation Qualification Test at Clear AFS and Camp Roberts.						
FY 2017 Plans: Finalize system installation for CAPS at Schriever AFB. Execute factory intersegment testing between CAPS, payload, and the terminals. Execute EPS Key Management Architecture testing. Execute CAPS to Mission Ground Station (MGS) intersegment testing. Execute payload on-orbit intersegment testing between CAPS, Telemetry and Command Terminal (T&C-T), Payload, Gateway and the polar user terminals. Execute end-to-end system functionality testing with Payload #1.						
FY 2018 Plans:						

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

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 1206432F I Polar MILSATCOM (SPACE)
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Complete test activities for Lead Developmental Test Organization. Execute MOT&E. Complete PEO certification. Execute Payload #2 on-orbit testing. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.			
Accomplishments/Planned Programs Subtotals	71.867	50.815	33.644

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• None: None	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000

Remarks

E. Acquisition Strategy

The 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 Systems 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), San Diego, CA. The MILSATCOM Systems Directorate is the prime systems integrator for the EPS payload, ground control, and gateway segments. The Terminals that will use EPS will be acquired by each Service's Terminal Program Office.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206432F / Polar MILSATCOM (SPACE)				Project (Number/Name) 657105 / Polar Satellite Communications					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Control and Planning Segment	C/CPIF	Northrop Grumman Information Systems : Redondo Beach, CA	104.550	34.984	Nov 2015	19.026	Nov 2016	12.720	Nov 2017	0.000		12.720	0.000	171.280	148.600
Gateway architecture development	MIPR	Space and Naval Warfare Systems Command (SPAWAR) Systems Center - Pacific : San Diego, CA	30.269	8.943	Nov 2015	8.157	Nov 2016	3.496	Nov 2017	0.000		3.496	0.000	50.865	75.454
EPS Design/Development Contract	SS/CPAF	NGAS : Redondo Beach, CA	5.005	1.944	Nov 2015	2.803	Nov 2016	2.911	Nov 2017	0.000		2.911	0.000	12.663	606.693
T&C-T Development	MIPR	Lincoln Labs : Boston, MA	3.107	3.270	Nov 2015	2.980	Nov 2016	3.060	Nov 2017	0.000		3.060	0.000	12.417	-
Technical Mission Analysis	Various	Various : Various	1.795	6.640	Nov 2015	5.739	Nov 2016	3.886	Nov 2017	0.000		3.886	0.000	18.060	-
Enterprise SE&I	Various	Various : Various	20.417	7.830	Nov 2015	6.624	Nov 2016	3.976	Nov 2017	0.000		3.976	0.000	38.847	-
Subtotal			165.143	63.611		45.329		30.049		0.000		30.049	0.000	304.132	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Planning/Management Support for T&E	MIPR	Various : Various	1.279	0.000		0.000		0.000		0.000		0.000	0.000	1.279	-
Subtotal			1.279	0.000		0.000		0.000		0.000		0.000	0.000	1.279	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206432F / Polar MILSATCOM (SPACE)				Project (Number/Name) 657105 / Polar Satellite Communications					
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Various : Various	17.863	0.420	Nov 2015	1.150	Nov 2016	0.633	Nov 2017	0.000		0.633	0.000	20.066	-
A&AS	Various	Various : Various	16.617	7.663	Nov 2015	4.066	Nov 2016	2.692	Nov 2017	0.000		2.692	0.000	31.038	-
Other Support	Various	Various : Various	0.287	0.173	Nov 2015	0.270	Nov 2016	0.270	Nov 2017	0.000		0.270	0.000	1.000	-
Subtotal			34.767	8.256		5.486		3.595		0.000		3.595	0.000	52.104	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			201.189	71.867		50.815		33.644		0.000		33.644	0.000	357.515	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206432F / <i>Polar MILSATCOM (SPACE)</i>	Project (Number/Name) 657105 / <i>Polar Satellite Communications</i>
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	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Field Control and Planning Segment (CAPS)																												
Availability of Payload #2																												
Conduct Multiservice Operational Test and Evaluation (MOT&E)																												
IOC/FOC declaration																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206432F / <i>Polar MILSATCOM (SPACE)</i>	Project (Number/Name) 657105 / <i>Polar Satellite Communications</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Field Control and Planning Segment (CAPS)	1	2016	3	2017
Availability of Payload #2	2	2017	1	2018
Conduct Multiservice Operational Test and Evaluation (MOT&E)	3	2018	3	2018
IOC/FOC declaration	1	2019	1	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1206433F I WIDEBAND GLOBAL SATCOM (SPACE)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	49.954	41.632	14.263	0.000	14.263	4.000	1.934	0.000	0.000	0.000	111.783
657102: Command & Control Sys-Consolidated (CCS-C)	-	8.249	12.248	4.263	0.000	4.263	4.000	1.934	0.000	0.000	0.000	30.694
657107: WGS Space Systems Resiliency Upgrade	-	41.705	29.384	10.000	0.000	10.000	0.000	0.000	0.000	0.000	0.000	81.089

Note

In FY2018, PE 0605433F, Wideband Global SATCOM efforts were transferred to PE 1206433F, Wideband Global SATCOM, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206433F.

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 the X-band.

The Command and Control System-Consolidated (CCS-C) system provides integrated launch and on-orbit command and control (C2) functionality at Schriever AFB and Vandenberg AFB for MILSATCOM satellites. Schriever AFB is used for primary operations and Vandenberg AFB is used for backup operations. CCS-C uses modified commercial off the shelf hardware/software to control emerging and legacy MILSATCOM systems including Milstar, Defense Satellite Communications System (DSCS), Wideband Global SATCOM (WGS) and Advanced Extremely High Frequency (AEHF) satellites.

The CCS-C project 657102 funds system architecture evolution to provide increased performance for additional satellites and to comply with DoD, Air Force, and AFSPC-directed standards for Information Assurance, Satellite Control Standardization, and Net-Readiness.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 1206433F I WIDEBAND GLOBAL SATCOM (SPACE)			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	52.185	41.632	14.385	0.000	14.385
Current President's Budget	49.954	41.632	14.263	0.000	14.263
Total Adjustments	-2.231	0.000	-0.122	0.000	-0.122
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-2.231	0.000			
• Other Adjustments	0.000	0.000	-0.122	0.000	-0.122
Change Summary Explanation					
FY18: -\$4.217M to account for availability of prior year execution balances, -\$5.934M for CCS-C Assurance and Capability Enhancement (CACE) program re-phase, +\$10.000M for Commercial Satellite Communications (COMSATCOM) Pilot program, +\$0.029M Inflation adjustment (total FY18 adjustments -\$0.122M)					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206433F / WIDEBAND GLOBAL SATCOM (SPACE)				Project (Number/Name) 657102 / Command & Control Sys-Consolidated (CCS-C)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657102: Command & Control Sys-Consolidated (CCS-C)	-	8.249	12.248	4.263	0.000	4.263	4.000	1.934	0.000	0.000	0.000	30.694
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Additional Prior Years funds for Wideband Global SATCOM (SPACE) are in PE 0603854F, Project 644870, Command and Control System - Consolidated (CCS-C), Budget Activity 4.

A. Mission Description and Budget Item Justification

The Military Satellite Communications (MILSATCOM) Command and Control System-Consolidated (CCS-C) system provides integrated launch and on-orbit command and control (C2) functionality at Schriever AFB and Vandenberg AFB for MILSATCOM satellites. Schriever AFB is used for primary operations and Vandenberg AFB is used for backup operations. CCS-C uses modified commercial off the shelf hardware/software to control emerging and legacy MILSATCOM systems including Milstar, Defense Satellite Communications System (DSCS), Wideband Global SATCOM (WGS) and Advanced Extremely High Frequency (AEHF) satellites.

The CCS-C project 657102 funds system architecture evolution to provide increased performance for additional satellites and to comply with DoD, Air Force, and AFSPC-directed standards for Information Assurance, Satellite Control Standardization, and Net-Readiness. This continuing effort was previously funded in the FY14PB and prior as an Acquisition Category II (ACAT II) program. With the 10 October 2013 Final Operational Capability (FOC) declaration, the program has transitioned to an ACAT III program, the Command and Control System-Consolidated Assurance and Capability Enhancement (CACE), beginning FY2014. The WGS and AEHF procurement program elements fund the mission unique software and databases for the WGS Block II Follow-On satellites and the AEHF 4-6 satellites, respectively. FY18 funds have been re-phased due to an increased CACE test scope and fact-of-life Government delays driving the need for an increased contract Period of Performance.

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

	FY 2016	FY 2017	FY 2018
Title: CCS-C development	8.249	12.248	4.263
Description: Develop system architecture to provide enhanced C2 of MILSATCOM satellites.			
FY 2016 Accomplishments: Executed CCS-C modifications to implement new Cross-Domain Solution and Host Based Security System to enhance Information Assurance posture; upgraded, integrated, and tested new cryptologic equipment; and implemented new architecture changes to increase WGS capacity, reduced system downtime, and decreased O&M costs. Conducted Critical Design Review (CDR).			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 1206433F / WIDEBAND GLOBAL SATCOM (SPACE)				Project (Number/Name) 657102 / Command & Control Sys-Consolidated (CCS-C)				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
Continue to execute implementation, integration, and begin test verification activities for all CCS-C modifications. Manage both the operational CCS-C baseline and the new CCS-C Assurance and Capacity Enhancement (CACE) upgraded baseline throughout testing activities.												
FY 2018 Plans: Continue to execute implementation, integration, and conduct test verification activities for all CCS-C modifications. Continue to manage the operational CCS-C & CACE baseline. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.												
Accomplishments/Planned Programs Subtotals										8.249	12.248	4.263
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• SPAF: BA01: Line Item # MILSAT: <i>Milsatcom Space</i>	0.269	0.272	0.277	0.000	0.277	0.282	0.000	0.000	0.000	0.000	1.100	
• SPAF: BA01: Line Item # ADV555: <i>Advanced EHF</i>	1.906	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.906	
• SPAF: BA01: Line Item # GAP000: <i>Wideband Global System Procurement</i>	0.000	0.000	0.208	0.000	0.208	0.000	0.000	0.000	0.000	0.000	3.291	
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. 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 funding in the FY14PB and prior as an ACAT II program. With the 10 October 2013 FOC declaration, the program has transitioned to an ACAT III program, the Command and Control System - Consolidated Assurance and Capability Enhancement (CACE), beginning in FY2014.												
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206433F / WIDEBAND GLOBAL SATCOM (SPACE)				Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657107: WGS Space Systems Resiliency Upgrade	-	41.705	29.384	10.000	0.000	10.000	0.000	0.000	0.000	0.000	0.000	81.089
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Wideband Global SATCOM (WGS) System provides the DoD with high data rate military satellite communications (MILSATCOM) services in accordance with the Joint Space Management Board-approved MILSATCOM architecture (August 1996), the Joint Requirements Oversight Council (JROC)-approved MILSATCOM Capstone Requirements Document (October 1997), and JROC-approved WGS Operational Requirements Document (May 2000). This program was originally conceived to augment the near-term "bandwidth gap" in warfighter communications needs. Dual-frequency WGS satellites augment, then replace the DoD's Defense Satellite Communications System X-band service and augment one-way Global Broadcast Service Ka-band capabilities. In addition, WGS provides a high capacity two-way Ka-band service.

All WGS Block I (Satellites 1-3), Block II (Satellites 4-6), and the first Block II Follow-on (Satellite 7) have been launched and are operational. Satellites 8-9 successfully launched on 7 December 2016 and 18 March 2017, respectively. 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 the X-band.

Commercial SATCOM (COMSATCOM) Pilot program started in FY2017 and will demonstrate the feasibility and utility of the DoD using order-of-magnitude SATCOM capability improvements advertised by commercial companies.

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

	FY 2016	FY 2017	FY 2018
Title: WGS Upgrade	30.190	21.544	-
Description: Upgrade WGS system to both locate and neutralize ground-based jamming threats.			
FY 2016 Accomplishments: X-band: Initiated Ground Based Receiver Equipment Development, Global SATCOM Command and Control Element (GSCCE)Software (SW) Development (GBAN). In Service Calibration/Geolocation/Beam Mitigation SW Development, and initiated Rack Integration and Test (I&T).			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 1206433F / WIDEBAND GLOBAL SATCOM (SPACE)			Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade					
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018	
X-band: Complete Ground Based Receiver Equipment Development, Global SATCOM Command and Control Element (GSCCE)Software (SW) Development (GBAN). In Service Calibration/Geolocation/Beam Mitigation SW Development. Continue Rack Integration and Test (I&T). Initiate System I&T and Information Assurance Certification.											
Title: Wideband AoA								6.302	7.840	-	
Description: Analysis of alternatives for a follow-on wideband communications system to the WGS system.											
FY 2016 Accomplishments: Defined core team and working group leads and established working group structure as well began studies bounding the expected solution space regarding requirements definition and technology maturity.											
FY 2017 Plans: Support the Principal DoD Space Advisor (PDSA) and USD AT&L in the conduct of a wideband Analysis of Alternatives to determine the appropriate mix of military and commercial wideband satellite communications.											
Title: COMSATCOM Pilot Program								5.213	-	10.000	
Description: Analysis for Wideband Transport Architectures, End user equipment, Mission Management and Operations, Future Technologies, Cyber-security, and Resiliency.											
FY 2016 Accomplishments: Developed initial concepts for studies to define commercial SATCOM architectures and potential avenues to incorporate them into a future DoD SATCOM solution.											
FY 2018 Plans: Implement flexible modem/terminal interface and centralized management process enabling demonstration of order of magnitude improvements in commercial satellite communications.											
Accomplishments/Planned Programs Subtotals								41.705	29.384	10.000	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SPAF:BA01:Line Item	74.476	86.272	80.849	0.000	80.849	62.112	0.000	0.000	0.000	0.000	303.709
# GAP000: Wideband											
Global System Procurement											
Remarks											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206433F / WIDEBAND GLOBAL SATCOM (SPACE)	Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade
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 7-10.		
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206433F / WIDEBAND GLOBAL SATCOM (SPACE)				Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WGS Upgrade: X-band Anti-jam enhancement	SS/FFP	The Boeing Company : El Segundo, CA	-	23.020	Mar 2016	20.260	Jan 2017	0.000		0.000		0.000	0.000	43.280	55.560
WGS Upgrade: Ka-band Anti-jam enhancement	C/TBD	TBD : TBD	-	5.400		0.000		0.000		0.000		0.000	0.000	5.400	-
Technical Mission Analysis	Various	Aerospace : El Segundo, CA	-	0.622	Nov 2015	0.707	Feb 2017	2.000	Nov 2017	0.000		2.000	0.000	3.329	-
Enterprise SE&I (COMSATCOM Pilot Program)	C/CPIF	LinQuest : Los Angeles, CA	-	2.213	Aug 2016	0.000		0.000		0.000		0.000	0.000	2.213	-
Lincoln Labs (COMSATCOM Pilot Program)	Various	Lincoln Labs : Lexington, MA	-	3.000	Mar 2017	0.000		7.800	Apr 2018	0.000		7.800	0.000	10.800	-
Wideband Analysis of Alternatives (AoA)	Various	Multiple : Multiple	-	6.302	Apr 2017	7.760	Jun 2017	0.000		0.000		0.000	0.000	14.062	-
Boeing Pension Protection Act Harmonization	SS/FFP	The Boeing Company : El Segundo, CA	-	0.081	Sep 2016	0.000		0.000		0.000		0.000	0.000	0.081	-
Subtotal			-	40.638		28.727		9.800		0.000		9.800	0.000	79.165	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206433F / WIDEBAND GLOBAL SATCOM (SPACE)				Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade					
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	Various	Aerospace : El Segundo, CA	-	0.067	Jan 2016	0.069	May 2017	0.000		0.000		0.000	0.000	0.136	6.180
Other Support	Various	Various : TBD	-	1.000	Aug 2016	0.588	Dec 2016	0.200	Oct 2017	0.000		0.200	0.000	1.788	1.200
Subtotal			-	1.067		0.657		0.200		0.000		0.200	0.000	1.924	7.380
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	41.705		29.384		10.000		0.000		10.000	0.000	81.089	-
Remarks FY16 Lincoln Labs (COMSATCOM Pilot Program) Subcontractors: Boeing, Northrop Grumman, Space Systems-Loral, Hughes, KRATOS, and ViaSat															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>			Project (Number/Name) 657107 / <i>WGS Space Systems Resiliency Upgrade</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Contract Award (X-band) Anti-Jam enhancement																												
X band: Ground Based Receiver Equipment Development																												
X-band: GSCCE Software Development (GBAN)																												
X-band: RAM Patch Development																												
X-band: In Service Calibration / Geolocation / Beam SW																												
X-band: Rack Integration & Test																												
X-band: System Integration & Test and IA Certification																												
X-band: Fielding and Activation																												
Wideband Business Case Analysis (BCA) Complete																												
Wideband Communications Services AoA Materiel Development Decision																												
COMSATCOM Pilot Program Analysis Phase																												
COMSATCOM Pilot Program Phase 1 Award																												
COMSATCOM Pilot Program Order of Magnitude Demos Phases																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206433F / <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) Anti-Jam enhancement	2	2016	2	2016
X band: Ground Based Receiver Equipment Development	2	2016	4	2017
X-band: GSCCE Software Development (GBAN)	2	2016	1	2017
X-band: RAM Patch Development	2	2016	3	2017
X-band: In Service Calibration / Geolocation / Beam SW	1	2017	1	2018
X-band: Rack Integration & Test	1	2017	3	2017
X-band: System Integration & Test and IA Certification	3	2017	3	2018
X-band: Fielding and Activation	4	2018	1	2019
Wideband Business Case Analysis (BCA) Complete	3	2016	3	2016
Wideband Communications Services AoA Materiel Development Decision	1	2017	1	2017
COMSATCOM Pilot Program Analysis Phase	4	2016	2	2018
COMSATCOM Pilot Program Phase 1 Award	3	2017	3	2017
COMSATCOM Pilot Program Order of Magnitude Demos Phases	1	2018	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1206441F I Space Based Infrared System (SBIRS) High EMD							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	9,827.288	291.510	218.766	311.844	0.000	311.844	345.460	275.873	236.578	275.571	Continuing	Continuing
653616: SBIRS High Element Emd	9,827.288	202.929	145.690	121.760	0.000	121.760	38.015	0.000	0.000	0.000	0.000	10,335.682
657009: Space Mod Initiative	0.000	88.581	73.076	173.537	0.000	173.537	211.406	232.853	209.576	183.340	Continuing	Continuing
657106: Evolved SBIRS	0.000	0.000	0.000	16.547	0.000	16.547	96.039	43.020	27.002	92.231	Continuing	Continuing
Program MDAP/MAIS Code: 210												
Note This program, BA 05 PE 1206441F, project 657106, Evolved SBIRS, is a new start. In FY2018, PE 0604441F, Space Based Infrared System (SBIRS) High EMD efforts were transferred to PE 1206441F, Space Based Infrared System (SBIRS) High EMD due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206441F. Prior Years: Total Program Element above includes \$39.831M for Project 65A040 Commercially Hosted Payload funded in FY 2011 and FY 2012. MDAP PNO 210 includes only Project 653616 SBIRS High EMD.												
A. Mission Description and Budget Item Justification The SBIRS RDT&E FY 2018 budget justification exhibits describe three elements of the SBIRS program: 1) the SBIRS Engineering and Manufacturing Development (EMD) program of record PNO 210 MDAP, 2) the Space Modernization Initiative (SMI) (non-MDAP) and the 3) Evolved SBIRS follow-on (pre-MDAP PNO 499). 1. SBIRS EMD: The Space-Based Infrared System (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. SBIRS supports Missile Defense, Battlespace Awareness, and Technical Intelligence missions by providing reliable, accurate, and timely data to Unified Combatant Commanders, Joint Task Force (JTF) Commanders, the intelligence community, and other users. SBIRS provides increased detection and tracking performance over legacy systems in order to meet requirements in Air Force Space Command's (AFSPC) Operational Requirements Document (ORD). The SBIRS system includes both space and ground elements. The space segment consists of Geosynchronous Earth Orbit (GEO) satellites, payloads hosted on satellites in Highly Elliptical Orbit (HEO), and Defense Support Program (DSP) satellites. The ground segment consists of both fixed and mobile data processing elements, communications infrastructure, and relay ground stations serving all SBIRS space elements. Three HEO payloads and three GEO satellites are on-orbit. Two of the three GEO and two of the three HEO satellites have completed AFSPC and USSTRATCOM operational acceptance and are certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. HEO-3 is in a storage/residual operational mode and GEO-4 (Flight 3) is proceeding through on-orbit checkout and infrared sensor tuning following the Jan 2017 launch. The program of record ground segment development exploits both the new scanner and starer sensor data through software processing and builds user messages for missile warning and missile defense. Also, data exploitation												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 1206441F I Space Based Infrared System (SBIRS) High EMD	
<p>efforts enable access to raw and processed data to expand capabilities for battlespace awareness and other applications. FY 2018 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.</p> <p>2. SMI: The primary objective of SMI is to enable and inform future decisions to maintain and evolve a capable, resilient, and affordable OPIR architecture by maturing technologies and mitigating risk areas to facilitate OPIR modernization within the Department's constrained resources. SMI supports the Program of Record (PoR) by assessing future parts and material obsolescence and designing future space and ground modifications focused on affordability and capability while simultaneously maximizing the effectiveness of existing system data products. SMI funds engineering activities to reduce both production and future system costs through manufacturing and producibility enhancements and through technology insertion. SMI will also mature potential technology upgrades at the component and system level for future space and ground architecture affordability and capability enhancements. The SBIRS OPIR SMI plan includes studies and risk reduction activities to evolve the current PoR SBIRS constellation, reduce production timelines, and reduce recurring production costs. Based on the outcome of these studies and technology development, the Sensor Ground Demonstration will develop capability for current, next generation sensors, processors, and algorithms. SMI funded data exploitation efforts include OPIR mission data processing, data fusion, data dissemination, algorithm development, network connectivity, efficient interfaces and sensor performance assessments to enable greater exploitation of SBIRS PoR and other data sources. SMI exploitation efforts build upon PoR capabilities and inform the PoR decision process. The data exploitation efforts identify affordable, responsive and resilient measures to improve technical intelligence and battlespace awareness processing and data dissemination tools to enhance OPIR support to the warfighters and other data users. The SMI Hosted Payloads and Wide Field of View (WFOV) Testbed activities explore technology maturation, qualification of new components, and subsystem/component prototyping to evolve the OPIR architecture. Hosted Payloads and WFOV Testbeds support maturation of mission data processing algorithms for tactical and strategic applications which are critical demonstration efforts to enhance PoR capabilities and to reduce program risks for future OPIR systems, whether new systems or evolutions of the PoR. Collection of on-orbit WFOV data is critical to develop algorithms to process large data sets generated by emerging large format focal planes and to reduce risk for possible SBIRS follow-on architectures. SBIRS Enterprise Ground Services (EGS) infrastructure modernization efforts under SMI will introduce Telemetry, Tracking and Command systems (TT&C) and Ground Control automation, Future Operationally Resilient Ground Evolution (FORGE) mission data processing as well as competition into SBIRS Ground with an emphasis to on-ramp to EGS as soon as practical. SMI activities are balanced and phased to enable an expanded tradespace and improve the competitive environment.</p> <p>3. The Evolved SBIRS RDT&E FY 2018 budget justification exhibits describes the SBIRS Next-Generation OPIR program (pre-MDAP PNO 499). This program, BA 05 PE 1206441F, project 657106, EVOLVED SBIRS, is a new start.</p> <p>SBIRS Next-Gen OPIR: The SBIRS' primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. The SBIRS Next-Gen OPIR will provide improved strategic missile warning coverage and increased resiliency in a strategic constellation to meet the requirements laid out in the Air Force draft Capability Development Document (CDD) based on the AFSPC Space Warfighter Construct (SWC) in response to the Space Enterprise Vision (SEV). The SBIRS Next Gen OPIR systems includes both the space and ground elements. The Next Gen OPIR space segment will consist of GEO and HEO satellites, providing real-time persistent global infrared coverage using a highly resilient bus with modernized payloads. The space segment will begin development of HEO space vehicles in FY21. FORGE and EGS are infrastructure modernization efforts also aligned with AFSPC SWC. The FORGE effort will</p>		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)				
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 1206441F I Space Based Infrared System (SBIRS) High EMD				
implement an open framework for mission data processing and migration of C2 of satellite operations to integrate with EGS. FORGE and EGS efforts will provide the flexibility to integrate new mission data processing capabilities and more efficiently allow the system to meet evolving warfighter needs.						
This program element is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.						
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		291.510	181.966	444.177	0.000	444.177
Current President's Budget		291.510	218.766	311.844	0.000	311.844
Total Adjustments		0.000	36.800	-132.333	0.000	-132.333
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	36.800	-132.333	0.000	-132.333
Change Summary Explanation						
FY2017: Request for Additional Appropriation (RAA) funded SMI FORGE (+\$16.800M), and EMD Cyber Enhancements (+\$20.000M). NOTE: RAA adjustments added to project 653616, but SMI FORGE funding will be realigned to project 657009.						
FY2018: +57.200M for SMI Data Exploitation and Space Warfighter Construct efforts; +\$26.306M to fund SBIRS ground cyber security enhancements; - \$215.839M realigned SBIRS 7&8 to Space Procurement and SBIRS Evolved RDT&E to new PE.						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206441F / Space Based Infrared System (SBIRS) High EMD				Project (Number/Name) 653616 / SBIRS High Element Emd			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
653616: SBIRS High Element Emd	9,827.288	202.929	145.690	121.760	0.000	121.760	38.015	0.000	0.000	0.000	0.000	10,335.682
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 FY 2011, GEO-2 in FY 2012, HEO-1 in FY 2004, and HEO-2 in FY 2005.

The Space-Based Infrared System (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. SBIRS supports Missile Defense, Battlespace Awareness, and Technical Intelligence missions by providing reliable, accurate, and timely data to Unified Combatant Commanders, Joint Task Force (JTF) Commanders, the intelligence community, and other users. SBIRS provides increased detection and tracking performance over legacy systems in order to meet requirements in Air Force Space Command's (AFSPC) Operational Requirements Document (ORD). The SBIRS system includes both space and ground elements. The space segment consists of Geosynchronous Earth Orbit (GEO) satellites, payloads hosted on satellites in Highly Elliptical Orbit (HEO), and Defense Support Program (DSP) satellites. The ground segment consists of both fixed and mobile data processing elements, communications infrastructure, and relay ground stations serving all SBIRS space elements. The three HEO payloads and two GEO satellites are on-orbit. Both GEO and two of the three HEO satellites have completed AFSPC and USSTRATCOM operational acceptance and are certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. HEO-3 is in a storage/residual operational mode. The program of record ground segment development exploits both the new scanner and starrer sensor data through software processing and builds user messages for missile warning and missile defense. Also, data exploitation efforts enable access to raw and processed data to expand capabilities for battlespace awareness and other applications. SBIRS ground system cyber defense increases resiliency by resolving legacy DSP network architecture issues and establishes an active cyber defense capability. FY 2018 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SBIRS EMD	202.929	145.690	121.760	0.000	121.760
Description: Continued EMD contracts for Space and Ground segment development, concept studies/activities for obsolescence issues.					
FY 2016 Accomplishments: Continued Ground System Development (Block 10) and pre certification use of the staring sensor for Technical Intelligence. Block 10 provides significantly enhanced missile warning capabilities for our nation and allies					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017				
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / <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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>by exploiting both scanner and starrer sensor data with the improved ability for quicker detection and warning against a wider-ranging number of smaller missiles that are proliferating around the globe. Continued Block 20 Ground System Development, System Engineering and Program Management, HEO host program office support, Technical Intelligence activated, Data Processing/Exploitation/ground integration activities, Combined Task Force (CTF) support activities, systems integration and test studies. Block 20 adds ground processing that will exploit starrer data via auto-cues on theater launches to enhance burnout surveillance and improve impact point prediction. Continued enterprise SE&I. Began operational utility evaluation and trial period for Block 10. Began cyber defense improvement to SBIRS ground system architecture in Block 10.</p> <p>FY 2017 Plans: Complete Block 10 Operational Acceptance and ITW/AA certification (including GEO-1/2 Starers). Block 10 acceptance significantly enhances missile warning capabilities for our nation and allies by exploiting both scanner and starrer sensor data with the improved ability for quicker detection and warning (for Combatant Commanders and the National Command Authority) against a wider-ranging number of smaller missiles that are proliferating around the globe. Complete Increment 1 operations support activities. Continue Block 20 Ground System Development, System Engineering and Program Management, HEO host program office support, Technical Intelligence activities, Data Processing/ Exploitation/ground integration activities, systems integration and test studies. Block 20 adds ground processing that will exploit starrer data via auto-cues on theater launches for enhanced burnout surveillance and improved impact point prediction. Continue 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. Continue cyber defense improvements to SBIRS ground system architecture in Block 20 in response to deficiencies identified during operational testing. Increase resiliency by resolving legacy DSP network architecture issues and establish an active cyber defense capability for SBIRS to keep pace with evolving threat.</p> <p>FY 2018 Base Plans: 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. Continue developing and fielding Command & Control, Technical Intelligence, and Battlespace Awareness operations to leverage residual capability for HEO 1/2 post-transition. Will continue enterprise SE&I. Continue cyber defense improvements to SBIRS ground system architecture in</p>							

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206441F / <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)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Block 20 to address identified deficiencies during operational testing. Continue Program Office and other related support activities that may include, but are not limited to studies, technical analysis, etc.					
<i>FY 2018 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	202.929	145.690	121.760	0.000	121.760

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF, BA 01, Line # 13, MSSBIR: <i>SBIR High (Space)</i>	542.713	362.504	1,113.429	0.000	1,113.429	547.664	659.317	739.234	545.076	Continuing	Continuing

Remarks

D. Acquisition Strategy

The pre-SDD SBIRS contracts were competed in full and open competition. Two contracts were awarded to Lockheed/Loral/Aerojet and Hughes/TRW in 1995 for the pre-SDD phase. A single contract was awarded to Lockheed Martin in 1996 for the SDD phase. This contract is still ongoing and will incrementally deliver the ground segment. Production contracts are discussed in the procurement budget exhibits.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>						Project (Number/Name) 653616 / <i>SBIRS High Element Emd</i>			
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Pre-EMD (LMMS & Hughes)	C/CPFF	Hughes Aircraft Company : El Segundo, CA	159.600	0.000		0.000		0.000		0.000		0.000	0.000	159.600	159.600
SBIRS EMD	Various	Prime: Lockheed Martin Sunnyvale, CA; Sub: Northrop Grumman, Azusa, CA : TBD	8,789.290	149.809	Oct 2015	119.578	Oct 2016	104.275	Oct 2017	0.000		104.275	29.916	9,192.868	9,130.475
Enterprise SE&I	C/CPAF	The Analytical Sciences Corporation : Andover, MA	53.983	1.897	Dec 2015	4.979	Dec 2016	1.971	Dec 2017	0.000		1.971	1.582	64.412	64.412
SBIRS Pre-SDD Contract Adjustment	Various	Various : Various	4.780	0.000		0.000		0.000		0.000		0.000	0.000	4.780	4.780
Technology	Various	Various : Various : Various	11.600	0.000		0.000		0.000		0.000		0.000	0.000	11.600	11.600
Phenomenology	Various	Various : Various : Various	17.350	0.000		0.000		0.000		0.000		0.000	0.000	17.350	17.350
Sensor Technology	Various	Sandia National Lab : Albuquerque, NM	10.000	0.000		0.000		0.000		0.000		0.000	0.000	10.000	10.000
HEO Command & Control (C2) Ground Expansion	Various	Lockheed Martin : Sunnyvale, CA	36.259	0.000		0.000		0.000		0.000		0.000	0.000	36.259	36.259
Technical Mission Analysis	RO	Aerospace Corp. : El Segundo, CA	2.163	6.706	Oct 2015	6.104	Oct 2016	5.164	Oct 2017	0.000		5.164	2.657	22.794	22.794
HEO 1/2 Residual Capability	Various	Various : TBD	0.000	14.600	Jun 2016	0.000		0.000		0.000		0.000	0.000	14.600	14.600
Subtotal			9,085.025	173.012		130.661		111.410		0.000		111.410	34.155	9,534.263	9,471.870
Remarks Award dates represent date of first award of the funds for that fiscal year.															

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>						Project (Number/Name) 653616 / <i>SBIRS High Element Emd</i>			
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WFOV Testbed Concept Study	MIPR	Millennium Space Systems : El Segundo, CA	8.000	0.000		0.000		0.000		0.000		0.000	0.000	8.000	8.000
Various Program Support	Various	Various : TBD	11.942	0.000		0.000		0.000		0.000		0.000	0.000	11.942	11.942
Subtotal			19.942	0.000		0.000		0.000		0.000		0.000	0.000	19.942	19.942
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Aerospace Corp. : El Segundo, CA	452.619	7.156	Oct 2015	5.450	Oct 2016	3.817	Oct 2017	0.000		3.817	1.964	471.006	471.006
A&AS	Various	Various : Various	159.379	7.181	Oct 2015	4.733	Oct 2016	1.824	Oct 2017	0.000		1.824	0.896	174.013	174.013
Other Support	Various	Various : Various	110.323	15.580	Oct 2015	4.846	Oct 2016	4.709	Oct 2017	0.000		4.709	0.986	136.444	136.007
Subtotal			722.321	29.917		15.029		10.350		0.000		10.350	3.846	781.463	781.026
Remarks Award dates represent date of first award of the fiscal year.															
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			9,827.288	202.929		145.690		121.760		0.000		121.760	38.001	10,335.668	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017									
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>					Project (Number/Name) 653616 / <i>SBIRS High Element Emd</i>									

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Block 10 Integration & Test at MCS																												
Block 10 Integration & Test at MCSB																												
B10.3 Completed and ITW/AA Certified																												
Block 20 Integration & Test at MCSB																												
Block 20 Operational Utility Evaluation and Initial Operational Test & Evaluation with AFOTEC																												
B20 Completed and ITW/AA Certified																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 653616 / <i>SBIRS High Element Emd</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Block 10 Integration & Test at MCS	1	2016	3	2016
Block 10 Integration & Test at MCSB	3	2016	4	2016
B10.3 Completed and ITW/AA Certified	1	2017	1	2017
Block 20 Integration & Test at MCSB	2	2016	4	2018
Block 20 Operational Utility Evaluation and Initial Operational Test & Evaluation with AFOTEC	4	2018	2	2019
B20 Completed and ITW/AA Certified	3	2019	3	2019

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>				Project (Number/Name) 657009 / <i>Space Mod Initiative</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657009: <i>Space Mod Initiative</i>	0.000	88.581	73.076	173.537	0.000	173.537	211.406	232.853	209.576	183.340	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The primary objective of SMI is to enable and inform future decisions to maintain and evolve a capable, resilient, and affordable OPIR architecture by maturing technologies and mitigating risk areas to facilitate OPIR modernization within the Department's constrained resources. SMI supports the Program of Record (PoR) by assessing future parts and material obsolescence and designing future space and ground modifications focused on affordability and capability while simultaneously maximizing the effectiveness of existing system data products. SMI funds engineering activities to reduce both production and future system costs through manufacturing and producibility enhancements and through technology insertion. SMI will also mature potential technology upgrades at the component and system level for future space and ground architecture affordability and capability enhancements. The SBIRS OPIR SMI plan includes studies and risk reduction activities to evolve the current PoR SBIRS constellation, reduce production timelines, and reduce recurring production costs. Based on the outcome of these studies and technology development, the Sensor Ground Demonstration will develop capability for current, next generation sensors, processors, and algorithms. SMI funded data exploitation efforts include OPIR mission data processing, data fusion, data dissemination, algorithm development, network connectivity, efficient interfaces and sensor performance assessments to enable greater exploitation of SBIRS PoR and other data sources. SMI exploitation efforts build upon PoR capabilities and inform the PoR decision process. The data exploitation efforts identify affordable, responsive and resilient measures to improve technical intelligence and battlespace awareness processing and data dissemination tools to enhance OPIR support to the warfighters and other data users. The SMI Hosted Payloads and Wide Field of View (WFOV) Testbed activities explore technology maturation, qualification of new components, and subsystem/component prototyping to evolve the OPIR architecture. Hosted Payloads and WFOV Testbeds support maturation of mission data processing algorithms for tactical and strategic applications which are critical demonstration efforts to enhance PoR capabilities and to reduce program risks for future OPIR systems, whether new systems or evolutions of the PoR. Collection of on-orbit WFOV data is critical to develop algorithms to process large data sets generated by emerging large format focal planes and to reduce risk for possible SBIRS follow-on architectures. SBIRS Enterprise Ground Services (EGS) infrastructure modernization efforts under SMI will introduce Telemetry, Tracking and Command systems (TT&C) and Ground Control automation, Future Operationally Resilient Ground Evolution (FORGE) mission data processing as well as competition into SBIRS Ground with an emphasis to on-ramp to EGS as soon as practical. SMI activities are balanced and phased to enable an expanded tradespace and improve the competitive environment.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Technology Maturation	10.800	17.030	61.309	-	61.309
Description: Formerly titled Evolved SBIRS. Perform Trade and Design Studies to assess obsolescence, affordability, and capability design modifications to the PoR. Assess technology needs to support resiliency of PoR assets as well as Space Warfighting Construct architectures in response to the Space Enterprise Vision (SEV). 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.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / Space Based Infrared System (SBIRS) High EMD		Project (Number/Name) 657009 / Space Mod Initiative		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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.						
FY 2016 Accomplishments: Advanced engineering designs for low Size Weight and Power (SWaP), high data flow crosslink and downlink communications upgrade and space-environmental monitoring detectors. Completed phase one of nBn focal plane characterization and initiated phase two for focal plane technology characterization. Completed digital focal plane test articles. Improved resilient processing algorithms.						
FY 2017 Plans: Develop ground prototype hardware, perform ground-based demonstrations, and reduce risk for optical resilience hardware, intrinsically-hardened Focal Plane Arrays (FPAs), multispectral and resilient processing algorithms, affordable pointing mirrors, space processors, as well as other critical emerging technologies, as required by PoR.						
FY 2018 Base Plans: Continue prototyping resiliency hardware and maturing technologies critical to current and future PoRs which include large format Focal Plane Arrays (FPAs), intrinsically-hardened FPAs, resilient processing algorithms, pointing mirrors, threat warning sensors, and next generation space processors. Continue to develop technology options to address emerging threats and stressing targets to current and future OPIR systems. Continue to develop and space qualify ground and on-orbit prototypes to reduce risk for SBIRS and other OPIR programs. Continue to demonstrate system resiliency and advanced technology concepts via ground and on-orbit demonstrations in order to validate performance and prove enhanced system capabilities. Support efforts towards Air Force Space Command's Space Warfighting Construct (SWC) in response to the Space Enterprise Vision (SEV).. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.						
Title: Data Exploitation Description: Exploit existing OPIR data sources (DSP, SBIRS HEO, SBIRS GEO Scanner, SBIRS GEO Starer, Commercially Hosted Infrared Payload (CHIRP), and 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		27.434	31.269	59.346	-	59.346

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017			
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / Space Based Infrared System (SBIRS) High EMD		Project (Number/Name) 657009 / Space Mod Initiative		
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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.						
FY 2016 Accomplishments: Continued 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. Continued to collaborate with Intelligence Community (IC) and Missile Defense Agency (MDA) to enhance Joint OPIR Ground (JOG) initiatives. Completed Critical Design Review (CDR) for WFOV Command and Control (C2) ground station in Jun 2016. Procured WFOV Mission Data Processing equipment and completed hardware installation at Schriever AFB in Apr 2016. Continued WFOV Mission Data Processing software development. Continued development of an open architecture ground command and control and Virtual Mission Management operations for expanded data exploitation of the SBIRS HEO sensors. Opened an initial data exploitation laboratory to support experimentation, technology maturity and evolution of exploitation algorithms in Apr 2016. Continued development of a Battlespace Awareness real-time capability that will integrate applications and services matured in the data exploitation government lab.						
FY 2017 Plans: Continue to provide enhanced ground segment capability and tools for command and control, data collection, mission processing, and data dissemination to enhance data exploitation of SBIRS and other OPIR data. Continue to collaborate with IC and MDA to enhance JOG initiatives. Continue WFOV Mission Data Processing software development. Continue WFOV C2 ground station and software development. Continue planning for the WFOV payload calibration and test campaign. Continue data exploitation laboratory capability to support experimentation, technology maturity and evolution of exploitation algorithms. Continue Battlespace Awareness real-time capability that will integrate applications and services matured in the data exploitation government lab.						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / Space Based Infrared System (SBIRS) High EMD		Project (Number/Name) 657009 / Space Mod Initiative		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Develop capability to operate two residual SBIRS HEO payloads and transition command and control to EGS to continue to provide HEO data to the Intelligence Community. FY 2018 Base Plans: Continue to provide enhanced ground segment capability and tools for command and control, data collection, mission processing, and data dissemination to enhance mission resiliency and data exploitation of SBIRS and other OPIR data. Continue to collaborate with IC and MDA to enhance JOG initiatives. Continue WFOV Mission Data Processing software development. Continue WFOV C2 ground station and software development. Continue planning for the WFOV payload calibration and test campaign. Complete building and expanding data exploitation laboratory capability into its final location to support experimentation, technology maturity and evolution of exploitation algorithms. Continue development and expansion of a Battlespace Awareness real-time capability and facility that will integrate applications and services matured in the data exploitation government lab. Develop and demonstrate the performance of an evolved ground system architecture to support multi-satellite, multi-payload, multi-mission management and data processing for any IR payload with enhanced net-centric and service oriented features along with a flexible expansion capability. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.						
Title: Hosted Payloads Description: Hosted Payloads mature WFOV technology and demonstrate multi-mission capabilities including the potential for a single sensor to simultaneously perform both the strategic and tactical missions. On-orbit data is required in order to develop and validate WFOV algorithms and on-board mission data processing throughput requirements for the Strategic Missile Warning Mission. These payload risk-mitigation efforts support the potential to field future Strategic Missile Warning and/or multi-mission systems and potentially increase capability of the PoR starer. WFOV payloads are a part of all evolved and new architecture alternatives. FY 2016 Accomplishments: Procured long-lead parts and materials and continued to build payload. Continued planning for WFOV payload ground calibration and testing. FY 2017 Plans: Continue to build, integrate and checkout the WFOV payload. Continue planning for the payload calibration and test campaign. FY 2018 Base Plans:		20.000	12.200	8.600	-	8.600

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017				
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / Space Based Infrared System (SBIRS) High EMD		Project (Number/Name) 657009 / Space Mod Initiative				
B. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete final payload integration and checkout. Deliver payload to the calibration and test facility. Conduct the payload calibration and test campaign. Deliver payload to bus contractor to begin space vehicle integration. Initiate post-calibration ground analysis. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.								
Title: WFOV Testbeds 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. FY 2016 Accomplishments: Completed bus build and integration in Aug 2016 and continued testing. Continued SEIT activities, including requirements management, risk management, and test planning. Completed WFOV program-level System Requirements Review (SRR) and Critical Design Review (CDR) in Sep 2016. FY 2017 Plans: Risk reduction activities prior to storage of WFOV spacecraft bus until FY18 due to payload schedule slip. Continue execution of program-level SEIT systems engineering processes. Continue SEIT system test plan and information assurance (IA) accreditation plan. Begin early launch integration studies. FY 2018 Base Plans: Begin payload-to-bus integration. Continue SEIT activities, including inter-segment testing and IA accreditation approval. Begin launch integration and analysis. Procure launch parts and materials. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				21.500	1.972	23.500	-	23.500
Title: Sensor Ground Demonstration Description: Based on previous study outcomes, design and build test capability for next generation sensors, processors and algorithms. Develop modeling and simulation software (M&S), breadboards/brassboards, test equipment, and data reduction software. Perform ground demonstration of candidate focal plane arrays, on-				0.000	3.798	14.000	-	14.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>		Project (Number/Name) 657009 / <i>Space Mod Initiative</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
board processors, and other payload components for future SBIRS satellites to ensure demonstrated technical maturity for the next-generation payload development.						
FY 2016 Accomplishments: N/A, No Funding in FY16						
FY 2017 Plans: Complete detailed design of sensor demonstration experiments, including requirements for M&S and test equipment. Initiate M&S development work, such as threat/scene generation capability and predictive effects for threat engagement. Develop an experimental optical breadboard, leveraging focal plane maturation efforts to create a focal plane interface. Procure test equipment, such as thermal control system and dewar.						
FY 2018 Base Plans: Initiate the fabrication of the sensor ground demonstration test bed. Integrate M&S scenes to the demo test bed to begin scene projection on demo sensors. A test will be designed and conducted to expose a test sensor to a directed energy source. The test results will feed into an iterative process with the M&S scenes to refine and mature the design. The demo test bed will be used to validate resiliency options identified by resiliency studies to inform the SBIRS Next-Gen OPIR program. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.						
Title: Enterprise System Engineering and Integration Description: System of Systems engineering and integration (SE&I) activities to evolve to future architectures. FY 2017 Plans: Provide SE&I support for OPIR Enterprise analysis and integration of potential mission capabilities with existing OPIR Architecture. FY 2018 Base Plans: Provide SE&I support for OPIR Enterprise analysis and integration of potential mission capabilities with existing OPIR Architecture.		-	0.000	1.056	-	1.056
Title: Management Services Description: Provide Program office and other related support activities that may include, but not limited to Federally Funded Research and Development Center (FFRDC), System Engineering Technical Assistance (SETA), studies, technical analysis, etc.		8.847	3.707	5.726	-	5.726

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / Space Based Infrared System (SBIRS) High EMD		Project (Number/Name) 657009 / Space Mod Initiative		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Provided Program office and other related support activities that included, but not limited to Federally Funded Research and Development Center (FFRDC), System Engineering Technical Assistance (SETA), studies, technical analysis, etc.						
FY 2017 Plans: Provide Program office and other related support activities that may include, but not limited to Federally Funded Research and Development Center (FFRDC), System Engineering Technical Assistance (SETA), studies, technical analysis, etc.						
FY 2018 Base Plans: Provide Program office and other related support activities that may include, but not limited to Federally Funded Research and Development Center (FFRDC), System Engineering Technical Assistance (SETA), studies, technical analysis, etc.						
Title: Enterprise Ground Services (EGS)		-	3.100	0.000	-	0.000
Description: EGS is envisioned to provide a robust enterprise ground architecture for Air Force space systems, which leverages mission commonality and automation to reduce sustainment costs and re-focus manpower on warfighting capabilities. In addition, EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status, indications, and warnings for Air Force satellites. The end-state will be a modern technical infrastructure which is cyber-secure and resilient against the Advanced Persistent Threat and employs streamlined architecting, acquisition, and operational processes. Through early architecture studies and prototyping, the government will establish clear ownership of the technical baseline to meet Better Buying Power principles as the EGS effort evolves through development. This effort provides focus and expertise for the development, test, certification and enforcement of standards and interfaces for all AFSPC satellite ground systems to enable transition planning for legacy ground systems, new capability demonstrations, and systems acquisition leading to an enterprise ground architecture for Air Force space systems.						
FY 2017 Plans: Conduct developmental planning, mature technologies, and develop initial small-scale prototype capability for the enterprise ground architecture. Efforts in 2017 will include, but not be limited to, systems engineering, special studies, cybersecurity planning and implementation, standards and interface development and codification, integration and test efforts in support of demonstrations, and operational architecture planning. In						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>		Project (Number/Name) 657009 / <i>Space Mod Initiative</i>	

<u>B. Accomplishments/Planned Programs (\$ in Millions)</u> addition, this effort will build the technical and programmatic roadmap to enable a phased enterprise transition in the future. <u>FY 2018 Base Plans:</u> In FY18, Enterprise Ground Services has been migrated to Space and Missile Test Evaluation Center PE 1203173F for core functions and continues in Evolved SBIRS BPAC 657106 in PEs 1206441F and 1206442F for SBIRS unique activities.	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Accomplishments/Planned Programs Subtotals	88.581	73.076	173.537	-	173.537

<u>C. Other Program Funding Summary (\$ in Millions)</u>											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• SPAF, BA 01 Line #13: <i>MSSBIR: SBIR High (Space)</i>	542.713	362.504	1,113.429	0.000	1,113.429	547.664	659.317	728.302	545.076	Continuing	Continuing
<u>Remarks</u>											
<u>D. Acquisition Strategy</u>											
<p>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. Data exploitation efforts in the laboratory and the Battlespace Awareness center will leverage existing external contracts, as well as new internal competitive contracts. Activities, such as SBIRS obsolescence and affordability enhancements to the existing satellite design, will leverage existing Program of Record contracts. Technology maturation and component prototyping and/or qualification could leverage existing contracts; in fact many are planned in collaboration with AFRL and other government agencies. Where practical, other efforts could be competed. FFRDC and SETA contractors will also be used to conduct and support studies. New technology, replacement components, and system designs will be acquired with government data rights to the maximum extent to allow their incorporation into any future OPIR satellite production or system development. Contracting partnerships with other agencies will also be used to study, develop, demonstrate and prove emerging capabilities.</p>											
<u>E. Performance Metrics</u>											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206441F / Space Based Infrared System (SBIRS) High EMD				Project (Number/Name) 657009 / Space Mod Initiative					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Technology Maturation	Various	Various : TBD	0.000	10.800	Jan 2016	17.030	Apr 2017	61.309	Dec 2017	0.000		61.309	Continuing	Continuing	-
Data Exploitation	Various	Various : TBD	0.000	27.434	Nov 2015	31.269	Dec 2016	59.346	Nov 2017	0.000		59.346	Continuing	Continuing	-
Hosted Payloads	C/CPFF	L3 Communications : Wilmington, MA	0.000	20.000	Nov 2015	12.200	Dec 2016	8.600	Dec 2017	0.000		8.600	Continuing	Continuing	-
WFOV Testbeds	C/CPFF	Millenium Space Systems : El Segundo, CA	0.000	21.500	Nov 2015	1.972	Dec 2016	23.500	Dec 2017	0.000		23.500	Continuing	Continuing	-
Sensor Ground Demonstration	Various	Various : TBD	0.000	0.000		3.798	Jun 2017	14.000	Dec 2017	0.000		14.000	Continuing	Continuing	-
Enterprise SE&I	TBD	Not specified. : TBD	0.000	0.000		0.000	Dec 2016	1.056	Dec 2017	0.000		1.056	Continuing	Continuing	-
Enterprise Ground Services (EGS)	Various	Various : Various	0.000	0.000		3.100	Dec 2016	0.000		0.000		0.000	0.000	3.100	-
Subtotal			0.000	79.734		69.369		167.811		0.000		167.811	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>						Project (Number/Name) 657009 / <i>Space Mod Initiative</i>			
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	MITRE Corp : Bedford, MA	0.000	1.898	Oct 2015	2.572	Dec 2016	1.098	Oct 2017	0.000		1.098	0.000	5.568	-
A & AS	Various	Various : TBD	0.000	1.000	Oct 2015	1.017	Mar 2017	1.035	Oct 2017	0.000		1.035	Continuing	Continuing	-
Other Support	Various	Various : TBD	0.000	5.949	Oct 2015	0.118	Oct 2016	3.593	Oct 2017	0.000		3.593	Continuing	Continuing	-
Subtotal			0.000	8.847		3.707		5.726		0.000		5.726	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	88.581		73.076		173.537		0.000		173.537	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>			Project (Number/Name) 657009 / <i>Space Mod Initiative</i>

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Technology Maturation																												
Data Exploitation																												
Wide Field of View Starer Payload																												
Wide Field of View Testbed																												
Sensor Ground Demonstration																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657009 / <i>Space Mod Initiative</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Technology Maturation	1	2016	4	2022
Data Exploitation	1	2016	4	2022
Wide Field of View Starer Payload	1	2016	2	2018
Wide Field of View Testbed	1	2016	4	2022
Sensor Ground Demonstration	1	2017	4	2022

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206441F / Space Based Infrared System (SBIRS) High EMD				Project (Number/Name) 657106 / Evolved SBIRS			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
657106: Evolved SBIRS	0.000	0.000	0.000	16.547	0.000	16.547	96.039	43.020	27.002	92.231	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
This program, BA 05 PE 1206441F, project 657106, Evolved SBIRS, is a new start.												
A. Mission Description and Budget Item Justification												
The Evolved Space-based Infrared System (SBIRS) RDT&E FY18 budget justification exhibits describes the SBIRS Next Generation Overhead Persistent Infrared (Next-Gen OPIR) program (pre-MDAP PNO 499) and the ground modernization effort for Evolved SBIRS.												
SBIRS Next-Gen OPIR: The SBIRS' primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. The SBIRS Next-Gen OPIR will provide improved strategic missile warning coverage and increased resiliency in a strategic constellation to meet the requirements laid out in the Air Force draft Capability Development Document (CDD) based on the Air Force Space Command (AFSPC) Space Warfighting Construct (SWC) in response to the Space Enterprise Vision (SEV).												
The SBIRS Next Gen OPIR systems includes both the space and ground elements. The Next Gen OPIR space segment will consist of Geostationary Earth Orbit (GEO) and Highly Elliptical Orbit (HEO) satellites, providing real-time persistent global infrared coverage using highly resilient bus with modernized payloads. The space segment will begin development of HEO space vehicles in FY21. The Future Operationally Resilient Ground Evolution (FORGE) and Enterprise Ground Services (EGS) are infrastructure modernization efforts to meet requirements laid out in the AFSPC SWC. The FORGE effort will implement an open framework for mission data processing and migration of C2 of satellite operations to integrate with EGS. FORGE and EGS efforts will provide the flexibility to integrate new mission data processing capabilities and more efficiently allow the system to meet evolving warfighter needs.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Evolved SBIRS								0.000	0.000	16.547	-	16.547
Description: The Next-Gen OPIR focuses on development of ground segment that will include EGS/FORGE in incremental development. The Space segment development consists of resilient HEO and GEO satellites with modernized payloads. The FORGE effort will implement an open framework for mission data processing and migration of C2 of satellite operations to integrate with EGS. FORGE and EGS efforts will provide the flexibility to integrate new mission data processing capabilities and more efficiently allow the system to meet evolving warfighter needs.												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017							
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>		Project (Number/Name) 657106 / <i>Evolved SBIRS</i>							
B. Accomplishments/Planned Programs (\$ in Millions)											
		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total					
<i>FY 2016 Accomplishments:</i> N/A <i>FY 2017 Plans:</i> N/A <i>FY 2018 Base Plans:</i> Begin infrastructure modernization of Future Operationally Resilient Ground Evolution (FORGE) and Enterprise Ground Services (EGS). The FORGE effort will implement a Government owned open framework for mission data processing and migrate C2 of satellite operations onto a common platform, EGS. FORGE and EGS platforms provide enhanced flexibility and scalability which will allow for more efficient integration of new mission data processing and C2 capabilities, standardized C2 interfaces across multiple space missions, a resilient cyber defense, and a system that is prepared to meet evolving user and warfighter needs. Begin risk reduction phase and engage industry in maturing payload designs that meet new missile warning requirements, balancing affordability, capability, and resiliency requirements. The risk-reduction phase is intended to develop a PDR-level design, plan for integration onto EGS, perform ground-based demonstrations, and will reduce risk for optical resilience hardware, intrinsically-hardened Focal Plane Arrays (FPAs), multispectral and resilient processing algorithms, affordable pointing mirrors, and space processors. Continue program office and other related support activities that may include, but not limited to studies, technical analysis, etc.											
Accomplishments/Planned Programs Subtotals		0.000	0.000	16.547	-	16.547					
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA05: PE 1206442F: <i>Evolved SBIRS</i>	0.000	0.000	71.018	0.000	71.018	5.766	139.812	558.940	1,015.241	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657106 / <i>Evolved SBIRS</i>
D. Acquisition Strategy Utilize existing SMC contracts to transition SBIRS C2 satellite operations to EGS. Compete a mission data processing framework provider and mission data processing applications. For Next Gen OPIR space segment, the program office intends to conduct full and open competition for industry-wide participation and lowering overall program cost.		
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 1206441F / Space Based Infrared System (SBIRS) High EMD						Project (Number/Name) 657106 / Evolved SBIRS					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Evolved SBIRS	TBD	Not specified : TBD	0.000	0.000		0.000		16.547	Jan 2018	0.000		16.547	Continuing	Continuing	-
Subtotal			0.000	0.000		0.000		16.547		0.000		16.547	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS	TBD	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		16.547		0.000		16.547	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity

3600 / 5

R-1 Program Element (Number/Name)

PE 1206441F / Space Based Infrared
System (SBIRS) High EMD

Project (Number/Name)

657106 / Evolved SBIRS

[illegible]

SBIRS Future Ground Evolution/Development

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206441F / <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
SBIRS Future Ground Evolution/Development	2	2018	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 1206442F / <i>Evolved SBIRS</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	71.018	0.000	71.018	5.766	139.812	558.940	1,015.241	Continuing	Continuing
657106: <i>EVOLVED SBIRS</i>	-	0.000	0.000	71.018	0.000	71.018	5.766	139.812	558.940	1,015.241	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): N42

Note

This program, BA 05 PE 1206442F, project 657106, Evolved SBIRS, is a new start.

A. Mission Description and Budget Item Justification

The Evolved Space-based Infrared System (SBIRS) RDT&E FY18 budget justification exhibits describes the SBIRS Next Generation Overhead Persistent Infrared (Next-Gen OPIR) program (pre-MDAP PNO 499) and the ground modernization effort for Evolved SBIRS.

SBIRS Next-Gen OPIR: The SBIRS' primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. The SBIRS Next-Gen OPIR will provide improved strategic missile warning coverage and increased resiliency in a strategic constellation to meet the requirements laid out in the Air Force draft Capability Development Document (CDD) based on the Air Force Space Command (AFSPC) Space Warfighter Construct (SWC) in response to the Space Enterprise Vision (SEV).

The SBIRS Next Gen OPIR systems includes both space and ground elements. The Next Gen OPIR space segment will consist of Geostationary Earth Orbit (GEO) and Highly Elliptical Orbit (HEO) satellites, providing real-time persistent global infrared coverage using highly resilient bus with modernized payloads. The space segment will begin development of HEO space vehicles in FY21. The Future Operationally Resilient Ground Evolution (FORGE) and Enterprise Ground Services (EGS) are infrastructure modernization efforts to meet guidance laid out in SWC. The FORGE effort will implement an open framework for mission data processing and migration of C2 of satellite operations to integrate with EGS. FORGE and EGS efforts will provide the flexibility to integrate new mission data processing capabilities and more efficiently allow the system to meet evolving warfighter needs.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 1206442F I Evolved SBIRS					
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget		0.000	0.000	0.000	0.000	0.000	
Current President's Budget		0.000	0.000	71.018	0.000	71.018	
Total Adjustments		0.000	0.000	71.018	0.000	71.018	
• Congressional General Reductions		0.000	0.000				
• Congressional Directed Reductions		0.000	0.000				
• Congressional Rescissions		0.000	0.000				
• Congressional Adds		0.000	0.000				
• Congressional Directed Transfers		0.000	0.000				
• Reprogrammings		0.000	0.000				
• SBIR/STTR Transfer		0.000	0.000				
• Other Adjustments		0.000	0.000	71.018	0.000	71.018	
Change Summary Explanation							
This PE was established for Evolved SBIRS Ground in FY 2018. Remaining associated funding will be addressed in a future budget cycle.							
C. Accomplishments/Planned Programs (\$ in Millions)					FY 2016	FY 2017	FY 2018
Title: Evolved SBIRS					0.000	0.000	71.018
Description: The Next-Gen OPIR focuses on development of ground segment that will include EGS/FORGE in incremental development. The Space segment development consists of highly resilient HEO and GEO satellites with payload modernization. The FORGE effort will implement an open framework for mission data processing and migration of C2 of satellite operations to integrate with EGS. FORGE and EGS efforts will provide the flexibility to integrate new mission data processing capabilities and more efficiently allow the system to meet evolving warfighter needs.							
FY 2016 Accomplishments: N/A							
FY 2017 Plans: N/A							
FY 2018 Plans: Begin infrastructure modernization of Future Operationally Resilient Ground Evolution (FORGE) and Enterprise Ground Services (EGS). The FORGE effort will implement a Government owned open framework for mission data processing and migrate C2 of satellite operations onto a common platform, EGS. FORGE and EGS platforms provide enhanced flexibility and scalability which will allow for more efficient integration of new mission data processing and C2 capabilities, standardized C2 interfaces across multiple space missions, a resilient cyber defense, and a system that is prepared to meet evolving user and warfighter needs.							

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 5: <i>System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 1206442F / <i>Evolved SBIRS</i>							
C. Accomplishments/Planned Programs (\$ in Millions)												
<p>Begin risk reduction phase and engage industry in maturing payload designs that meet new missile warning requirements, balancing affordability, capability, and resiliency requirements. The risk-reduction phase is intended to develop a PDR-level design, plan for integration onto EGS, perform ground-based demonstrations, and will reduce risk for optical resilience hardware, intrinsically-hardened Focal Plane Arrays (FPAs), multispectral and resilient processing algorithms, affordable pointing mirrors, and space processors.</p> <p>Continue program office and other related support activities that may include, but not limited to studies, technical analysis, etc.</p>										FY 2016	FY 2017	FY 2018
Accomplishments/Planned Programs Subtotals										0.000	0.000	71.018
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA05: PE 1206441F: <i>Space Based Infrared System (SBIRS) High EMD</i>	0.000	0.000	16.547	0.000	16.547	96.039	43.020	27.002	92.231	Continuing	Continuing	
Remarks												
E. Acquisition Strategy												
Utilize existing SMC contracts to transition SBIRS C2 satellite operations to EGS. Compete a mission data processing framework provider and mission data processing applications. For Next Gen OPIR space segment, the program office intends to conduct full and open competition for industry-wide participation and lowering overall program cost.												
F. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017		
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206442F / <i>Evolved SBIRS</i>				Project (Number/Name) 657106 / <i>EVOLVED SBIRS</i>					

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Evolved SBIRS	TBD	TBD : TBD	-	0.000		0.000		71.018	Jan 2018	0.000		71.018	Continuing	Continuing	-
Subtotal			-	0.000		0.000		71.018		0.000		71.018	-	-	-

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000		0.000		71.018		0.000		71.018	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)			
3600 / 5					PE 1206442F / Evolved SBIRS					657106 / EVOLVED SBIRS			

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SBIRS Future Ground Evolution/Development																												
SBIRS Next Gen OPIR Space Segment Acquisition																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206442F / <i>Evolved SBIRS</i>	Project (Number/Name) 657106 / <i>EVOLVED SBIRS</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SBIRS Future Ground Evolution/Development	2	2018	4	2022
SBIRS Next Gen OPIR Space Segment Acquisition	1	2021	4	2022

Note
SBIRS Next Gen OPIR Space Segment Acquisition effort will be ongoing through Q4, FY 2033.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 1206853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	259.600	224.920	296.572	297.572	0.000	297.572	247.294	197.885	198.648	202.715	0.000	1,925.206
650006: Next Generation Launch System Investment	259.600	224.920	296.572	297.572	0.000	297.572	247.294	197.885	198.648	202.715	0.000	1,925.206
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 176												
<p>Note</p> <p>In FY2018, PE 0604853F, Evolved Expendable Launch Vehicle Program (SPACE) - EMD efforts were transferred to PE 1206853F, Evolved Expendable Launch Vehicle Program (SPACE) - EMD due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206853F.</p> <p>A. Mission Description and Budget Item Justification</p> <p>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.</p> <p>This program, started in FY2015, funds research and development activities and related studies support to invest in new and/or upgraded launch systems to meet NSS launch needs leveraging two or more domestic commercial providers.</p> <p>The Air Force will invest in public-private partnerships for the development of new and/or upgraded domestic launch systems with launch providers. The end goal is two or more domestic, commercial launch providers that also meet all national security launch needs. In addition, the Air Force is continuing a technical maturation program to address the highest risks for rocket propulsion system (RPS) development. Development of the associated RPSs will continue under the Launch Service Agreement public-private partnerships. In 2017 launch service agreement was a new start.</p> <p>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.</p>												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017			
Appropriation/Budget Activity		R-1 Program Element (Number/Name)					
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 1206853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD					
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget		227.784	296.572	296.715	0.000	296.715	
Current President's Budget		224.920	296.572	297.572	0.000	297.572	
Total Adjustments		-2.864	0.000	0.857	0.000	0.857	
• Congressional General Reductions		0.000	0.000				
• Congressional Directed Reductions		0.000	0.000				
• Congressional Rescissions		0.000	0.000				
• Congressional Adds		0.000	0.000				
• Congressional Directed Transfers		0.000	0.000				
• Reprogrammings		0.000	0.000				
• SBIR/STTR Transfer		-2.864	0.000				
• Other Adjustments		0.000	0.000	0.857	0.000	0.857	
Congressional Add Details (\$ in Millions, and Includes General Reductions)						FY 2016	FY 2017
Project: 650006: Next Generation Launch System Investment							
Congressional Add: Rocket Propulsion System Development						143.346	-
Congressional Add Subtotals for Project: 650006						143.346	-
Congressional Add Totals for all Projects						143.346	-
C. Accomplishments/Planned Programs (\$ in Millions)					FY 2016	FY 2017	FY 2018
Title: Rocket Propulsion System Development (1)					81.574	0.000	0.000
Description: Continued to invest in providers of domestic rocket propulsion systems (RPS). This investment enables the transition from the use of non-Allied space launch engines to domestic rocket propulsion systems. Continued to execute Other Transaction Authority (OTA) agreements and various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities started in FY15.							
FY 2016 Accomplishments: Executed investments with providers of domestic rocket propulsion systems. This investment enables the transition from the use of non-Allied space launch engines to domestic rocket propulsion systems. Executed four Other Transaction Authority agreements and various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities started in FY15.							
FY 2017 Plans:							

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 1206853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
NOTE: Starting in FY2017 the RPS activity will continue as part of the Launch Service Agreement.				
FY 2018 Plans: N/A				
Title: Launch Service Agreement		0.000	296.572	297.572
Description: Invest in providers of domestic Launch Services. This investment enables the transition from the use of non-Allied space launch engines to commercial launch services that also meet NSS needs. Award Other Transaction Authority (OTA) agreements and various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities started in FY15.				
FY 2016 Accomplishments: N/A				
FY 2017 Plans: Initiate investments with public-private partnerships with domestic launch providers for the 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. Includes continuation of the Rocket Propulsion System Investment and associated technical maturation and risk reduction activities. Per the FY15 NDAA as amended, the Air Force will fence all but 31% of the appropriation, but no more than \$220M, for boost stage RPS efforts only. Any appropriation above the fenced portion will be used for any LSA or RPS activity.				
FY 2018 Plans: Continue investments with public-private partnerships with domestic launch providers for the 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. Includes completion of the Rocket Propulsion System Investment and associated technical maturation and risk reduction activities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
Accomplishments/Planned Programs Subtotals		81.574	296.572	297.572
		FY 2016	FY 2017	
Congressional Add: Rocket Propulsion System Development		143.346	-	
FY 2016 Accomplishments: Executed investments with providers of domestic rocket propulsion systems. This investment enables the transition from the use of non-Allied space launch engines to domestic rocket propulsion				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 1206853F <i>I Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>
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	FY 2016	FY 2017
systems. Executed four Other Transaction Authority agreements and various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities started in FY15.		
Congressional Adds Subtotals	143.346	-

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF BA01: Line Item # MSEELV: <i>Evolved Expendable Launch Veh (Space)</i>	679.851	737.853	606.488	0.000	606.488	864.099	1,266.067	847.193	1,176.357	16,094.997	22,272.905
• SPAF: BA01: Line Item # MSEELC: <i>Evolved Expendable Launch Capability</i>	571.076	768.586	957.420	0.000	957.420	678.071	0.000	0.000	0.000	0.000	2,975.153

Remarks

E. 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 for future NSS launch service. This shared investment approach may also leverage commitments to a portion of the planned launch services (between FY2020 and FY2025) to decrease the required up front Government investment.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD				Project (Number/Name) 650006 / Next Generation Launch System Investment					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aerojet Rocketdyne OTA	C/Various	Aerojet Rocketdyne : Canoga Park, CA	52.200	121.787	Mar 2016	0.000		0.000		0.000		0.000	0.000	173.987	-
United Launch Service OTA	C/Various	United Launch Service : Centennial, CO	26.345	20.285	Jul 2016	0.000		0.000		0.000		0.000	0.000	46.630	-
Orbital ATK OTA	C/Various	Orbital ATK : Magna, UT	46.968	39.768	Feb 2017	0.000		0.000		0.000		0.000	0.000	86.736	-
Space X OTA	C/Various	Space X : Hawthorne, CA	33.660	0.000		0.000		0.000		0.000		0.000	0.000	33.660	-
Rocket Propulsion System Development	C/TBD	Various : TBD	0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	-
Broad Agency Announcement Technical Maturation Studies	C/Various	Various : TBD	34.619	0.000		0.000		0.000		0.000		0.000	0.000	34.619	-
NASA Advance Booster Engine Demonstration Risk Reduction (ABEDRR)	SS/ Various	Various : TBD	32.587	2.540	Oct 2016	0.000		0.890	Oct 2017	0.000		0.890	0.000	36.017	-
Georgia Tech Combustion Stability Technical Maturation UARC	SS/ Various	Various : TBD	7.740	0.000		0.000		0.000		0.000		0.000	0.000	7.740	-
NASA Combustion Stability Technical Maturation Study	SS/ Various	Various : TBD	5.910	0.890	Oct 2016	0.000		0.000		0.000		0.000	0.000	6.800	-
AFRL Combustion Stability Technical Maturation Study	SS/ Various	Various : TBD	2.557	0.141	Nov 2015	0.000		0.000		0.000		0.000	0.000	2.698	-
AFRL Hydrocarbon Boost Technical Maturation Demonstration	SS/ Various	Various : TBD	3.041	7.650	Feb 2017	0.000		0.000		0.000		0.000	0.000	10.691	-
FFRDC Mission Assurance	SS/CPAF	Aerospace : El Segundo, CA	7.934	12.731	Oct 2015	0.000		6.840	Nov 2017	0.000		6.840	15.514	43.019	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD				Project (Number/Name) 650006 / Next Generation Launch System Investment					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Launch Enterprise System Engineering and Integration	C/FP	Various : TBD	3.075	3.307	Mar 2016	0.000		4.039	Mar 2018	0.000		4.039	10.536	20.957	-
Launch Service Agreement (Including the Rocket Propulsion System)	C/TBD	TBD : TBD	0.000	0.000		282.825	May 2017	272.350	Jan 2018	0.000		272.350	788.379	1,343.554	-
Subtotal			256.636	209.099		282.825		284.119		0.000		284.119	814.429	1,847.108	-
Remarks SE&I and Aerospace support costs for FY17 were moved to FY16 due to the FY17 New Start Restrictions during Continuing Resolution on the Launch Service Agreement funding.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Organic Civilian Support	Reqn	DOD : TBD	0.000	2.086	Apr 2016	0.000		1.876	Oct 2017	0.000		1.876	3.878	7.840	9.723
Subtotal			0.000	2.086		0.000		1.876		0.000		1.876	3.878	7.840	9.723
Remarks Civilian support costs for FY17 were moved to FY16 due to the FY17 New Start Restrictions during Continuing Resolution on the Launch Service Agreement funding.															
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD				Project (Number/Name) 650006 / Next Generation Launch System Investment					
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	SS/CPAF	Aerospace : El Segundo, CA	0.050	4.480	Oct 2015	0.000		2.014	Oct 2017	0.000		2.014	3.878	10.422	5.263
Advisory and Assistance Services	Various	Various : TBD	2.858	5.882	Dec 2015	1.240	May 2017	3.479	Dec 2017	0.000		3.479	6.841	20.300	15.258
Other Support	Various	Various : TBD	0.056	3.373	Nov 2015	12.507	Apr 2017	6.084	Nov 2017	0.000		6.084	17.516	39.536	1.254
Subtotal			2.964	13.735		13.747		11.577		0.000		11.577	28.235	70.258	21.775
Remarks															
Some A&AS and Other Support costs for FY17 were moved to FY16 due to the FY17 New Start Restrictions during Continuing Resolution on the Launch Service Agreement funding.															
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			259.600	224.920		296.572		297.572		0.000		297.572	846.542	1,925.206	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force										Date: May 2017			
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>					Project (Number/Name) 650006 / <i>Next Generation Launch System Investment</i>			

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Advanced Booster Engine Demonstration Risk Reduction (ABEDRR)																												
NASA Combustion Stability																												
Rocket Propulsion System Development (RPS OTAs)																												
Launch Service Agreement (Including Rocket Propulsion System)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>	Project (Number/Name) 650006 / <i>Next Generation Launch System Investment</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Advanced Booster Engine Demonstration Risk Reduction (ABEDRR)	1	2016	4	2018
NASA Combustion Stability	1	2016	4	2017
Rocket Propulsion System Development (RPS OTAs)	1	2016	1	2018
Launch Service Agreement (Including Rocket Propulsion System)	3	2017	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0604256F I Threat Simulator Development							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	23.558	21.630	35.405	0.000	35.405	28.513	28.540	29.049	29.655	Continuing	Continuing
662907: Electronic Combat Intel Support	-	3.196	2.481	2.547	0.000	2.547	2.575	2.622	2.668	2.723	Continuing	Continuing
663321: Electronic Warfare Ground Test Resources	-	12.389	12.133	25.695	0.000	25.695	18.643	18.487	18.821	19.218	Continuing	Continuing
667500: Foreign Materiel Acquisition/Analysis	-	7.973	7.016	7.163	0.000	7.163	7.295	7.431	7.560	7.714	Continuing	Continuing

A. Mission Description and Budget Item Justification

This PE provides funding for the elements necessary to support the Air Force Electronic Warfare (EW) Test Process, including Directed Energy (DE). This test process provides a scientific methodology to ensure the effective disciplined and efficient testing of EW and avionics systems. Each capability or facility improvement is pursued in concert with the others to avoid duplicate capabilities while at the same time producing the proper mix of test resources needed to support the AF EW Test Process and testing of EW systems which can be used in any action involving the use of electromagnetic and DE to control the electromagnetic spectrum or to attack the enemy. This PE provides funding for the management and technical oversight of implementation activities, development and improvement of digital EW models, measurement facilities improvements, hardware-in-the-loop test facilities improvements, and installed system test facility improvements. Support includes requirements definition and analysis, project planning, programming and budgeting, technical oversight, and application of T&E facility Improvement & Modernization (I&M). Products include studies, analyses, improved Modeling & Simulation (M&S) of threat sources, improved or new T&E capabilities to support EW testing and related documentation. Additionally, this PE provides funding to support the acquisition and analysis efforts of the Foreign Materiel Program and EW intelligence efforts.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	23.844	21.630	22.038	0.000	22.038
Current President's Budget	23.558	21.630	35.405	0.000	35.405
Total Adjustments	-0.286	0.000	13.367	0.000	13.367
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.014	0.000			
• SBIR/STTR Transfer	-0.272	0.000			
• Other Adjustments	0.000	0.000	13.367	0.000	13.367

Change Summary Explanation

FY18: \$13.266M increase for FY18, is for the Benefield Anechoic Facility (BAF) at Edwards AFB, directed threat simulator acquisition support and support from the intelligence community reflecting AF focus on recapitalizing and modernizing test infrastructure to support future warfighting capability acquisition efforts. \$101K increase for a nonpay/nonfuel inflation adjustment.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 662907 / Electronic Combat Intel Support			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
662907: Electronic Combat Intel Support	-	3.196	2.481	2.547	0.000	2.547	2.575	2.622	2.668	2.723	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 2016	FY 2017	FY 2018	
Title: FMOT&E									3.196	2.481	2.547	
Description: Supports Foreign Materiel Operational Test and Evaluation (FMOT&E)												
FY 2016 Accomplishments: Continued to conduct foreign material operational analysis (FMOA) for fighter and bomber testing; mobility/special operations transport/helicopter testing; classified operational assessments; and extensive evaluations and reporting of system effectiveness.												
FY 2017 Plans: Continue to conduct foreign material operational analysis (FMOA) for fighter and bomber testing; mobility/special operations transport/helicopter testing; classified operational assessments; and extensive evaluations and reporting of system effectiveness.												
FY 2018 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									3.196	2.481	2.547	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA 06: PE 0604759F: Major T&E Investment	70.894	71.385	82.874	0.000	82.874	79.536	76.629	78.240	81.118	Continuing	Continuing	

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6				R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 662907 / Electronic Combat Intel Support				
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA 06: PE 0605807F: Test and Evaluation Support	683.307	680.217	678.289	0.000	678.289	686.379	700.630	713.790	729.060	Continuing	Continuing	
• RDTE: BA 06: PE 0605976F: Facility Restoration and Modernization - T&E	40.518	134.111	135.507	0.000	135.507	125.437	89.111	69.814	71.243	Continuing	Continuing	
• RDTE: BA 06: PE 0605978F: Facility Sustainment - T&E Support	27.895	28.091	28.720	0.000	28.720	29.105	29.646	30.160	30.777	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
Not applicable.												
E. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 663321 / Electronic Warfare Ground Test Resources			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
663321: Electronic Warfare Ground Test Resources	-	12.389	12.133	25.695	0.000	25.695	18.643	18.487	18.821	19.218	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The AF requires a comprehensive set of test facilities to implement the Air Force Electronic Warfare (EW) Test Process in order to test EW systems, including Directed Energy (DE). To manage program risk effectively throughout the weapons system acquisition process, and conduct T&E effectively and efficiently, a broad multi-spectrum, integrated set of T&E capabilities for Modeling and Simulation (M&S) through open-air ranges (OAR) is required. The EW Test Process Support task provides for investment management, coordinated technical oversight, and application of EW T&E facilities, including studies, analyses, and related documentation. The National Radar Cross Section (RCS) Test Facility (NRTF) at Holloman AFB, NM, provides timely, accurate, and secure RCS and antenna measurements for tri-service and joint program offices, DoD laboratories, Defense Advanced Research Projects Agency (DARPA) and industry. The NRTF tests fielded and developmental systems and technologies to meet Low Observable (a.k.a. stealth) and EW customer requirements. The Guided Weapons Evaluation Facility (GWEF), 412 EWG/OL-HN and the Digital Integrated Air Defense System (DIADS) provide the ability to realistically evaluate hardware components and simulated weapon systems against manned hardware threat representations throughout the acquisition process. GWEF and 412 EWG/OL-HN provide simulations of advanced Infrared (IR) semi-active Surface-to-Air Missiles (SAMs), Air-to-Air Missiles (AAMs), IR and Laser countermeasure functions; integration of actual threat hardware and ground clutter into advanced threat IR missile simulations. DIADS provides algorithm based enemy command and control (C2) capabilities plus early warning radar detection, limited ground control intercept features and also allows man-in-the-loop interaction for the enemy C2 positions. The Advanced Warfare Test and Evaluation Capability (AWTEC) will replace 90's technology with state-of-the-art stimulators to upgrade the Benfield 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 2016	FY 2017	FY 2018
Title: I&M	10.831	10.503	16.322
Description: Provides for planning and improvement & modernization (I&M) of test capabilities to conduct and support the AF EW test process, including DE.			
FY 2016 Accomplishments: The 96 TW continued development of hardware and software upgrades to 5-axis IR threat simulator capabilities, as well as the development and the transition of the developmental test lab to operational capability. DIADS continued software conversion to C++ and developed and validated architecture and simulation upgrades, including improvements to command and control, sensor reactivity, and jamming models. AWTEC continued development, procurement and integration of new state-of-the-art stimulators,			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
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 2016	FY 2017	FY 2018
<p>CEESIM enhancements and modifications, instrumentation, and environment monitoring and measuring capabilities for the BAF. NRTF continued facility upgrades to consolidate and enhance operations efficiency and improve the RCS measurement accuracy of Low Observable platforms and antennas, including completing the construction of the Research Diagnostic and Integration (REDI) range.</p> <p>FY 2017 Plans: The 96 TW will continue development of hardware and software upgrades to 5-axis IR threat simulator capabilities. DIADS will continue to develop and validate architecture and simulation upgrades, including improvements to command and control, sensor reactivity, and jamming models. AWTEC will continue development, procurement and integration of new state-of-the-art stimulators and threat signal generation capabilities for the BAF. NRTF will continue facility upgrades to consolidate and enhance operations efficiency and improve RCS measurement accuracy of Low Observable platforms and antennas, including design studies of next generation radar and RCS metrology requirements.</p> <p>FY 2018 Plans: The 96 TW will continue development of hardware and software upgrades to 5-axis IR threat simulator capabilities. DIADS will complete development and validation of needed architecture and simulation upgrades, including improvements to command and control, sensor reactivity, and jamming models. AWTEC will complete the development, procurement and integration of new state-of-the-art stimulators and threat signal generation capabilities for the BAF. NRTF will continue facility upgrades to consolidate and enhance operations efficiency and improve RCS measurement accuracy of Low Observable platforms and antennas, including design studies of next generation radar and RCS metrology requirements.</p>					
<p>Title: EC Test Process Support</p> <p>Description: Electronic Combat (EC) Test Process Support. Conduct requirements analyses and other studies in support of Air Force T&E investments in test infrastructure and capabilities.</p> <p>FY 2016 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.</p> <p>FY 2017 Plans: Continue to provide SETA support needed to implement planned Air Force test processes and infrastructure I&M capabilities. Team members will continue support to tri-service monitoring and analysis teams established to identify emerging joint investment needs and requirements development. Team members will help manage and monitor I&M program elements and activities.</p> <p>FY 2018 Plans:</p>			1.558	1.630	9.373

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6				R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 663321 / Electronic Warfare Ground Test Resources				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
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. Support directed threat simulator acquisition effort.												
Accomplishments/Planned Programs Subtotals										12.389	12.133	25.695
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA 06: PE 0604759F: Major T&E Investment	70.894	71.385	82.874	0.000	82.874	79.536	76.629	78.240	81.118	Continuing	Continuing	
• RDTE: BA 06: PE 0605807F: Test and Evaluation Support	683.307	680.217	678.289	0.000	678.289	686.379	700.630	713.790	729.060	Continuing	Continuing	
• RDTE: BA 06: PE 0605976: Facility Restoration & Modernization - T&E	40.518	134.111	135.507	0.000	135.507	125.437	89.111	69.814	71.243	Continuing	Continuing	
• RDTE: BA 06: PE 0605978F: Facilities Sustainment - T&E Support	27.895	28.091	28.720	0.000	28.720	29.105	29.646	30.160	30.777	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.												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 667500 / Foreign Materiel Acquisition/ Analysis			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
667500: Foreign Materiel Acquisition/Analysis	-	7.973	7.016	7.163	0.000	7.163	7.295	7.431	7.560	7.714	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 2016	FY 2017	FY 2018
Title: FMP	7.973	7.016	7.163
Description: Supports USAF Foreign Materiel Program (FMP) Requirements through the acquisition and analysis of foreign materiel.			
FY 2016 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 2017 Plans: Continue to fund acquisition of available Foreign Materiel in accordance with the prioritized Air Force Foreign Materiel List; analysis of acquired Foreign Materiel; and operations and maintenance of the specialized Foreign Materiel assets.			
FY 2018 Plans: Continue to fund acquisition of available Foreign Materiel in accordance with the prioritized Air Force Foreign Materiel List; analysis of acquired Foreign Materiel; and operations and maintenance of the specialized Foreign Materiel assets.			
Accomplishments/Planned Programs Subtotals	7.973	7.016	7.163

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600 / 6				R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>				Project (Number/Name) 667500 / <i>Foreign Materiel Acquisition/ Analysis</i>			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA 06: PE 0604759F: <i>Major T&E Investment</i>	70.894	71.385	82.874	0.000	82.874	79.536	76.629	78.240	81.118	Continuing	Continuing
• RDTE: BA 06: PE 0605807F: <i>Test and Evaluation Support</i>	683.307	680.217	678.289	0.000	678.289	686.379	700.630	713.790	729.060	Continuing	Continuing
• RDTE: BA 06: PE 0605976F: <i>Facility Restoration & Modernization - T&E</i>	40.518	134.111	135.507	0.000	135.507	125.437	89.111	69.814	71.243	Continuing	Continuing
• RDTE: BA 06: PE 0605978F: <i>Facilities Sustainment -T&E Support</i>	27.895	28.091	28.720	0.000	28.720	29.105	29.646	30.160	30.777	Continuing	Continuing
Remarks											
D. Acquisition Strategy Not applicable.											
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0604759F I Major T&E Investment							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	70.894	71.385	82.874	0.000	82.874	79.536	76.629	78.240	81.118	Continuing	Continuing
664597: Air Force Test Investments	-	70.894	71.385	82.874	0.000	82.874	79.536	76.629	78.240	81.118	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 four Air Force Test Center (AFTC) organizations: 96 Test Wing at Eglin AFB FL, 704 Test Group at Holloman AFB NM (and operating locations at Wright-Patterson AFB OH), Arnold Engineering Development Complex (AEDC) at Arnold AFB TN, and the 412 Test Wing at Edwards AFB CA. The purpose is to help test organizations improve and develop their test infrastructure and capabilities to keep pace with improvements in weapon system technologies.

The improvement and modernization (I&M) requirements are defined through the AF Test Investment Planning & Programming (TIPP) Process. All projects have been reviewed through the Tri-Service Reliance process (to communicate AF efforts to the other Services and avoid unwarranted duplication of effort) and are documented in the Technology Development Acquisition Program (TDAP) database. Each project has its own planning, development, equipment acquisition, equipment installation, and checkout phases which often require significant differences in funding from one year to the next. As such, the changes in category funding from year to year do not necessarily indicate program growth, but rather a planned phasing of improvement and modernization efforts. The test capabilities at these locations enable testing through all phases of weapon system acquisition, from system concept exploration through component and full-scale integrated weapon system testing to operational testing. These test organizations are a part of the Major Range and Test Facility Base (MRTFB), operated and maintained by the Air Force for DoD Test and Evaluation (T&E). These national test assets are available to others requiring their unique capabilities.

The 96 TW, at Eglin AFB FL, conducts and supports developmental test and evaluation (DT&E) of non-nuclear air armaments; Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR) systems; target acquisition and weapon delivery systems; navigation systems; provides a climatic simulation capability; determines target/test item spectral signatures; and provides Cyber testing capabilities as part of the Joint Information Operations (IO) Range.

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; testing of large-scale models such as space boosters together with their propulsion systems and it provides a climatic simulation capability. The 704 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 704 TG, OL-AC at

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604759F / <i>Major T&E Investment</i>	
<p>Wright-Patterson AFB, OH provides independent T&E in support of aircraft survivability and full-scale aircraft landing gear T&E. These T&E activities include the development, T&E of aircraft landing gear components supporting engineering acquisition, design, safety, and performance evaluations. In addition, they provide an independent T&E capability for component qualification.</p> <p>The 412th Test Wing, at Edwards AFB CA, conducts and supports DT&E and Operational Test and Evaluation (OT&E) of aircraft and aircraft systems, aerospace research vehicles, unmanned aerial vehicles, cruise missiles, parachute delivery/recovery/systems, and cargo handling systems.</p> <p>I&M efforts within this PE are identified in four mission area categories: Airframe/Propulsion/Avionics (APA); Armament/Munitions (A/M); Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR)/Cyber; and Space. These categories describe general types of effort that will be conducted in this PE. APA provides planning, improvements, and modernization needed for test capabilities to conduct and support DT&E and OT&E of aircraft and aircraft systems, aerospace research vehicles, unmanned aerial vehicles, cruise missiles, parachute delivery/recovery systems, cargo handling systems, and turbine engines. APA focuses on evaluation of the vehicle airframe, propulsion system, and avionics systems, as well as overall systems integration testing. It encompasses both ground test facilities, on-board test aircraft systems, and open-air range infrastructure, including instrumentation and data processing. A/M provides planning, improvements, and modernization to conduct DT&E of air-to-ground and air-to-air armaments and munitions, which include gun, chaff and flare systems, as well as aerial decoy and target systems. The A/M category encompasses the full range of DT&E from digital modeling and simulation, to precision measurement testing, to hardware-in-the-loop and installed systems testing, to open-air range testing. Elements of A/M DT&E include environmental, warhead effectiveness, arena blast/fragmentation, guidance navigation and control, aerodynamics, propulsion, electromagnetic interference and compatibility, mass properties, seeker and signature measurement, survivability, lethality, integration, reliability, net-centric and terminal effects testing. A/M also involves the design and development of systems needed to support A/M DT&E including the design and development of high speed sleds, targets, range support systems and various instrumentation and measurement systems. C4ISR provides planning, improvements and modernization to conduct DT&E of systems that support Command and Control (C2) functions which range from air campaign planning at the theater level to wing level C2 operations, to planning individual missions, to putting weapons on target using concepts such as machine to machine targeting. C4ISR includes ground and flight performance testing of airborne C2 networks and tactical data links, air operation centers, mission planning systems, multi-level security systems, radio and communication systems, ISR systems, information assurance systems, and radar systems such as those used by Joint Surveillance Target Attack Radar Systems (JSTARS) and air traffic control systems. C4ISR conducts DT&E on a full range of systems covering the sensor (detection) to the shooter (weapon), including functional and environmental testing of these systems. C4ISR/Cyber also includes DT&E for offensive and defensive Cyber capabilities. Space provides planning, improvements, and modernization needed for test capabilities to perform developmental and operational testing for space and launch acquisition and sustainment programs. Test capabilities include launch vehicle, satellite, missile, sensor, thermal protection system, signature, hardness, and interface testing. The capabilities reside at Vandenberg, Kirtland, Arnold, Patrick, Schriever, Peterson, Holloman Air Force Bases and others. Infrastructure includes launch sites, mobile control units, thermal vacuum chambers, sled tracks, arc heated wind tunnels, ballistic test ranges, signature collection, and the requisite personnel.</p> <p>This program is in Budget Activity 6, RDT&E Management Support, because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0604759F I Major T&E Investment				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	73.302	66.385	65.706	0.000	65.706	
Current President's Budget	70.894	71.385	82.874	0.000	82.874	
Total Adjustments	-2.408	5.000	17.168	0.000	17.168	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	-0.696	0.000				
• SBIR/STTR Transfer	-1.712	0.000				
• Other Adjustments	0.000	5.000	17.168	0.000	17.168	
Change Summary Explanation						
FY16: \$1.712 million decrease for the SBIR tax and \$696 thousand below threshold reprogramming for higher AF priorities.						
FY17: As part of the FY2017 Request for Additional Appropriations (RAA), \$5 million is required to accelerate the development of cyber "System in the Loop" infrastructure for detecting cyber vulnerabilities and increase cyber resiliency of weapon systems.						
FY18: \$16.929 million increase supports weapon system cyber resiliency as part of the larger AF FY18 cyber campaign plan. Also, included in the \$17.168 million total is a \$239 thousand increase for a nonpay/nonfuel inflation adjustment.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Airframe/Propulsion/Avionics T&E I&M				47.118	51.866	54.510
Description: Improvement and modernization of the AF capability to test and evaluate Airframe/Propulsion/Avionics (APA)						
FY 2016 Accomplishments:						
Joint Airborne Instrumentation Integration (JAII) completed instrumentation upgrades on Edwards T-38 test support aircraft, replaced outdated range radar systems and completed ground infrastructure upgrades to enhance network instrumentation, which completes this project.						
Advanced Large Military Engine Capability (ALMEC) completed installation and checkout of the 9 C-plant main-drive exciters; all 18 exciters have been upgraded; completed installation and Functional Configuration Audit (FCA) for the Engine Test Facility (ETF) controls – phase 2 upgrade is underway; taken delivery of the H1 heater tubes and began demolition of H1 heater bank 1; completed detailed design of H1 heater roof installation.						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
<p>Improved Transonic Test Capability (IMTTC) completed final detailed design for the wind tunnel 16T Test Article Control System (TACS) and began fabrication and installation; completed acceleration of major procurements that reduced potential schedule impacts for Major Defense Acquisition Program (MDAP) test customers; completed design and developed procurement documents for the Test Conditions Control (TCC) and Pressure Sensitive Paints projects.</p> <p>Test Instrumentation Data Systems and Control (TIDSC) completed the Arcs facility (H1, H2 and H3 test cells) upgrade; completed the J2 test cell measurement system upgrade; completed detailed design and hardware procurement for the C2 test cell upgrade; and began the J1 and J2 facility upgrades.</p> <p>The Common Range Integrated Instrumentation System (CRIIS) Production project completed the Analysis of Alternative (AoA) studies to address Time, Space, Position Information (TSPI) instrumentation capabilities. CRIIS production began Lot 1 procurement of OSD Central Test and Evaluation Investment Program (CTEIP) developed CRIIS TSPI increment 2 pods, aircraft internal mounts and ground test support infrastructure. Purchased and delivered initial CRIIS equipment focused on Eglin AFB IOC.</p> <p>The Landing Gear Test Facility (LGTF) Modernization Program completed its Industry Day to discuss preliminary designs with potential vendors. A draft design specification has been completed and work on the acquisition strategy initiated.</p> <p>Common Airborne Networked Instrumentation System (CANIS) supported and complemented the CTEIP-funded iNET Program by implementing the airborne solutions. FY16 activity implemented 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>The Next Generation Turbine Engine Test Capability (NGTETC) project revitalized capability at AEDC to make it more effective and efficient. It expanded the test envelope to accommodate next generation turbine engine performance characteristics. NGTETC initiated discussions with contractors on possible exhaust cooler designs; completed preliminary designs on the compressor inbleed, thermal management, and power management systems; and began hardware procurement for test cell engine venture system.</p> <p>The Improved Plant Reliability and Efficiency/Transonic Aero Propulsion Test Capability (IMTPC) project began work to restore components and sub-systems in AEDC Wind Tunnel 16T primary drive systems. Work was done to determine requirements and</p>				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
<p>design modifications for the compressor C1 blades, as well as the initiation of component analysis and integration for the main drive, the C1 compressor sub-systems (refurbish/replace) and the electrical support systems (refurbish/replace).</p> <p>Modular Mission Control Room Upgrade (MMCRU) began in FY16. The initial studies supported the hardware integration (spiral 1), situational awareness integration (spiral 2), and applications migration of the MMCRU implementation. MMCRU establishes a "cloud type" mission control room architecture to enable user friendly access to and distribution of data through internet protocol (IP) networks.</p> <p>The Voice Communication System Upgrade (VCSU) began in FY16. The program is currently conducting Market Research to determine appropriate requires. The program has met with other DoD users to evaluate the potential for commonality and synergy between ranges. The program has begun defining its acquisition strategy.</p> <p>The T&E Board of Directors continued to lead Tri-Service investment planning and joint T&E Reliance efforts as directed by the Service Secretaries.</p> <p>FY 2017 Plans: ALMEC will complete upgrades for the ETF controls project and restoral of the C Plant H1 Heater.</p> <p>IMTTC will continue to install and integrate hardware and software enhancements for TCC and 16T TACS.</p> <p>TIDSC will complete the C2 facility upgrade.</p> <p>CRIIS production will continue Lot 1 procurement and fielding of CTEIP developed CRIIS TSPI increment 2 pods, aircraft internal mounts and ground test support infrastructure.</p> <p>The LGTF Modernization Program will explore options to begin contract actions.</p> <p>Common Airborne Networked Instrumentation System (CANIS) will continue supporting and complementing the CTEIP-funded iNET Program by implementing the airborne solutions. FY17 activity will include completing the implementation of spirals 0, 1, and 2 of the CANIS acquisition approach. Spiral 0 modifies Air Force Test Center (AFTC) telemetry policies and procedures and makes use of tier 1 waveforms; Spiral 1 implements multi-band and C-Band transmitter and transceiver conversions; and Spiral 2 establishes a test asset networked data gathering package.</p> <p>NGTETC will continue upgrades to exhaust coolers, compressor inbleed, power and thermal management systems.</p>				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
<p>IMTPC will restore the capabilities of the main drive motors (rewind main drive motors M1 and M4), C1 compressor (replace both C1 compressor rotor blades and spacers), main drive motor sub-systems (refurbish/replace), C1 compressor sub-systems (refurbish/replace), and the electrical support systems (refurbish/replace primary Propulsion Wind Tunnel (PWT) facility main drive electrical utilities) to original specifications.</p> <p>MMCRU will continue to support the hardware integration (spiral 1), situational awareness integration (spiral 2), and applications migration of the MMCRU implementation.</p> <p>The VCSU program will complete requirements definition and take receipt of initial test lab equipment.</p> <p>The T&E Board of Directors will continue to lead tri-service investment planning and joint T&E Reliance efforts as directed by the Service Secretaries.</p> <p>FY 2018 Plans: ALMEC will complete upgrades for the ETF controls and restoration of the C Plant H1 heater.</p> <p>IMTTC will continue to install and integrate hardware and software enhancements for TCC and 16T TACS.</p> <p>The VCSU Program will begin procurement of equipment for the mission control room (MCR).</p> <p>CRIIS Production will continue Lot 1 procurement of OSD 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>The LGTF Modernization Program will continue design and fabrication (Phase II) efforts, and system integration (Phase III).</p> <p>The Integrated Networked Enhanced Telemetry (iNET) Systems Integration and Support (ISIS) Program will begin in FY18. The program will begin to define design requirements to integrate and implement the telemetry technologies developed under the CTEIP-funded iNET Program.</p> <p>CANIS will continue supporting and complementing the CTEIP-funded iNET Program by implementing the airborne solutions. FY17 activity will include completing the implementation of spirals 0, 1, and 2 of the CANIS acquisition approach. Spiral 0 modifies 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>				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
NGTETC will continue upgrades to exhaust coolers, compressor inbleed, power and thermal management systems. IMPTC will continue to restore the capabilities of the main drive motors (rewind main drive motors M1 and M4), C1 compressor (replace both C1 compressor rotor blades and spacers), main drive motor sub-systems (refurbish/replace), C1 compressor sub-systems (refurbish/replace), and the electrical support systems (refurbish/replace primary PWT facility main drive electrical utilities) to original specifications. MMCRU will continue to support the situational awareness integration (spiral 2) and begin development IO at each range (spiral 3), and applications migration of the MMCRU implementation. The VSCU Program will continue to take receipt of MCR equipment and begin installation and integration activities. The T&E Board of Directors will continue to lead tri-service investment planning and joint T&E Reliance efforts as directed by the Service Secretaries.				
Title: Armament/Munitions T&E I&M Description: Improvement and modernization of the AF capability to test and evaluate Armament/Munitions (A/M) FY 2016 Accomplishments: Joint Gulf Range Area Network Development (JGRAND) acquired and installed equipment in the Alt RNOCC; implemented data encryption across the Eglin Range Information Grid (RIG); acquired and implemented optical fiber paths to improve range communication capabilities at the Eglin Test and Training Complex (ETTC). JGRAND completes in FY16. Combined High Speed/High Resolution (CHSHR) Electro-Optical/Infrared (EO/IR) Imaging implemented autonomous designs to test sites B-70 and C-72; acquired and modernized mobile optical tracking systems; completed evaluation of ultra-high speed camera options for hypersonic speed testing on the high-speed test track. Next Generation Munitions Test Environment (NGMTE) continued to upgrade aging gun and munitions test infrastructure, developed and procured common data instrumentation and acquisition systems, and replaced environmental test chambers/ facilities supporting gun and arena test capabilities.		20.475	7.907	3.176

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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) <p>Started the Airborne Sensor Data Correlation effort. This effort is a research project to prototype fusing unmanned aerial system electro-optical and infrared full motion video to support accurate over-water weapons impact scoring. The results of this effort will help future testing of hypersonic and long-range weapons that require large test areas and larger hazard areas.</p> <p>Holloman High Speed Test Track (HHSTT) Gantry Crane project began efforts to replace the smaller and lower capacity gantry crane at HHSTT with a crane that can carry heavier targets needed to replicate more realistic weapons targets.</p> <p>FY 2017 Plans: CHSHR EO/IR Imaging will complete implementation of autonomous designs to B-70 and C-72; acquire and modernize mobile optical tracking systems; complete evaluation of ultra-high speed camera options for hypersonic speed testing on the high-speed test track.</p> <p>NGMTE will continue to upgrade aging gun and munitions test infrastructure, develop and procure common data instrumentation and acquisition systems, and replace environmental test chambers/facilities supporting gun and arena test capabilities.</p> <p>HHSST Gantry Crane project will complete the delivery and integration of the new gantry crane.</p> <p>FY 2018 Plans: NGMTE will complete upgrades to aging gun and munitions test infrastructure, development and procurement of common data instrumentation and acquisition systems, and replacement of environmental test chambers/facilities supporting gun and arena test capabilities.</p>		FY 2016	FY 2017	FY 2018
Title: C4ISR T&E I&M Description: Improvement and modernization of the AF capability to test and evaluate C4ISR <p>FY 2016 Accomplishments: Improved Command and Control (C2) Test Operations Center (I-C2TOC) provided for improved capabilities to represent any level of Air Force Operations Centers, including the Squadron Ops Center, Wing Ops Center, and Air Ops Center, to support C4ISR testing at Eglin AFB. I-C2TOC began acquiring computer and network equipment to replace outdated network infrastructure and upgrade servers and workstations.</p> <p>Cyber Defense Test Capability (CDTC) completed the first phase of a Federally-Funded Research and Development Center (FFRDC) study that will provide a detailed analysis of the draft six-step DoD cybersecurity test and evaluation process and</p>		3.301	11.612	25.188

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0604759F I Major T&E Investment							
C. Accomplishments/Planned Programs (\$ in Millions)										FY 2016	FY 2017	FY 2018
determine its adequacy in testing cyber vulnerabilities of acquisition systems under test; initiated the second phase of the study which is to identify manpower requirements and test infrastructure investments.												
FY 2017 Plans: I-C2TOC will continue C4ISR test network upgrades to C4ISR system hardware and software, and replace outdated network infrastructure.												
The CDTC project will complete the study to develop a detailed implementation methodology for the DoD cybersecurity T&E process, and identify manpower requirements and develop a test investment roadmap.												
FY 2018 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.												
The CDTC project will continue in FY18. During this phase, implementation of the plan for acquiring and training the workforce necessary for executing the cybersecurity T&E process will begin.												
The Weapon System Cyber Resiliency project will begin with requirements definitization and development of acquisition strategies.												
The Cyber DT/OT Range will begin with requirements definitization and development of acquisition strategies.												
Accomplishments/Planned Programs Subtotals										70.894	71.385	82.874
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• RDTE: BA 06: PE 0604256F: Threat Simulator Development	23.558	21.630	35.405	0.000	35.405	28.513	28.540	29.049	29.655	Continuing	Continuing	
• RDTE: BA 06: PE 0605807F: Test and Evaluation Support	683.307	680.217	678.289	0.000	678.289	686.379	700.630	713.790	729.060	Continuing	Continuing	

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>					<u>Cost To</u>	
Line Item	FY 2016	FY 2017	Base	OCO	Total	FY 2019	FY 2020	FY 2021	FY 2022	Complete	Total Cost
• RDTE: BA 06: PE 0605976F: <i>Facility Restoration & Modernization - T&E</i>	40.518	134.111	135.507	0.000	135.507	125.437	89.111	69.814	71.243	Continuing	Continuing
• RDTE: BA 06: PE 0605978F: <i>Facility Sustainment - T&E Support</i>	27.895	28.091	28.720	0.000	28.720	29.105	29.646	30.160	30.777	Continuing	Continuing
Remarks											
E. Acquisition Strategy N/A											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605101F I RAND Project Air Force							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	33.943	34.641	34.346	0.000	34.346	34.874	35.523	36.141	36.881	Continuing	Continuing
661110: Project Air Force	-	33.943	34.641	34.346	0.000	34.346	34.874	35.523	36.141	36.881	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides for continuing analytical research across a broad spectrum of aerospace issues and concerns. The Project AIR FORCE (PAF) research agenda is focused primarily on mid to long-term problems; in addition, PAF provides quick response assistance for senior Air Force officials on high priority, near term issues. Within these areas, PAF addresses difficult and complex, far-reaching and inter-related questions linked to future strategies, approaches and policies, in order to enhance Air Force senior leadership's deliberations and decisionmaking on major issues. The Air Force Steering Group, chaired by the Vice Chief of Staff, reviews, monitors, and approves PAF annual research efforts. Each project is initiated, processed, and approved in accordance with PAF Sponsoring Agreement which requires General Officer (or SES equivalent) sponsorship and involvement on a continuing basis.

PAF is organized in four primary research program areas: strategy and doctrine; force modernization employment; manpower, personnel and training; and resource management. Integrative research projects are also conducted at the division level with direct support provided through the most applicable program. Research programs address organizational crosscutting issues as defined by specific research themes approved by the Air Force Steering Group. These research themes encompass a wide spectrum of topics including external challenges to national security; terrorism and homeland defense; joint and coalition operations; integrated roadmap for ISR capabilities; enhancing, tailoring and reducing infrastructure to meet new force requirements; potential changes to the Active/Reserve/National Guard/Civilian/Contractor manpower mix; and improved weapon system costing.

The research program will continue to build upon research foundations, examining the evolving security environment, emerging threats, national and military strategy, transformation approaches including investment strategies to provide capabilities within changing Defense budgets, operational concepts to meet evolving and increasingly joint missions, exploiting advanced technologies, increasing the effectiveness and efficiency of combat support, and developing the total force (Active/Reserve/National Guard/Civilian/Contractor). These efforts will continue to inform and support the senior Air Force leadership regarding personnel management and training; improving logistical efficiencies and force sustainment; ongoing conflicts and joint operations; force structure capabilities, limitations, and operational concepts; and making force structure tradeoffs within resource constraints to meet future national security and Air Force needs.

Future research will build upon earlier work to continue to help the Air Force to rapidly and appropriately adapt to the changing world environment and emerging threats; continue to modernize and employ its force structure to provide capabilities within changing DoD budgets; assess lessons learned from recent and ongoing conflicts; develop and utilize its total force; and enhance the support of our aerospace forces, ranging from sustainment of the force structure to agile combat support.

PAF research spans functional and organizational boundaries and is managed in a manner to facilitate independence and freedom from organizational bias thereby providing perspectives and insights to senior Air Force leaders free from parochial influences not necessarily in the best interest of the Air Force at large. Benefits of

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605101F I RAND Project Air Force				
independent non-Department of Defense analysis of complex present day and emerging issues are shared beyond the immediacy of the Air Force. PAF study results are given wide dissemination within the DOD on a routine basis and are deposited with the Defense Technical Information Center available to a broad range of qualified government and commercial-sector individuals and activities.						
This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.						
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		34.918	34.641	34.247	0.000	34.247
Current President's Budget		33.943	34.641	34.346	0.000	34.346
Total Adjustments		-0.975	0.000	0.099	0.000	0.099
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		-0.975	0.000	0.099	0.000	0.099
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Strategy & Doctrine				7.290	8.232	8.160
Description: Provides for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.						
FY 2016 Accomplishments: Provided for analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.						
FY 2017 Plans: Provides for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.						
FY 2018 Plans: Will provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.						
Title: Force Development				8.265	8.232	8.162

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605101F I <i>RAND Project Air Force</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Description: Provides analytical research across a broad spectrum of aerospace issues and concerns--force development employment. FY 2016 Accomplishments: Provided for analytical research across a broad spectrum of aerospace issues and concerns--force development employment. FY 2017 Plans: Provides for continuing analytical research across a broad spectrum of aerospace issues and concerns--force development employment. FY 2018 Plans: Will provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--force development employment.				
Title: Manpower, Personnel & Training Description: Provides analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training. FY 2016 Accomplishments: Conducted analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training. FY 2017 Plans: Conducting continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training. FY 2018 Plans: Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.		8.265	8.232	8.162
Title: Resource Management Description: Provides analytical research across a broad spectrum of aerospace issues and concerns--resource management. FY 2016 Accomplishments: Conducting analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support. FY 2017 Plans:		8.265	8.232	8.162

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training. FY 2018 Plans: Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.				
Title: Integrative Research/Direct Support Description: Provides for continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support. FY 2016 Accomplishments: Conducting analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support. FY 2017 Plans: Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support. FY 2018 Plans: Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support.		1.858	1.713	1.700
Accomplishments/Planned Programs Subtotals		33.943	34.641	34.346
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605502F I Small Business Innovation Research							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	337.762	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
663005: Small Business Innovation Research	-	337.762	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification Mission Description not provided.												
B. Program Change Summary (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Previous President's Budget				0.000	0.000	0.000	0.000	0.000				
Current President's Budget				337.762	0.000	0.000	0.000	0.000				
Total Adjustments				337.762	0.000	0.000	0.000	0.000				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				0.000	0.000							
• SBIR/STTR Transfer				337.762	0.000							
• Other Adjustments				0.000	0.000	0.000	0.000	0.000				
C. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: Small Business Innovation Research									337.762	-	-	
Description: Small Business Innovation Research												
FY 2016 Accomplishments: Implemented the provisions of 15 U.S.C., Section 638, to maximize the creative, innovative, and entrepreneurial spirit of small businesses to solve technological problems. Integrated Air Force needs and requirements into research and development topics to enhance military and commercial potential. Applied pilot administration funding for enhanced outreach and communications in the form of Small Business Industry Days and participation in Small Business Administration national road shows. Utilized Direct to Phase II SBIR authority in the solicitation process to focus on potential rapid response solutions for warfighters. SBIR supported												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017
many small business matured technologies during 2016. For example, a process was transitioned which automates drilling and inspection for F-35 assembly at Lockheed Martin, a high accuracy hole cell at Warner-Robins, and for Boeing 777 assembly to achieve precise tolerances, archiving of data, and \$123M savings for the F-35 program. Another small business transitioned software which provides shop-wide visibility of test stand capabilities, resulting in a projected return on investment of at least 14:1, a 10 to 25 percent reduction in days Mission Impaired Capability Awaiting Parts in B-1 Avionics, and a five to 10 percent increase in capacity turns and throughput based on a detailed part and work status.			
Accomplishments/Planned Programs Subtotals		337.762	-
D. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
E. Acquisition Strategy N/A			
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605712F I Initial Operational Test & Evaluation							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	11.172	11.529	15.523	0.000	15.523	13.178	13.896	14.102	14.356	Continuing	Continuing
660191: Initial Operational Test and Eval	-	11.172	11.529	15.523	0.000	15.523	13.178	13.896	14.102	14.356	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), 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 program element is driven by Congressional and DoD acquisition mandated requirements for operational testing.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605712F I Initial Operational Test & Evaluation				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	10.476	11.529	11.985	0.000	11.985	
Current President's Budget	11.172	11.529	15.523	0.000	15.523	
Total Adjustments	0.696	0.000	3.538	0.000	3.538	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.696	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	0.000	3.538	0.000	3.538	
Change Summary Explanation						
FY18: \$2.5M increase for additional FY18 testing requirements and \$1.0M increase for cyber testing infrastructure requirements associated with the AF FY18 cyber campaign plan.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Air Systems OT&E				4.197	4.255	7.039
Description: Plan, execute and report OT&E for Air Systems						
FY 2016 Accomplishments:						
-Advanced Pilot Training (APT T-X): Conducted early influence						
-AWACS Block 40/45: Conducted FOT&E						
-B-2 Flex Strike P6.2 Block Upgrade: Conducted OA						
-C-130J Block Upgrade 8.1: Conducted OA						
-Combat Rescue Helicopter (CRH): Conducted OA1						
-(Diminishing Manufacturing Sources) Replacement of Avionics for Global Operations and Navigation (E-3 DRAGON): Conducted OA						
-F-15 Eagle Passive and Active Warning and Survivability System (F-15 EPAWSS): Conducted early influence						
-F-15 Infrared Search and Track System (F-15 IRST): Conducted early influence						
-F-22A 3.2B: Completed OA						
-Global Hawk Ground Segment Modernization Program GH GSMP): Conducted early influence						
-Joint Mission Planning System RQ-4 Mission Planning Element (JMPS RQ-4 MPE): Planned for IOT&E						
-JSTARS Recap: Conducted early influence						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605712F <i>I Initial Operational Test & Evaluation</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
-KC-46A: Conducted OA -Miniature Air Launched Decoy - Jammer (MALD-J): Conducted FOT&E -MQ-9 Increment 1: Conducted FOT&E -Presidential Aircraft Recapitalization (PAR): Planned for OA -RQ-4B Global Hawk Block 30 Multi-Spectral Intelligence (MSI): Planned for OUE -UH-1N Replacement: Conducted early influence FY 2017 Plans: -Advanced Pilot Training (APT T-X): Plan for OA -B-2 Flex Strike P6.2 Block Upgrade: Plan for IOT&E -B-52 Radar Modernization Program (B-52 RMP): Conduct early influence -C-130J Block Upgrade 8.1: Plan for IOT&E -Combat Rescue Helicopter (CRH): Plan for OA2 -(Diminishing Manufacturing Sources) Replacement of Avionics for Global Operations and Navigation (E-3 DRAGON): Complete OA -F-15 Eagle Passive and Active Warning and Survivability System (F-15 EPAWSS): Conduct early influence -F-15 Infrared Search and Track System (F-15 IRST): Conduct early influence -F-22A 3.2B: Conduct IOT&E -Global Hawk Ground Segment Modernization Program GH GSMP): Conduct early influence -Joint Mission Planning System RQ-4 Mission Planning Element (JMPS RQ-4 MPE): Plan for IOT&E -JSTARS Recap: Conduct early influence -KC-46A: Conduct OA -Miniature Air Launched Decoy - Jammer (MALD-J): Complete FOT&E -MQ-9 Increment 1: Plan for OA -Presidential Aircraft Recapitalization (PAR): Conduct OA -RQ-4B Global Hawk Block 30 Multi-Spectral Intelligence (MSI): Plan for OUE -UH-1N Replacement: Conduct early influence -Conduct other planning and operational testing for new air system programs as the requirement becomes known to AFOTEC FY 2018 Plans: -Advanced Pilot Training (APT T-X): Conduct OA -B-2 Flex Strike P6.2 Block Upgrade: Conduct IOT&E -B-52 Radar Modernization Program (B-52 RMP): Conduct early influence -C-130J Block Upgrade 8.1: Conduct IOT&E -Combat Rescue Helicopter (CRH): Plan for OA2				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
-(Diminishing Manufacturing Sources) Replacement of Avionics for Global Operations and Navigation (E-3 DRAGON): Conduct IOT&E -F-15 Eagle Passive and Active Warning and Survivability System (F-15 EPAWSS): Plan for OA -F-15 Infrared Search and Track System (F-15 IRST): Plan for OA -F-22A 3.2B: Complete IOT&E -Global Hawk Ground Segment Modernization Program GH GSMP): Plan for OA -Joint Mission Planning System RQ-4 Mission Planning Element (JMPS RQ-4 MPE): Conduct IOT&E -JSTARS Recap: Plan for OA -KC-46A: Conduct IOT&E -MQ-9 Increment 1: Plan for OA -Presidential Aircraft Recapitalization (PAR): Complete OA -RQ-4B Global Hawk Block 30 Multi-Spectral Intelligence (MSI): Conduct OUE -UH-1N Replacement: Plan for IOT&E -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 2016 Accomplishments: -Advanced Extremely High Frequency Satellite Communications (Advanced EHF): Conducted early influence -Airborne Launch Control System Replacement (ALCS-R): Conducted early influence -Enhanced Polar System (EPS): Planned for MOT&E -Global Broadcast Service (GBS): Planned FOT&E -Global Positioning System Block III (GPS III): Conducted early influence -Military GPS User Equipment (GPS MGUE): Conducted early influence -Global Positioning System III Contingency Operations (GPS III COps): Conducted early influence -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 OA -Joint Space Operations Center (JSpOC) Mission System (JMS): Planned for OUE -Protected Tactical Enterprise Services (PTES): Conducted early influence -Space Based Infrared System (SBIRS): Conducted OUE -Space Based Infrared System Follow-On (SBIRS FO): Conducted early influence -Space Based Space Surveillance Follow-On (SBSS FO): Conducted early influence		1.693	1.532	1.433

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605712F <i>I Initial Operational Test & Evaluation</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
-Space Fence: Conducted early influence -Weather System Follow-on (WSF): Conducted early influence FY 2017 Plans: -Advanced Extremely High Frequency Satellite Communications (Advanced EHF): Conduct early influence -Airborne Launch Control System Replacement (ALCS-R): Conduct early influence -Enhanced Polar System (EPS): Plan for MOT&E -Global Broadcast Service (GBS): Conduct FOT&E -Global Positioning System Block III (GPS III): Conduct early influence -Military GPS User Equipment (GPS MGUE): Plan for OA -Global Positioning System III Contingency Operations (GPS III COps): Conduct early influence -GPS Next Generation Control Segment (GPS OCX): Conduct early influence -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 OUE -Protected Tactical Enterprise Services (PTES): Conduct early influence -Space Based Infrared System (SBIRS): Plan for IOT&E -Space Based Infrared System Follow-On (SBIRS FO): Conduct early influence -Space Based Space Surveillance Follow-On (SBSS FO): Conduct early influence -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 FY 2018 Plans: -Advanced Extremely High Frequency Satellite Communications (Advanced EHF): Conduct early influence -Airborne Launch Control System Replacement (ALCS-R): Plan for EOA -Enhanced Polar System (EPS): Conduct MOT&E -Global Positioning System Block III (GPS III): Plan for OUE -Military GPS User Equipment (GPS MGUE): Conduct OA -Global Positioning System III Contingency Operations (GPS III COps): Plan for OUE -GPS Next Generation Control Segment (GPS OCX): Plan for OA -Inter-Continental Ballistic Missile Fuze (ICBM FUZE): Conduct OA -Integrated Strategic Planning and Analysis Network Increment 4 (ISPAN Inc IV): Conduct IOT&E -Joint Space Operations Center (JSpOC) Mission System (JMS): Conduct IOT&E -Protected Tactical Enterprise Services (PTES): Conduct early influence				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605712F <i>I Initial Operational Test & Evaluation</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
-Space Based Infrared System (SBIRS): Conduct IOT&E -Space Based Infrared System Follow-On (SBIRS FO): Conduct early influence -Space Based Space Surveillance Follow-On (SBSS FO): Conduct early influence -Space Fence: Plan for IOT&E -Weather System Follow-on (WSF): Plan for EOA -Conduct other planning and operational testing for new space system programs as the requirement becomes known to AFOTEC				
Title: Weapons OT&E Description: Plan, execute and report OT&E for Weapons OT&E FY 2016 Accomplishments: -AIM-120C Advanced Electronic Protection Improvement Program (AIM-120C Advanced EPIP): Conducted MOT&E 1 -AIM-9X Block II 9.4xx (AIM-9X Blk II 9.4xx): Conducted early influence -B-61 Life Extension Program (B-61 LEP): Conducted early influence -Hard Target Void Sensing Fuze (HTVSF): Conducted MOT&E -Offensive Anti-Surface Warfare/Increment I (OASuW Inc I): Planned for OUE -Small Diameter Bomb II (SDB II): Planned for MOT&E FY 2017 Plans: -AIM-120C Advanced Electronic Protection Improvement Program (AIM-120C Advanced EPIP): Complete MOT&E 1 -AIM-9X Block II 9.4xx (AIM-9X Blk II 9.4xx): Conduct early influence -B-61 Life Extension Program (B-61 LEP): Plan for OA -Electronic Bomb Fuze FMU-139D/B (FMU-139D/B): Conduct early influence -Hard Target Void Sensing Fuze (HTVSF): Complete MOT&E -Offensive Anti-Surface Warfare/Increment I (OASuW Inc I): Conduct OUE -Small Diameter Bomb II (SDB II): Plan for MOT&E -Conduct other planning and operational testing for new weapons system programs as the requirement becomes known to AFOTEC FY 2018 Plans: -AIM-120C Advanced Electronic Protection Improvement Program (AIM-120C Advanced EPIP): Conduct MOT&E 2 -AIM-9X Block II 9.4xx (AIM-9X Blk II 9.4xx): Plan for FOT&E -B-61 Life Extension Program (B-61 LEP): Conduct OA -Electronic Bomb Fuze FMU-139D/B (FMU-139D/B): Plan for OUE -Offensive Anti-Surface Warfare/Increment I (OASuW Inc I): Complete OUE		3.798	0.981	4.599

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605712F <i>I Initial Operational Test & Evaluation</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
-Small Diameter Bomb II (SDB II): Conduct MOT&E -Conduct other planning and operational testing for new weapons system programs as the requirement becomes known to AFOTEC				
Title: C4ISR OT&E Description: Plan, execute and report OT&E for C4ISR OT&E FY 2016 Accomplishments: -Three Dimensional Expeditionary Long Range Radar (3DELRR): Conducted early influence -Air Force Distributed Common Ground System (AF DCGS): Planned for OUE -Air Force Integrated Personnel and Pay System (AF-IPPS): Conducted early influence -Air Operations Center (AOC WS Inc 10.2): Conducted early influence -Command and Control Air Operations Suite/Command and Control Information Services (C2AOS-C2IS): Conducted early influence -Enclave Control Node (ECN): Conducted early influence -Family of Advanced Beyond Line Of Sight Terminals (FAB T): Conducted early influence -Presidential and National Voice Conferencing (PNVC): Conducted early influence -RQ-4 Global Hawk Block 30/Airborne Signals Intelligence Payload (ASIP): Planned for FOT&E -RQ-4B Global Hawk Block 40: Completed IOT&E -Wide Area Surveillance (WAS): Conduct early influence FY 2017 Plans: -Three Dimensional Expeditionary Long Range Radar (3DELRR): Conduct early influence -Air Force Distributed Common Ground System (AF DCGS): Conduct OUE -Air Force Integrated Personnel and Pay System (AF-IPPS): Conduct early influence -Air Operations Center (AOC WS Inc 10.2): Plan for OA -B-52 EHF Satcom: Conduct early influence -Command and Control Air Operations Suite/Command and Control Information Services (C2AOS-C2IS): Conduct early influence -Enclave Control Node (ECN): Plan for OUE -Family of Advanced Beyond Line Of Sight Terminals (FAB T): Plan for IOT&E -Nuclear Planning and Execution System Recapitalization (NPES): Conduct early influence -Presidential and National Voice Conferencing (PNVC): Plan for EOA -RQ-4 Global Hawk Block 30/Airborne Signals Intelligence Payload (ASIP): Plan for FOT&E -Wide Area Surveillance (WAS): Plan for IOT&E		1.416	4.199	2.135

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
-Conduct other planning and operational testing for new C4ISR programs as the requirement becomes known to AFOTEC FY 2018 Plans: -Three Dimensional Expeditionary Long Range Radar (3DELRR): Plan for OA -Air Force Distributed Common Ground System (AF DCGS): Conduct IOT&E -Air Force Integrated Personnel and Pay System (AF-IPPS): Conduct early influence -Air Operations Center (AOC WS Inc 10.2): Conduct OA -B-52 EHF Satcom: Conduct early influence -Command and Control Air Operations Suite/Command and Control Information Services (C2AOS-C2IS): Plan for MOT&E -Enclave Control Node (ECN): Conduct OUE -Family of Advanced Beyond Line Of Sight Terminals (FAB T): Conduct IOT&E -Nuclear Planning and Execution System Recapitalization (NPES): Conduct early influence -Presidential and National Voice Conferencing (PNVC): Conduct EOA -RQ-4 Global Hawk Block 30/Airborne Signals Intelligence Payload (ASIP): Conduct FOT&E -Wide Area Surveillance (WAS): Conduct IOT&E -Conduct other planning and operational testing for new C4ISR programs as the requirement becomes known to AFOTEC				
Title: Combat Support OT&E Description: Plan, execute and report OT&E for Combat Support OT&E FY 2016 Accomplishments: -Deliberate and Crisis Action Planning and Execution Segments Increment 2B (DCAPES Inc 2B): Planned for OUE -Integrated Aircrew Ensemble (IAE): Conducted early influence -Joint Mission Planning System B-2 (JMPS B-2): Planned for IOT&E -Maintenance, Repair, and Overhaul Initiative (MROI): Conducted early influence -Modular Handgun System (MHS): Conducted OA -Mission Planning System Increment 5 (MPS Inc 5): Planned for IOT&E 1 & 2 FY 2017 Plans: -Deliberate and Crisis Action Planning and Execution Segments Increment 2B (DCAPES Inc 2B): Plan for OUE -Integrated Aircrew Ensemble (IAE): Plan for IOT&E -Joint Mission Planning System B-2 (JMPS B-2): Plan for IOT&E -Maintenance, Repair, and Overhaul Initiative (MROI): Conduct early influence -Modular Handgun System (MHS): Conduct MOT&E -Mission Planning System Increment 5 (MPS Inc 5): Conduct IOT&E 1 & 2		0.068	0.562	0.317

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
-Conduct other planning and operational testing for new combat support programs as the requirement becomes known to AFOTEC <i>FY 2018 Plans:</i> -Deliberate and Crisis Action Planning and Execution Segments Increment 2B (DCAPES Inc 2B): Conduct OUE -Integrated Aircrew Ensemble (IAE): Conduct IOT&E -Joint Mission Planning System B-2 (JMPS B-2): Conduct IOT&E -Maintenance, Repair, and Overhaul Initiative (MROI): Conduct early influence -Mission Planning System Increment 5 (MPS Inc 5): Conduct IOT&E 3 -Conduct other planning and operational testing for new combat support programs as the requirement becomes known to AFOTEC				
Accomplishments/Planned Programs Subtotals		11.172	11.529	15.523
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	683.307	680.217	678.289	0.000	678.289	686.379	700.630	713.790	729.060	Continuing	Continuing
6606TG: <i>704th Test Group</i>	-	35.797	36.680	37.485	0.000	37.485	38.041	38.712	39.436	40.259	Continuing	Continuing
6606TS: <i>Test and Evaluation Support</i>	-	647.510	643.537	640.804	0.000	640.804	648.338	661.918	674.354	688.801	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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	683.308	661.417	672.180	0.000	672.180
Current President's Budget	683.307	680.217	678.289	0.000	678.289
Total Adjustments	-0.001	18.800	6.109	0.000	6.109
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.001	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	18.800	6.109	0.000	6.109

Change Summary Explanation

FY17: \$18.8 million is required to address emergency war fighting requirements as part of the Fiscal Year(FY) 2017 Request for Additional Appropriations. The funding will provide \$14.4 million of additional F-15 flying hours and contract maintenance labor to support on-going developmental test efforts avoiding critical delays and \$4.4 million for cyber test infrastructure to support early detection of cyber vulnerabilities.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605807F I Test and Evaluation Support	
FY18: \$6.109 million increase related to additional funding for weapon system cyber resiliency testing, manpower/civilian pay moves in and out of the PE associated with the 5 Center Reorganization and reporting of management headquarters personnel, and adjustments for economic assumptions associated with nonpay/nonfuel inflation and fuel pricing. Also, included in the total is an increase of \$1.827 million for a civilian pay raise.		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0605807F / Test and Evaluation Support				Project (Number/Name) 6606TG / 704th Test Group			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
6606TG: 704th Test Group	-	35.797	36.680	37.485	0.000	37.485	38.041	38.712	39.436	40.259	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 704th 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/704 TG Det 2), the 586th Flight Test Squadron including Detachment 1 (Det 1), 704 TG Operating Location (704 TG OL-AA) at Kirtland AFB, and 704 TG Operation Location (704 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 704 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 704 TG OL-AC also includes the Air Vehicle Survivability Office that provides support for Air Force aircraft acquisition programs. The 704th TG support services contracts are awarded on the basis of full and open competition.

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

	FY 2016	FY 2017	FY 2018
Title: 704th Test Group	35.797	36.680	37.485
Description: Provide infrastructure at the 704th Test Group (TG) to support testing of DoD, other Government Agencies, foreign military sales, and commercial weapon systems.			
FY 2016 Accomplishments:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0605807F / Test and Evaluation Support	Project (Number/Name) 6606TG / 704th Test Group	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Total consisted of utilities, contractor services, and civilian pay.			
FY 2017 Plans: Total consists of utilities, contractor services, and civilian pay.			
FY 2018 Plans: Total consists of utilities, contractor services, and civilian pay.			
Accomplishments/Planned Programs Subtotals	35.797	36.680	37.485

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• NA: NA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000

Remarks

D. Acquisition Strategy

Not applicable

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0605807F / Test and Evaluation Support				Project (Number/Name) 6606TS / Test and Evaluation Support			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
6606TS: Test and Evaluation Support	-	647.510	643.537	640.804	0.000	640.804	648.338	661.918	674.354	688.801	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
<p>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.</p> <p>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.</p> <p>The AFTCs three test wings 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) 96 TW, 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; the McKinley Climatic Lab, multi-service climatic simulation capability, located at Eglin AFB, FL; 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.</p>												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: AEDC, 412TW, 96TW									647.510	643.537	640.804	

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
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 2016	FY 2017	FY 2018
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. FY 2016 Accomplishments: Total consisted of utilities, contractor services, civilian pay, and the test and evaluation flying hour program. FY 2017 Plans: Total consists of utilities, contractor services, civilian pay, and the test and evaluation flying hour program. FY 2018 Plans: Total consists of utilities, contractor services, civilian pay, and the test and evaluation flying hour program.												
Accomplishments/Planned Programs Subtotals										647.510	643.537	640.804
C. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>	
• NA: NA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000	
Remarks												
D. Acquisition Strategy												
Not applicable.												
E. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605826F I Acq Workforce- Global Power							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	219.809	0.000	219.809	217.853	222.659	228.082	233.779	Continuing	Continuing
664127: Acq Workforce - Direct	-	0.000	0.000	219.809	0.000	219.809	217.853	222.659	228.082	233.779	Continuing	Continuing

Note
This program, BA 06 PE 0605826F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance funding in PEs 0702806F, Acquisition and Command Support, and 0708070F, Logistics Operations, was transferred to PE 0605826F, Acquisition Workforce Global Power, Project 664127 Acq Workforce Direct in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification
The Acquisition Workforce Global Power program element 0605826F transfers funding for the AFLCMC acquisition workforce from the Operations and Maintenance appropriation to the Research Development Test and Evaluation appropriation. This program element is one of eight new direct funded AFLCMC acquisition workforce program elements. The other seven AFLCMC acquisition workforce civilian pay program elements are 0605827F Global Vigilance and Combat Systems, 0605828F Global Reach, 0605829F Global Cyber, Network, and Business Systems, 0605830F Global Battle Management, 0605831F Capability Integration, 0605832F Advanced Program Technology, and 0605898F Management Headquarters.

The Air Force Life Cycle Management Center (AFLCMC) equips U.S. and allied forces with operational weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee acquisition programs throughout their life cycle. The direct funded acquisition workforce funded in this program element will support all phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel. This program element supports both civilian pay and non-pay support requirements.

This program element is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test, and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test, and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605826F I Acq Workforce- Global Power
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	219.809	0.000	219.809
Total Adjustments	0.000	0.000	219.809	0.000	219.809
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	219.809	0.000	219.809

Change Summary Explanation

In FY18, the AFLCMC acquisition workforce transferred from Operations and Maintenance to Research Development Test and Evaluation.

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605827F I <i>Acq Workforce- Global Vig & Combat Sys</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	223.179	0.000	223.179	222.317	228.806	233.974	239.822	Continuing	Continuing
664127: <i>Acq Workforce - Direct</i>	-	0.000	0.000	223.179	0.000	223.179	222.317	228.806	233.974	239.822	Continuing	Continuing

Note

This program, BA 06 PE 0605827F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance funding in PEs 0702806F, Acquisition and Command Support, 0702207F, Depot Maintenance (Non-Industrial Fund), and 0708070F, Logistics Operations, was transferred to PE 0605827F, Acquisition Workforce Global Vigilance and Combat Systems Project 664127 Acq Workforce Direct in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification

The Acquisition Workforce Vigilance and Combat Systems program element 0605827F transfers funding for the AFLCMC acquisition workforce from the Operations and Maintenance appropriation to the Research Development Test and Evaluation appropriation. This program element is one of eight new direct funded AFLCMC acquisition workforce program elements. The other seven acquisition workforce civilian pay program elements are 0605826F Global Power, 0605828F Global Reach, 0605829F Global Cyber, Network, and Business Systems, 0605830F Global Battle Management, 0605831F Capability Integration, 0605832F Advanced Program Technology, and 0605898F Management Headquarters.

The Air Force Life Cycle Management Center (AFLCMC) equips U.S. and allied forces with operational weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee acquisition programs throughout their life cycle. The direct funded acquisition workforce funded in this program element will support all phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel. These program elements support both civilian pay and non-pay support requirements.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		PE 0605827F I Acq Workforce- Global Vig & Combat Sys			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	223.179	0.000	223.179
Total Adjustments	0.000	0.000	223.179	0.000	223.179
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	223.179	0.000	223.179
Change Summary Explanation					
In FY18, the AFLCMC acquisition workforce funding transferred from Operations and Maintenance to Research Development Test and Evaluation.					

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605828F / <i>Acq Workforce- Global Reach</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	138.556	0.000	138.556	144.632	147.828	151.428	155.212	Continuing	Continuing
664127: <i>Acq Workforce - Direct</i>	-	0.000	0.000	138.556	0.000	138.556	144.632	147.828	151.428	155.212	Continuing	Continuing

Note

This program, BA 06 PE 0605828F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance funding in PEs 0702806F, Acquisition and Command Support, and 0708070F, Logistics Operations, was transferred to PE 0605828F, Acquisition Workforce Global Reach, Project 664127 Acq Workforce Direct in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification

The Acquisition Workforce Global Reach program element 0605828F transfers funding for the AFLCMC acquisition workforce from the Operations and Maintenance appropriation to the Research Development Test and Evaluation appropriation. This program element is one of eight new direct funded AFLCMC acquisition workforce program elements. The other seven acquisition workforce civilian pay program elements are 0605826F Global Power, 0605827 Global Vigilance and Combat Systems, 0605829F Global Cyber, Network, and Business Systems, 0605830F Global Battle Management, 0605831F Capability Integration, 0605832F Advanced Program Technology, and 0605898F Management Headquarters.

The Air Force Life Cycle Management Center (AFLCMC) equips U.S. and allied forces with operational weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee acquisition programs throughout their life cycle. The direct funded acquisition workforce funded in this program element will support all phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel. These program elements support both civilian pay and non-pay support requirements.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605828F I Acq Workforce- Global Reach
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	138.556	0.000	138.556
Total Adjustments	0.000	0.000	138.556	0.000	138.556
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	138.556	0.000	138.556

Change Summary Explanation

In FY18, the AFLCMC acquisition workforce transferred from Operations and Maintenance to Research Development Test and Evaluation.

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605829F / <i>Acq Workforce- Cyber, Network, & Bus Sys</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	221.393	0.000	221.393	221.944	230.291	239.114	250.876	Continuing	Continuing
664127: <i>Acq Workforce - Direct</i>	-	0.000	0.000	221.393	0.000	221.393	221.944	230.291	239.114	250.876	Continuing	Continuing

Note

This program, BA 06 PE 0605829F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance funding in PEs 0702806F, Acquisition and Command Support, 0207433F, Advanced Program Technology, and 0708070F, Logistics Operations, was transferred to PE 0605829F, Acquisition Workforce Cyber, Network, and Business Systems Project 664127 Acq Workforce Direct in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification

The Acquisition Workforce Capability Integration program element 0605829F transfers funding for the AFLCMC acquisition workforce from the Operations and Maintenance appropriation to the Research Development Test and Evaluation appropriation. This program element is one of eight new direct funded AFLCMC acquisition workforce program elements. The other seven acquisition workforce civilian pay program elements are 0605826F Global Power, 0605827 Global Vigilance and Combat Systems, 0605828F Global Reach, 0605830F Global Battle Management, 0605831F Capability Integration, 0605832F Advanced Program Technology, and 0605898F Management Headquarters.

The Air Force Life Cycle Management Center (AFLCMC) equips U.S. and allied forces with operational weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee acquisition programs throughout their life cycle. The direct funded acquisition workforce funded in this program element will support all phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel. These program elements support both civilian pay and non-pay support requirements.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		PE 0605829F I Acq Workforce- Cyber, Network, & Bus Sys			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	221.393	0.000	221.393
Total Adjustments	0.000	0.000	221.393	0.000	221.393
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	221.393	0.000	221.393
Change Summary Explanation					
In FY18, the AFLCMC acquisition workforce transferred from Operations and Maintenance to Research Development Test and Evaluation.					

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605830F / <i>Acq Workforce- Global Battle Mgmt</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	152.577	0.000	152.577	145.671	148.888	152.516	156.326	Continuing	Continuing
664127: <i>Acq Workforce - Direct</i>	-	0.000	0.000	152.577	0.000	152.577	145.671	148.888	152.516	156.326	Continuing	Continuing

Note

This program, BA 06 PE 0605830F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance funding in PEs 0702806F, Acquisition and Command Support, 0708070F, Logistics Operations, and 0305111F Weather Service was transferred to PE 0605830F, Acquisition Workforce Global Battle Management, Project 664127 Acq Workforce Direct in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification

The Acquisition Workforce Global Battle Management program element 0605830F transfers funding for the AFLCMC acquisition workforce from the Operations and Maintenance appropriation to the Research Development Test and Evaluation appropriation. This program element is one of eight new direct funded AFLCMC acquisition workforce program elements. The other seven acquisition workforce civilian pay program elements are 0605826F Global Power, 0605827 Global Vigilance and Combat Systems, 0605828F Global Reach, 0605829F Global Cyber, Network, and Business Systems, 0605831F Capability Integration, 0605832F Advanced Program Technology, and 0605898F Management Headquarters.

The Air Force Life Cycle Management Center (AFLCMC) equips U.S. and allied forces with operational weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee acquisition programs throughout their life cycle. The direct funded acquisition workforce funded in this program element will support all phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel. These program elements support both civilian pay and non-pay support requirements.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605830F I Acq Workforce- Global Battle Mgmt
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	152.577	0.000	152.577
Total Adjustments	0.000	0.000	152.577	0.000	152.577
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	152.577	0.000	152.577

Change Summary Explanation

In FY18, the AFLCMC acquisition workforce transferred from Operations and Maintenance to Research Development Test and Evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605831F I Acq Workforce- Capability Integration							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	196.561	0.000	196.561	195.221	199.497	204.165	209.179	Continuing	Continuing
664127: Acq Workforce - Direct	-	0.000	0.000	196.561	0.000	196.561	195.221	199.497	204.165	209.179	Continuing	Continuing

Note

This program, BA 06 PE 0605831F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance funding in PEs 0702806F, Acquisition and Command Support, 0708070F, Logistics Operations, 020815F, Combat Development, 0305111F, Weather Service, and 0901212F Service-wide Support was transferred to PE 0605831F, Acquisition Workforce Capability Integration, Project 664127 Acq Workforce Direct in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification

The Acquisition Workforce Capability Integration program element 0605831F transfers funding for the AFLCMC acquisition workforce from the Operations and Maintenance appropriation to the Research Development Test and Evaluation appropriation. This program element is one of eight new direct funded AFLCMC acquisition workforce program elements. The other seven acquisition workforce civilian pay program elements are 0605826F Global Power, 0605827 Global Vigilance and Combat Systems, 0605828F Global Reach, 0605829F Global Cyber, Network, and Business Systems, 0605830F Global Battle Management, 0605832F Advanced Program Technology, and 0605898F Management Headquarters.

The Air Force Life Cycle Management Center (AFLCMC) equips U.S. and allied forces with operational weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee acquisition programs throughout their life cycle. The direct funded acquisition workforce funded in this program element will support all phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel. These program elements support both civilian pay and non-pay support requirements.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605831F I Acq Workforce- Capability Integration
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	196.561	0.000	196.561
Total Adjustments	0.000	0.000	196.561	0.000	196.561
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	196.561	0.000	196.561

Change Summary Explanation

In FY18, the AFLCMC acquisition workforce transferred from Operations and Maintenance to Research Development Test and Evaluation.

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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605832F / <i>Acq Workforce- Advanced Prgm Technology</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	28.322	0.000	28.322	28.060	28.680	29.379	30.113	Continuing	Continuing
664127: <i>Acq Workforce - Direct</i>	-	0.000	0.000	28.322	0.000	28.322	28.060	28.680	29.379	30.113	Continuing	Continuing

Note

This program, BA 06 PE 0605832F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance funding in PE 0207433F, Advanced Program Technology was transferred to PE 0605832F, Acquisition Workforce Advanced Program Technology, Project 664127 Acq Workforce Direct in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification

The Acquisition Workforce Advanced Program Technology program element 0605832F transfers funding for the AFLCMC acquisition workforce from the Operations and Maintenance appropriation to the Research Development Test and Evaluation appropriation. This program element is one of eight new direct funded AFLCMC acquisition workforce program elements. The other seven acquisition workforce civilian pay program elements are 0605826F Global Power, 0605827F Global Vigilance and Combat Systems, 0605828F Global Reach, 0605829F Global Cyber, Network, and Business Systems, 0605830F Global Battle Management, 0605831F Capability Integration, and 0605898F Management Headquarters.

The Air Force Life Cycle Management Center (AFLCMC) equips U.S. and allied forces with operational weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee acquisition programs throughout their life cycle. The direct funded acquisition workforce funded in this program element will support all phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel. These program elements support both civilian pay and non-pay support requirements.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605832F / <i>Acq Workforce- Advanced Prgm Technology</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	28.322	0.000	28.322
Total Adjustments	0.000	0.000	28.322	0.000	28.322
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	28.322	0.000	28.322

Change Summary Explanation

In FY18, the AFLCMC acquisition workforce transferred from Operations and Maintenance to Research Development Test and Evaluation.

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

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605833F I Acq Workforce- Nuclear Systems							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	126.611	0.000	126.611	129.846	132.992	136.233	139.780	Continuing	Continuing
664127: ACQ Workforce - Direct	-	0.000	0.000	126.611	0.000	126.611	129.846	132.992	136.233	139.780	Continuing	Continuing

Note

This program, BA 06 PE 0605833F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance Funding in PEs 0101122F, Air Launched Cruise Missile and 0101213F, Minuteman Squadrons, was transferred to PE 0605833F, Acquisition Workforce Nuclear Systems in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification

The Acquisition Workforce Nuclear Systems program element 0605833F transfers funding for the AFNWC acquisition workforce from Operations and Maintenance to the Research Development Test and Evaluation appropriation. The Acquisition Workforce Nuclear Systems program element 0605833F is the new AFNWC acquisition workforce program element.

The Air Force Nuclear Weapons Center (AFNWC) equips U.S. forces with operational Nuclear Systems weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee Nuclear Systems acquisition programs throughout their life cycle. The direct funded acquisition workforce funded in this program element will support all phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel. These program elements support both civilian pay and non-pay support requirements.

This program element is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test, and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605833F I Acq Workforce- Nuclear Systems
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	126.611	0.000	126.611
Total Adjustments	0.000	0.000	126.611	0.000	126.611
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	126.611	0.000	126.611

Change Summary Explanation

In FY18, the AFNWC acquisition workforce transferred from Operations and Maintenance to Research Development Test and Evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605860F I Rocket Systems Launch Program (SPACE)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	21.245	11.198	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
661023: Rocket System Launch Program (RSLP)	-	21.245	11.198	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0605860F, Rocket Systems Launch Program efforts were transferred to PE 1206860F, Rocket Systems Launch Program, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206860F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	21.245	11.198	0.000	0.000	0.000
Total Adjustments	21.245	11.198	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	21.245	11.198	0.000	0.000	0.000

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

Title: RSLP	FY 2016	FY 2017	FY 2018
	21.245	11.198	-
Description: In FY2018, PE 0605860F, Rocket Systems Launch Program efforts were transferred to PE 1206860F, Rocket Systems Launch Program, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206860F.			
FY 2016 Accomplishments:			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
In FY2018, PE 0605860F, Rocket Systems Launch Program efforts were transferred to PE 1206860F, Rocket Systems Launch Program, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206860F.				
<i>FY 2017 Plans:</i> In FY2018, PE 0605860F, Rocket Systems Launch Program efforts were transferred to PE 1206860F, Rocket Systems Launch Program, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206860F.				
Accomplishments/Planned Programs Subtotals		21.245	11.198	-
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605864F I Space Test Program (STP)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	28.143	27.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
662617: Free-Flyer Spacecraft Missions	-	28.143	27.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0605864F, Space Test Program (STP) efforts were transferred to PE 1206864F, Space Test Program (STP) due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206864F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	28.143	27.070	0.000	0.000	0.000
Total Adjustments	28.143	27.070	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	28.143	27.070	0.000	0.000	0.000

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

Title: STP	FY 2016	FY 2017	FY 2018
	28.143	27.070	-
Description: In FY2018, PE 0605864F, Space Test Program (STP) efforts were transferred to PE 1206864F, Space Test Program (STP) due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206864F.			
FY 2016 Accomplishments:			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
<p>In FY2018, PE 0605864F, Space Test Program (STP) efforts were transferred to PE 1206864F, Space Test Program (STP) due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206864F.</p> <p><i>FY 2017 Plans:</i> In FY2018, PE 0605864F, Space Test Program (STP) efforts were transferred to PE 1206864F, Space Test Program (STP) due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206864F.</p>				
Accomplishments/Planned Programs Subtotals		28.143	27.070	-
D. Other Program Funding Summary (\$ in Millions) N/A Remarks E. Acquisition Strategy N/A F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605898F I Management HQ - R&D							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	9.154	0.000	9.154	9.168	9.371	9.599	9.840	Continuing	Continuing
6606TS: Test and Evaluation Support	-	0.000	0.000	3.644	0.000	3.644	3.707	3.790	3.882	3.979	Continuing	Continuing
664127: ACQ Workforce - Direct	-	0.000	0.000	5.510	0.000	5.510	5.461	5.581	5.717	5.861	Continuing	Continuing

Note

This program, BA 06 PE 0605898F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance funding in PE 0702806F, Acquisition and Command Support, was transferred to PE 0605898F Management Headquarters Research and Development, Project 664127 in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification

The Management Headquarters program element 0605898F includes management headquarters personnel for Air Force Life Cycle Management Center and Air Force Flight Test Center. Air Force Life Cycle Management Center personnel are included in Budget Program Activity Code 664127 and Air Force Flight Test Center personnel are included in Budget Program Activity Code 6606TS.

The Air Force Life Cycle Management Center (AFLCMC) equips U.S. and allied forces with operational weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee acquisition programs throughout their life cycle. The direct funded acquisition workforce funded in this program element will support all phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel. This program element supports both civilian pay and non-pay support requirements.

This program element includes Air Force Flight Test Center management headquarters personnel to lead, guide and direct the operation of 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 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.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605898F I <i>Management HQ - R&D</i>
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This program element 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 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	9.154	0.000	9.154
Total Adjustments	0.000	0.000	9.154	0.000	9.154
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	9.154	0.000	9.154

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0605898F / <i>Management HQ - R&D</i>				Project (Number/Name) 6606TS / <i>Test and Evaluation Support</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
6606TS: <i>Test and Evaluation Support</i>	-	0.000	0.000	3.644	0.000	3.644	3.707	3.790	3.882	3.979	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program element includes Air Force Flight Test Center management headquarters personnel to lead, guide and direct the operation of 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 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.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Title: Test and Evaluation Support	-	-	3.644
Description: Air Force Flight Test Center management headquarters personnel.			
FY 2018 Plans: Air Force Flight Test Center management headquarters personnel.			
Accomplishments/Planned Programs Subtotals	-	-	3.644

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

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

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0605898F / Management HQ - R&D	Project (Number/Name) 6606TS / Test and Evaluation Support

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0605898F / Management HQ - R&D				Project (Number/Name) 664127 / ACQ Workforce - Direct			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
664127: ACQ Workforce - Direct	-	0.000	0.000	5.510	0.000	5.510	5.461	5.581	5.717	5.861	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
This program, BA 06 PE 0605898F, project 664127, Acquisition Workforce, is a new start.

In FY 2018, a portion of Operations and Maintenance funding in PE 0702806F, Acquisition and Command Support, was transferred to PE 0605898F Management Headquarters Research and Development, Project 664127 in order to clearly distinguish the acquisition workforce and increase flexibility in resourcing the mission.

A. Mission Description and Budget Item Justification
This budget program activity code includes Life Cycle Management Center management headquarters personnel.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Title: Acquisition Workforce	-	-	5.510
Description: Life Cycle Management Center management headquarters personnel.			
FY 2018 Plans: Life Cycle Management Center management headquarters personnel.			
Accomplishments/Planned Programs Subtotals	-	-	5.510

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

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

Remarks

D. Acquisition Strategy
N/A

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605976F I Facilities Restoration and Modernization - Test and Evaluation Support							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	40.518	134.111	135.507	0.000	135.507	125.437	89.111	69.814	71.243	Continuing	Continuing
6606MC: Facility Restoration and Modernization - T&E	-	40.518	134.111	135.507	0.000	135.507	125.437	89.111	69.814	71.243	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, 704th Test Group (TG) at Holloman AFB, NM, the 96th Test Wing (TW) at Eglin AFB, FL, Arnold Engineering and Development Complex (AEDC)] at Arnold AFB, TN, the 412th TW at Edwards AFB, CA, 704 TG Landing Gear Test Facility (LGTf) at Wright-Patterson AFB, OH, AEDC's Hypersonic Wind Tunnel 9 at White Oak, MD, and AEDC's 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	40.518	134.111	135.116	0.000	135.116
Current President's Budget	40.518	134.111	135.507	0.000	135.507
Total Adjustments	0.000	0.000	0.391	0.000	0.391
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.391	0.000	0.391

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605976F <i>I Facilities Restoration and Modernization - Test and Evaluation Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Title: Facility restoration and modernization at the 704 TG Description: Facility restoration and modernization at the 704th TG. FY 2016 Accomplishments: Implemented plan to replace Radar Cross Section Advanced Measurement System Fiber Optics. Installed a new uninterruptable power system (UPS) and connected it to the existing UPS wiring infrastructure in the Advanced Inertial Test Lab portion of the Central Inertial Guidance Test Facility (CIGTF). FY 2017 Plans: Continue to implement plan to replace Radar Cross Section Advanced Measurement System Fiber Optics. Continue to install a new uninterruptable power system (UPS) and connect it to the existing UPS wiring infrastructure in the Advanced Inertial Test Lab portion of the Central Inertial Guidance Test Facility (CIGTF). FY 2018 Plans: Continue to implement plan to replace Radar Cross Section Advanced Measurement System Fiber Optics. Complete work to install a new uninterruptable power system (UPS) and connect it to the existing UPS wiring infrastructure in the Advanced Inertial Test Lab portion of the Central Inertial Guidance Test Facility (CIGTF). Begin work to refurbish the high speed test track girder and rail hardware, refurbish and upgrade high speed test track utilities.		1.563	1.661	1.644
Title: Facility restoration and modernization at the 96 TW Description: Facility restoration and modernization at the 96th TW. FY 2016 Accomplishments: Continued Range Environmental Protection and small Restoration and Modernization (R&M) efforts across the range complex. FY 2017 Plans: Continue Range Environmental Protection and small Restoration and Modernization (R&M) efforts across the range complex. Begin effort to restore and modernize McKinnley Climatic Lab facility components. Replace solar array, replace HVAC air makeup unit heat exchanger, modernize facility monitoring and control system. FY 2018 Plans: Continue Range Environmental Protection and small Restoration and Modernization (R&M) efforts across the range complex. Continue effort to restore and modernize McKinnley Climatic Lab facility components. Replace solar array, replace HVAC air makeup unit heat exchanger, modernize facility monitoring and control system.		3.125	11.267	9.516
Title: Facility restoration and modernization at AEDC		30.820	113.162	111.558

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
Description: Facility restoration and modernization at AEDC.				
FY 2016 Accomplishments: Completed the multiyear efforts, including major service life extension efforts on wind tunnels and exhaust plants.				
FY 2017 Plans: Begin effort to restore and modernize the Medium Turbine Engine A&B Plant and the Large Turbine Engine C-Plant mechanical systems, control valves, electrical systems, temperature controls and automate the control systems. Begin service life extension program effort for the High Speed Wind Tunnels (4T, 16T, 16S, Tunnel 9 and associated infrastructure).				
FY 2018 Plans: Continue effort to restore and modernize the Medium Turbine Engine A&B Plant and the Large Turbine Engine C-Plant mechanical systems, control valves, electrical systems, temperature controls and automate the control systems. Continue service life extension program effort for the High Speed Wind Tunnels (4T, 16T, 16S, Tunnel 9 and associated infrastructure).				
Title: Facility restoration and modernization at 412 TW		5.010	8.021	12.789
Description: Facility restoration and modernization at the 412 TW.				
FY 2016 Accomplishments: 412 TW completed 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.				
FY 2017 Plans: Begin effort to restore and modernize Benefield Anechoic Facility components. Replace facility auxiliary cooling system, and replace the electrical substation.				
FY 2018 Plans: Continue effort to restore and modernize Benefield Anechoic Facility components. Replace facility auxiliary cooling system, and replace the electrical substation.				
Accomplishments/Planned Programs Subtotals		40.518	134.111	135.507

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605976F <i>I Facilities Restoration and Modernization - Test and Evaluation Support</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA06: PE 0604256F: <i>Threat Simulator Development</i>	23.558	21.630	35.405	0.000	35.405	28.513	28.540	29.049	29.655	Continuing	Continuing
• RDTE: BA06: PE 0604759F: <i>Major T&E Investment</i>	70.894	71.385	82.874	0.000	82.874	79.536	76.629	78.240	81.118	Continuing	Continuing
• RDTE: BA06: PE 0605807F: <i>Test and Evaluation Support</i>	683.307	680.217	678.289	0.000	678.289	686.379	700.630	713.790	729.060	Continuing	Continuing
• RDTE: BA06: PE 0605978F: <i>Facility Sustainment - T&E Support</i>	27.895	28.091	28.720	0.000	28.720	29.105	29.646	30.160	30.777	Continuing	Continuing

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					PE 0605978F I Facilities Sustainment - Test and Evaluation Support							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	27.895	28.091	28.720	0.000	28.720	29.105	29.646	30.160	30.777	Continuing	Continuing
6606MR: Facility Sustainment-T&E Support	-	27.895	28.091	28.720	0.000	28.720	29.105	29.646	30.160	30.777	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, 704th Test Group (TG) at Holloman AFB, NM, the 96th Test Wing (TW) at Eglin AFB, FL, Arnold Engineering and Development Complex (AEDC) at Arnold AFB, TN, the 412 Test Wing (TW) at Edwards AFB, CA, 704 TG Landing Gear Test Facility (LGTf) at Wright-Patterson AFB, OH, AEDC's Hypersonic Wind Tunnel 9 at White Oak, MD, and AEDC's 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	27.895	28.091	28.637	0.000	28.637
Current President's Budget	27.895	28.091	28.720	0.000	28.720
Total Adjustments	0.000	0.000	0.083	0.000	0.083
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.083	0.000	0.083

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605978F <i>I Facilities Sustainment - Test and Evaluation Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Title: Facility sustainment at the 704 TG. Description: Facility sustainment at the 704 TG. FY 2016 Accomplishments: Sustainment projects included painting buildings, carpet replacement, heating, ventilation, and air conditioning (HVAC) repairs and roof repairs throughout the 704 TG. FY 2017 Plans: Sustainment projects include painting buildings, carpet replacement, heating, ventilation, and air conditioning (HVAC) repairs and roof repairs throughout the 704 TG. FY 2018 Plans: Sustainment projects include painting buildings, carpet replacement, heating, ventilation, and air conditioning (HVAC) repairs and roof repairs throughout the 704 TG.		0.322	0.324	0.331
Title: Facility sustainment at the 96 TW. Description: Facility sustainment at the 96 TW. FY 2016 Accomplishments: Continued to work through several hundred Direct Scheduled Work Orders (DSWs) within the test infrastructure. FY 2017 Plans: Continue to work through several hundred Direct Scheduled Work Orders (DSWs) within the test infrastructure. FY 2018 Plans: Continue to work through several hundred Direct Scheduled Work Orders (DSWs) within the test infrastructure.		1.302	1.311	1.340
Title: Facility sustainment at the AEDC. Description: Facility sustainment at the AEDC. FY 2016 Accomplishments: Performed calendar based scheduled preventative maintenance on Engine Test Facility Plant and associated engine test cells, Propulsion Wind Tunnel Plant and associated wind tunnels, Von Karman Facility (VKF) Plant Core and associated test cells, arc heaters, rocket test facility, space chambers, and hypersonic engine test facilities, along with associated infrastructure that supports all test operations. FY 2017 Plans:		23.838	24.006	24.544

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support				R-1 Program Element (Number/Name) PE 0605978F I Facilities Sustainment - Test and Evaluation Support							
C. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018	
Continue to perform calendar based scheduled preventative maintenance on Engine Test Facility Plant and associated engine test cells, Propulsion Wind Tunnel Plant and associated wind tunnels, Von Karman Facility (VKF) Plant Core and associated test cells, arc heaters, rocket test facility, space chambers, and hypersonic engine test facilities, along with associated infrastructure that supports all test operations. FY 2018 Plans: Continue to perform calendar based scheduled preventative maintenance on Engine Test Facility Plant and associated engine test cells, Propulsion Wind Tunnel Plant and associated wind tunnels, Von Karman Facility (VKF) Plant Core and associated test cells, arc heaters, rocket test facility, space chambers, and hypersonic engine test facilities, along with associated infrastructure that supports all test operations.											
Title: Facility sustainment at the 412 TW. Description: Facility sustainment at the 412 TW. FY 2016 Accomplishments: Continued sustainment of test unique infrastructure in 412 TW Electronic Warfare, Range, and other T&E facilities located at Edwards AFB, CA. FY 2017 Plans: Continue sustainment of test unique infrastructure in 412 TW Electronic Warfare, Range, and other T&E facilities located at Edwards AFB, CA. FY 2018 Plans: Continue sustainment of test unique infrastructure in 412 TW Electronic Warfare, Range, and other T&E facilities located at Edwards AFB, CA.								2.433	2.450	2.505	
Accomplishments/Planned Programs Subtotals								27.895	28.091	28.720	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA06: PE 0604256F: Threat Simulator Development	23.558	21.630	35.405	0.000	35.405	28.513	28.540	29.049	29.655	Continuing	Continuing
• RDTE: BA06: PE 0604759F: Major T&E Investment	70.894	71.385	82.874	0.000	82.874	79.536	76.629	78.240	81.118	Continuing	Continuing

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force									Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support				R-1 Program Element (Number/Name) PE 0605978F I Facilities Sustainment - Test and Evaluation Support							
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA06: PE 0605807F: Test & Evaluation Support	683.307	680.217	678.289	0.000	678.289	686.379	700.630	713.790	729.060	Continuing	Continuing
• RDTE: BA06: PE 0605976F: Facility Restoration and Modernization-T&E	40.518	134.111	135.507	0.000	135.507	125.437	89.111	69.814	71.243	Continuing	Continuing
Remarks											
E. Acquisition Strategy											
N/A											
F. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0606017F I Requirements Analysis and Maturation							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	21.922	129.100	35.453	0.000	35.453	33.578	34.001	34.392	35.095	Continuing	Continuing
666157: Development Planning	-	12.445	38.731	12.946	0.000	12.946	12.025	12.344	12.589	12.846	Continuing	Continuing
666158: INTEGRATED SIMULATION AND ANALYSIS	-	9.477	90.369	22.507	0.000	22.507	21.553	21.657	21.803	22.249	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Requirements Analysis and Maturation (RAM) program funds development planning (DP) to include early systems engineering and integrated simulation and analysis. These activities include requirements analysis, capability decomposition and trade space characterization, concept development (system of systems, air, space, and cyber), cost analysis, modeling and simulation of representative or prototype systems, and costs associated with these activities to include analytical tools and travel. Outcomes of these activities are fiscally and technologically informed requirements, mature concepts that are technically feasible, and areas for science and technology (S&T) investment to reduce technology risks. These activities provide the analytic basis for cost and capability trades driving non-materiel solutions as well as weapon systems requirements, 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 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. DP efforts have been coordinated with the Air Force Capability Development Council to ensure funding supports the highest Air Force priorities.

This program is in Budget Activity 6, RDT&E Management Support, because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	22.507	29.100	35.348	0.000	35.348
Current President's Budget	21.922	129.100	35.453	0.000	35.453
Total Adjustments	-0.585	100.000	0.105	0.000	0.105
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.585	0.000			
• Other Adjustments	0.000	100.000	0.105	0.000	0.105

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0606017F <i>I Requirements Analysis and Maturation</i>	

<u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u> Project: 666158: <i>INTEGRATED SIMULATION AND ANALYSIS</i> Congressional Add: <i>Program Increase</i>	FY 2016	FY 2017
	6.000	0.000
Congressional Add Subtotals for Project: 666158	6.000	0.000
Congressional Add Totals for all Projects	6.000	0.000

Change Summary Explanation
 \$100M FY 2017 Request for Additional Appropriations (RAA) for Planning for Development (PFD) and Joint Simulation Environment (JSE).

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0606017F / Requirements Analysis and Maturation				Project (Number/Name) 666157 / Development Planning			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
666157: Development Planning	-	12.445	38.731	12.946	0.000	12.946	12.025	12.344	12.589	12.846	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Development Planning project funds activities to analyze Air Force capability needs and requirements to identify potential 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. Emphasis is placed on activities to inform strategic planning, analyzing multi-domain capabilities that look first at non-materiel solutions before generating materiel needs and requirements.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Long-range Capability Analyses								6.847	5.000	5.240	0.000	5.240
Description: Conduct long-range capability analyses by analyzing warfighter capability needs and requirements to identify potential shortfalls and opportunities.												
FY 2016 Accomplishments: Completed Air Superiority (AS) 2030 Enterprise Capability Collaboration Team (ECCT) to develop a roadmap guiding future capability development activities. The resulting AS 2030 Flight Plan addresses materiel and non-materiel actions needed to ensure future air superiority.												
FY 2017 Plans: Identify and assess enduring and future Air Force capability challenges and opportunities. Develop capability roadmaps, advanced concept studies and analyses, and derive technology needs required to realize future solutions to warfighter capability needs.												
FY 2018 Base Plans: Continue to identify and assess enduring and future Air Force capability challenges and opportunities. Continue to develop capability roadmaps, advanced concept studies and analyses, and derive technology needs required to realize future solutions to warfighter capability needs.												
FY 2018 OCO Plans: Not applicable.												
Title: Concept Development								3.963	2.463	4.750	0.000	4.750

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600 / 6		R-1 Program Element (Number/Name) PE 0606017F / Requirements Analysis and Maturation		Project (Number/Name) 666157 / Development Planning		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: Conduct concept development activities to inform strategic investment decisions. Formulate and explore multi-domain options (materiel and non-materiel) to better understand operational decision space.</p> <p>FY 2016 Accomplishments: Executed concept development activities, to include requirements support and analysis, early-phase systems engineering, early concept characterization and technical descriptions, market research, budget estimates, and technology assessments for future weapons and live, virtual, and constructive operational training.</p> <p>FY 2017 Plans: Formulate and explore multi-domain options (materiel and non-materiel) to better understand operational decision space.</p> <p>FY 2018 Base Plans: Continue to formulate and explore multi-domain options (materiel and non-materiel) to better understand operational decision space.</p> <p>FY 2018 OCO Plans: Not applicable.</p>						
<p>Title: Pre-systems Acquisition Planning</p> <p>Description: Conduct coordinated pre-systems acquisition planning activities that address requirements, schedule, cost, technology, and acquisition strategy.</p> <p>FY 2016 Accomplishments: Conducted pre-systems acquisition planning activities, to include concept refinement, cost estimates, acquisition courses of action, and acquisition milestone documentation for future tactical warning and attack assessment capability.</p> <p>FY 2017 Plans: Perform pre-systems acquisition planning activities, including concept refinement, cost estimates, acquisition courses of action, and acquisition milestone documentation directed by AS 2030 ECCT Flight Plan and to address other high priority efforts.</p> <p>FY 2018 Base Plans:</p>		1.635	31.268	2.956	0.000	2.956

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force				Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to perform pre-systems acquisition planning activities, including concept refinement, cost estimates, acquisition courses of action, and acquisition milestone documentation.						
FY 2018 OCO Plans: Not applicable.						
Accomplishments/Planned Programs Subtotals		12.445	38.731	12.946	0.000	12.946
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy Not applicable.						
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0606017F / Requirements Analysis and Maturation				Project (Number/Name) 666158 / INTEGRATED SIMULATION AND ANALYSIS			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
666158: INTEGRATED SIMULATION AND ANALYSIS	-	9.477	90.369	22.507	0.000	22.507	21.553	21.657	21.803	22.249	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Integrated Simulation and Analysis project provides system-of-systems synthetic environments for modeling, simulation, and analysis of systems and concepts under assessment. This effort accomplishes 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, cyber, and multi-domain capabilities assessments in support of development planning, experimentation, and related activities.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Integrated Simulation and Analysis								3.477	90.369	22.507	0.000	22.507
Description: Develop cross-domain system-of-systems modeling, simulation, and analysis capabilities to support development planning, capabilities assessment, and acquisition decisions.												
FY 2016 Accomplishments: Reconfigured and matured models and toolsets to provide integrated simulation capabilities with variable levels of fidelity and realistic representation of battlespace environments.												
FY 2017 Plans: Continue to reconfigure and mature models and toolsets to provide integrated simulation capabilities with variable levels of fidelity and realistic representation of battlespace environments. Provide a core set of composable models and a common suite of cross-domain, reusable frameworks at the engineering, engagement, mission, and campaign levels that can be used to support robust development planning and experimentation for high-priority capability gaps, needs, and warfighting challenges identified by Air Force leadership. Begin development of advanced system-of-systems, multi-domain, anti-access, area denial simulation environment to conduct developmental and operational test, advanced training, and experimentation support for current and future advanced platforms.												
FY 2018 Base Plans:												

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

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to reconfigure and mature models and toolsets to provide integrated simulation capabilities with variable levels of fidelity and realistic representation of battlespace environments. Provide a core set of composable models and a common suite of cross-domain, reusable frameworks at the engineering, engagement, mission, and campaign levels that can be used to support robust development planning and experimentation for high-priority capability gaps, needs, and warfighting challenges identified by Air Force leadership.					
FY 2018 OCO Plans: Not applicable.					
Accomplishments/Planned Programs Subtotals	3.477	90.369	22.507	0.000	22.507

	FY 2016	FY 2017
Congressional Add: Program Increase	6.000	0.000
FY 2016 Accomplishments: Conducted Congressionally-directed effort.		
FY 2017 Plans: Not applicable.		
Congressional Adds Subtotals	6.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
D. Acquisition Strategy Not applicable.											
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0606116F I Space Test and Training Range Development							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	18.465	18.528	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
666156: Space Test and Training Range Development	-	18.465	18.528	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0606116F, Space Test and Training Range Development efforts were transferred to PE 1206116F, Space Test and Training Range Development due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206116F.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	18.465	18.528	0.000	0.000	0.000
Total Adjustments	18.465	18.528	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	18.465	18.528	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					PE 0606392F I Space and Missile Center (SMC) Civilian Workforce							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	169.196	176.666	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
664280: SMC Civilian Pay	-	169.196	176.666	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
In FY2018, PE 0606392F, Space and Missile Center (SMC) Civilian Workforce efforts were transferred to PE 1206392F, Space and Missile Center (SMC) Civilian Workforce due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206392F.												
B. Program Change Summary (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Previous President's Budget				0.000	0.000	0.000	0.000	0.000				
Current President's Budget				169.196	176.666	0.000	0.000	0.000				
Total Adjustments				169.196	176.666	0.000	0.000	0.000				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				0.000	0.000							
• SBIR/STTR Transfer				0.000	0.000							
• Other Adjustments				169.196	176.666	0.000	0.000	0.000				
C. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: SMC Civ Workforce									169.196	176.666	-	
Description: In FY2018, PE 0606392F, Space and Missile Center (SMC) Civilian Workforce efforts were transferred to PE 1206392F, Space and Missile Center (SMC) Civilian Workforce due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206392F.												
FY 2016 Accomplishments: In FY2018, PE 0606392F, Space and Missile Center (SMC) Civilian Workforce efforts were transferred to PE 1206392F, Space and Missile Center (SMC) Civilian Workforce due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206392F.												
FY 2017 Plans:												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0606392F <i>I Space and Missile Center (SMC) Civilian Workforce</i>	
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
In FY2018, PE 0606392F, Space and Missile Center (SMC) Civilian Workforce efforts were transferred to PE 1206392F, Space and Missile Center (SMC) Civilian Workforce due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206392F.			
Accomplishments/Planned Programs Subtotals		169.196	176.666
			-
D. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
E. Acquisition Strategy N/A			
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0308602F I ENTEPRISE INFORMATION SERVICES (EIS)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	3.841	4.410	29.049	0.000	29.049	20.700	24.300	10.800	7.900	0.000	101.000
66ACSI: ACQ and Command Support Integration	-	3.841	4.410	29.049	0.000	29.049	20.700	24.300	10.800	7.900	0.000	101.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 06 PE 0308602F, project 66ACSI, Enterprise Resource Planning Consolidation, is a new start.

A. Mission Description and Budget Item Justification

Enterprise Information Services (EIS) is a portfolio of integrated programs/technologies/services that enables and sustains Air Force Information Management and Knowledge Operations. EIS provides Air Force personnel access to, and management of, timely, accurate, and trusted mission data, information, and knowledge supporting information/decision superiority. The environment will utilize the services provided by the Common Computing Environment (CCE).

CCE provides standardized platforms, common application support services, data center migration strategy, and security services for hosting AF mission applications. This acquisition is critical for multiple hosting environments leveraging DoD Joint Information Environment (JIE) Core Data Centers (CDC), commercial cloud capabilities and DISA brokered cloud capabilities in compliance with the Air Force Information Technology (AF IT) baselines. This effort also provides technical expertise, programmatic guidance, and policy navigation that supports AF approved application rationalization processes to multiple hosting environments and enterprise IT Lifecycle Capabilities Integration Environment (CIE) testing of CCE services.

In FY17 Common Tool Development was a new start

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0308602F I ENTERPRISE INFORMATION SERVICES (EIS)				
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		3.841	4.410	0.000	0.000	0.000
Current President's Budget		3.841	4.410	29.049	0.000	29.049
Total Adjustments		0.000	0.000	29.049	0.000	29.049
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	0.000	29.049	0.000	29.049
Change Summary Explanation						
The addition of FY18 funding will be used to continue the implementation of the Common Computing Environment for the Air Force.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Platform Provisioning / Technical Baseline (TB) Aligned Platform Configuration				1.000	0.526	0.526
Description: This task provides the engineering analysis of the Target Baseline platform configurations leading to development of design patterns and templates to be used at the enterprise level by Air Force Information Technology capabilities. These standards will be developed against multiple hosting environments to include DISA MilCloud, commercial cloud, and Installation Processing Nodes.						
FY 2016 Accomplishments:						
- Worked to develop Common Computing Environment platforms and services into commercial cloud environments providing pathway for reduced infrastructure sustainment costs						
- Established standardized process for providing engineering analysis of platform and services updates to support the 200+ applications requiring migration to new cloud environments complying with Federal Data Center Consolidation Initiative						
- Provided engineering analysis of Target Baseline updates ensuring updates and changes integrated into Implementation Baseline						
FY 2017 Plans:						
- Continue to develop Common Computing Environment platforms and services into Installation Processing Nodes ensuring standardization and compliance across all infrastructure hosting environments						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0308602F I ENTERPRISE INFORMATION SERVICES (EIS)		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
- Continue to provide engineering analysis of applications requiring migration to all infrastructure hosting environments FY 2018 Plans: - Will continue development of Common Computing Environment platforms and services to ensure standardization and compliance across all infrastructure hosting environments - Will continue providing engineering analysis of applications requiring migration to all infrastructure hosting environments				
Title: Managed Service Office (MSO) Description: This task develops the process flows for engaging mission application program offices, gathering infrastructure requirements and performing engineering analysis to determine optimum hosting platforms for Air Force IT capabilities. This provides the foundation for initial capabilities supporting the JIE stand-up. FY 2016 Accomplishments: - Continued work to build out engagement processes and begin including automation capabilities to capture mission application infrastructure requirements and also develop application migration tracking tools - Worked to develop virtual data center management capabilities to be utilized across multiple infrastructure hosting environments; optimizes ordering and consumption of cloud services driving down application storage and compute costs - Continued work to develop solutions to accelerate migration events to drastically reduce IT costs across the AF IT portfolio FY 2017 Plans: - Continue to provide engineering analysis and support to 100+ applications requiring migration to data centers in compliance with Federal Data Center Consolidation Initiative mandates - Continue to refine engagement process to provide more efficient application migration support process FY 2018 Plans: - Will provide engineering analysis and support to new applications requiring migration to data centers in compliance with Federal Data Center Consolidation Initiative mandates - Will continue to refine engagement process to provide more efficient application migration support process		2.438	2.438	2.419
Title: Enterprise Services Extended to the Commercial Cloud Description: This effort develops the design patterns and templates for taking the standardized platforms and enterprise application support services to commercial cloud environments. As more commercial cloud environments receive certifications for hosting DoD applications, this ensures the proper tools are developed and integrated for use in the commercial cloud environments. FY 2016 Accomplishments:		0.403	0.500	0.500

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
<ul style="list-style-type: none"> - Began development of the tools to provide automated provisioning of standardized platforms into commercial cloud hosting - Began development of the design patterns and standardized templates for application to integrate enterprise application support services in commercial cloud environments <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue development of the tools to provide automated provisioning of standardized platforms into commercial cloud hosting - Continue development of the design patterns and standardized templates for application to integrate enterprise application support services in commercial cloud environments <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will provide engineering analysis and support to greater than 100 applications requiring migration to data centers in compliance with Federal Data Center Consolidation Initiative mandates - Will refine engagement process to provide more efficient application migration support process - Will develop automated platform provisioning tools to be used across multiple infrastructure hosting environments 				
<p>Title: Common Tool Development</p> <p>Description: Develop and deploy a common set of enterprise tools to support application development and testing. These tools allow the Common Computing Environment to provide Test as a Service to mission application development teams; allowing for standardize development and test environments.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue to research and evaluate available development and test tools and perform analysis of alternatives of the various tools - Continue to develop testing processes and procedures to be used by application developers migrating capabilities to the Joint Information Environment infrastructure -Continue to develop and implement Test as a Service capabilities for use by application development teams <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will provide engineering analysis and support to greater than 100 applications requiring migration to data centers in compliance with Federal Data Center Consolidation Initiative mandates - Will refine engagement process to provide more efficient application migration support process -Will develop automated platform provisioning tools to be used across multiple infrastructure hosting environments 		0.000	0.946	0.404
Title: Enterprise Resource Planning Consolidation		0.000	0.000	25.200

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
<p>Description: Design, develop and deliver consolidated common services for Enterprise Resource Planning applications. Target environments are development, test, production and disaster recovery across at least two geographically separated locations. This effort includes completing cybersecurity requirements and acquisition of supporting hardware, software and management resources.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: N/A</p> <p>FY 2018 Plans: -Will provide development, test, production and disaster recovery environments -Will continue cybersecurity requirements to be deployment for development/test environments plus begin production/disaster recovery environments -Will procure supporting hardware and software plus begin transition of licensing from applications to common service provider</p>				
Accomplishments/Planned Programs Subtotals		3.841	4.410	29.049
<p>D. Other Program Funding Summary (\$ in Millions) N/A</p> <p>Remarks</p>				
<p>E. Acquisition Strategy N/A</p>				
<p>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.</p>				

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

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0702806F I Acquisition and Management Support							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	16.358	14.613	14.980	0.000	14.980	15.861	16.394	17.949	18.317	Continuing	Continuing
66ACSI: ACQ and Command Support Integration	-	16.358	14.613	14.980	0.000	14.980	15.861	16.394	17.949	18.317	Continuing	Continuing

Note

In FY18, PE 0702806F, Project 66ACSI, Civilian Pay, was transferred to PE 0605829F Acquisition Workforce - Cyber, Network, and Business Systems.

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.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	15.357	14.613	18.682	0.000	18.682
Current President's Budget	16.358	14.613	14.980	0.000	14.980
Total Adjustments	1.001	0.000	-3.702	0.000	-3.702
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	1.001	0.000	-3.702	0.000	-3.702

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0702806F <i>I Acquisition and Management Support</i>	
<u>Change Summary Explanation</u> FY18 reduction of \$3.7M due to movement of Project 66ACSI to PE 0605829F.		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0702806F / Acquisition and Management Support				Project (Number/Name) 66ACSI / ACQ and Command Support Integration			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
66ACSI: ACQ and Command Support Integration	-	16.358	14.613	14.980	0.000	14.980	15.861	16.394	17.949	18.317	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY18, Project 66ACSI, Civilian Pay, was transferred to PE 0605829F Acquisition Workforce - Cyber, Network, and Business Systems.

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 2016	FY 2017	FY 2018
Title: Acquisition Mandates	3.198	1.155	1.800
Description: Supporting Congressional, SECDEF, and SECAF mandates. Program funding provides the framework for Air Force business and acquisition.			
FY 2016 Accomplishments: Continue program management and resources management oversight.			
FY 2017 Plans: Continue program management and resources management oversight.			
FY 2018 Plans: Continue program management and resources management oversight.			
Title: Performance Measurements	1.950	0.600	1.937
Description: Develops and upgrades performance measures for capability-based planning constructs.			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 6		R-1 Program Element (Number/Name) PE 0702806F / Acquisition and Management Support		Project (Number/Name) 66ACSI / ACQ and Command Support Integration	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
FY 2016 Accomplishments: Continue to develop and analyze acquisition processes to provide process improvement and efficiencies.					
FY 2017 Plans: Continue to develop and analyze acquisition processes to provide process improvement and efficiencies.					
FY 2018 Plans: Continue to develop and analyze acquisition processes to provide process improvement and efficiencies.					
Title: Technical and Analytical Support Description: Supports Acquisition Domain-level effort (via the Acquisition Domain Capabilities Integration (ADCI) activities) to integrate existing acquisition business systems/services, data, and process supporting key Acquisition capabilities at the enterprise level. Supports analysis required to architect an integrated environment built on DISA's MilCloud infrastructure supporting the portfolio of acquisition business systems and implements standards for data management and service-oriented design methodology to facilitate efficiency and interoperability. Supports analysis aimed at solving problems across or outside of individual system boundaries with the goal of reducing redundancy, improving systems operations, and improving management of data resulting in dramatically improved transparency, efficiency, and effective management of the Acquisition process. Includes the creation and support of domain-level requirements and governance processes as well as the creation of domain-wide data standards.			1.910	2.044	3.133
FY 2016 Accomplishments: Continuation of work supporting the automation of key Life Cycle Management Center (LCMC) and Space & Missile Systems Center (SMC) acquisition processes. Includes analytical support, process work, governance, requirements definition, analysis, test & evaluation and configuration control. Continuation of work supporting the onboarding of new capabilities for the Acquisition Workbench/Acquisition Application Store.					
FY 2017 Plans: Continuation of work supporting the automation of key Life Cycle Management Center (LCMC) and Space & Missile Systems Center (SMC) acquisition processes. Continuation of work supporting the onboarding of new capabilities for the Acquisition Workbench/Acquisition Application Store.					
FY 2018 Plans: Continuation of work supporting the automation of key Life Cycle Management Center (LCMC) and Space & Missile Systems Center (SMC) acquisition processes. Continuation of work supporting the onboarding of new capabilities for the Acquisition Workbench/Acquisition Application Store.					
Title: Associated Tool Development			4.008	4.052	3.805

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017		
Appropriation/Budget Activity 3600 / 6		R-1 Program Element (Number/Name) PE 0702806F / Acquisition and Management Support	Project (Number/Name) 66ACSI / ACQ and Command Support Integration		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
<p>Description: Upgrade the enterprise tools that assists PMs and acquisition professionals with the day-to-day tasking involved in defining, managing, and reporting health and status information throughout an Acquisition program's lifecycle.</p> <p>FY 2016 Accomplishments: Complete creation of an integrated IT operational environment (Acquisition Workbench/Acquisition Application Store) and further develop applications for Acquisition Program Offices. In addition, assess appropriate metrics and alternative tools to enhance data collection and data visibility on all acquisition programs.</p> <p>FY 2017 Plans: Continue expansion of the integrated IT operational environment (Acquisition Workbench/Acquisition Application Store) to include additional Acquisition Program Office automation and additional application development. Continue assessment of appropriate tools.</p> <p>FY 2018 Plans: Continue expansion of the integrated IT operational environment (Acquisition Application Store) to include additional Acquisition Program Office automation and additional application development. Continue assessment of appropriate tools.</p>					
<p>Title: Project Management Resource Tools (PMRT)</p> <p>Description: Upgrade enterprise PMRT tools that provide program/project resource management support to the Acquisition community.</p> <p>FY 2016 Accomplishments: Development of the capability required to provide enhanced visibility of acquisition program and financial information for all AF Acquisition Investment programs. Continued development of critical PMRT interfaces to include the Defense Enterprise Accounting Management System (DEAMS). Upgrades required to (a) address new CyberSpace security requirements due to increased security threats and (b) implement changes to fix weaknesses in audit controls needed to address financial audit findings and to protect Air Force data. Upgrades to provide additional capability to enable and track Air Force's implementation of initiatives associated with OSD's Better Buying Power (BBP) mandates.</p> <p>FY 2017 Plans: Continued enhancement of PMRT to allow increased visibility to acquisition programmatic and financial information for all AF Acquisition Investment programs. Re-engineering and implementation of process improvements in PMRT supporting acquisition reporting. Development of additional acquisition dashboard data visualizations. Migration PMRT to a Core Data Center (CDC) in order to comply with the Federal Data Center Consolidation Initiative (FDCCI).</p> <p>FY 2018 Plans:</p>			2.988	1.964	1.965

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017	
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0702806F / Acquisition and Management Support	Project (Number/Name) 66ACSI / ACQ and Command Support Integration		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Continued enhancement of PMRT to allow increased visibility to acquisition programmatic and financial information for all AF Acquisition Investment programs. Re-engineering and implementation of process improvements in PMRT supporting acquisition reporting. Development of additional acquisition dashboard data visualizations. Migration PMRT to a Core Data Center (CDC) in order to comply with the Federal Data Center Consolidation Initiative (FDCCI).				
Title: Capabilities Integration Environment (CIE) Description: Provides a development, testing and integration environment for Information Technology (IT) system development, prototypes and proofs of concept. FY 2016 Accomplishments: Continues a secure, scalable environment to support Research and Development (R&D), Development Test/Operational Test (DT/OT), integration, exercises, experimentation, acquisition development and direct Warfighter support. FY 2017 Plans: Continues a secure, scalable environment to support Research and Development (R&D), Development Test/Operational Test (DT/OT), integration, exercises, experimentation, acquisition development and direct Warfighter support. FY 2018 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.		1.804	1.805	1.840
Title: Development and Retention Description: Supports activities to develop, manage and retain the acquisition workforce. FY 2016 Accomplishments: Performs activities to develop, manage, and retain the acquisition workforce by providing training on enhanced business and engineering processes that enable the effective management of complex acquisition processes, and allows continued interface with the academic community. FY 2017 Plans: Performs activities to develop, manage, and retain the acquisition workforce by providing training on enhanced business and engineering processes that enable the effective management of complex acquisition processes, and allows continued interface with the academic community. FY 2018 Plans:		0.500	0.500	0.500

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
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 2016	FY 2017
Performs activities to develop, manage, and retain the acquisition workforce by providing training on enhanced business and engineering processes that enable the effective management of complex acquisition processes, and allows continued interface with the academic community.			
Title: Civilian Pay Description: This program supports Civilian Full-Time Equivalents (FTEs) to administer Federally Funded Research and Development Center (FFRDC) contracts at the Massachusetts Institute of Technology Lincoln Laboratory (MIT-LL) and the Carnegie Mellon University Software Engineering Institute (CMU-SEI). The FFRDCs enable the Air Force to use private sector resources to accomplish tasks that are integral to Air Force's mission and operation. FY 2017 Plans: This program supports Civilian Full-Time Equivalents (FTEs) to administer Federally Funded Research and Development Center (FFRDC) contracts at the Massachusetts Institute of Technology Lincoln Laboratory (MIT-LL) and the Carnegie Mellon University Software Engineering Institute (CMU-SEI).		-	2.493
Accomplishments/Planned Programs Subtotals		16.358	14.613
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					PE 0804731F I General Skill Training							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	1.268	1.404	1.434	0.000	1.434	1.459	1.486	1.511	1.542	Continuing	Continuing
665297: Technical Training Information Systems	-	1.268	1.404	1.434	0.000	1.434	1.459	1.486	1.511	1.542	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
TECHNICAL TRAINING MANAGEMENT SYSTEM (TTMS): TTMS provides AETC organizations with a world class commercial-off-the-shelf (COTS) / government-off-the-shelf (GOTS) learning management system which supports six functions: course design and development; student evaluation; instructor management; student management; data analysis; and resource administration. TTMS is a centralized web-based system which provides productivity enhancements and higher degree of efficiency to AETC. The primary requirement objectives currently under development are: 1) Integration of Basic Training Management System (BTMS) capabilities and student records into the TTMS.												
This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.												
B. Program Change Summary (\$ in Millions)				FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total				
Previous President's Budget				1.315	1.404	1.430	0.000	1.430				
Current President's Budget				1.268	1.404	1.434	0.000	1.434				
Total Adjustments				-0.047	0.000	0.004	0.000	0.004				
• Congressional General Reductions				0.000	0.000							
• Congressional Directed Reductions				0.000	0.000							
• Congressional Rescissions				0.000	0.000							
• Congressional Adds				0.000	0.000							
• Congressional Directed Transfers				0.000	0.000							
• Reprogrammings				0.000	0.000							
• SBIR/STTR Transfer				0.000	0.000							
• Other Adjustments				-0.047	0.000	0.004	0.000	0.004				
C. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: Technical Training Management System (TTMS)									1.268	1.404	1.434	
Description: Provided TTMS productivity enhancements and higher degree of efficiency to AETC (i.e., Military Training Leader and Basic Training Management System).												

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017	
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>I General Skill Training</i>	
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
<i>FY 2016 Accomplishments:</i> Continued to enhance TTMS productivity focusing on Military Training Leader and Basic Training Management Capabilities.			
<i>FY 2017 Plans:</i> Will continue to enhance TTMS productivity focusing on Military Training Leader and Basic Training Management Capabilities.			
<i>FY 2018 Plans:</i> Will continue to enhance TTMS productivity focusing on Military Training Leader and Basic Training Management Capabilities.			
Accomplishments/Planned Programs Subtotals		1.268	1.404
D. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
E. Acquisition Strategy			
Not applicable			
F. Performance Metrics			
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 1001004F I International Activities							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	2.315	4.784	4.569	0.000	4.569	4.028	4.102	4.173	4.259	Continuing	Continuing
664645: International Cooperative Research & Development	-	2.315	4.784	4.569	0.000	4.569	4.028	4.102	4.173	4.259	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 (+500) air, space, and cyber bilateral and multilateral IAs to solve common US and allied military capability gaps, develop materiel solutions, harmonize requirements, and build interoperability with our international partners. This program element funds the USAF to identify, develop, process, negotiate, conclude, implement, and manage IAs in compliance with statutory provisions, legal authorities, fiscal constraints, technology transfer controls, intellectual property rights, third party transfer provisions, equitability criteria, industrial base factors, and political-military interests. Included in this budget are: air, space, and cyber IAC IAs activities; technology assessments; specialized working groups; Air Senior National Representative (ASNR) activities; IAC program and project reviews; bilateral and multilateral staff talks; Engineering and Scientist Exchange Program (ESEP); and Administrative and Professional Exchange Program (APEP).

This program is in Budget Activity 6, Management and Support, because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation. These funds are not to be used for civilian salaries or the construction of permanent facilities.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		PE 1001004F I International Activities			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	2.315	4.784	4.556	0.000	4.556
Current President's Budget	2.315	4.784	4.569	0.000	4.569
Total Adjustments	0.000	0.000	0.013	0.000	0.013
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.013	0.000	0.013
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018		
Title: Engineer and Scientist Exchange Program/Administrative and Professional Exchange Program (ESEP/APEP)	0.200	0.450	0.450		
Description: Funds the USAF execution and management oversight of ESEP and APEP programs and personnel. Funds eight to ten field level military and civilian personnel from Air Force Materiel Command (AFMC) Facilities, Product Centers, Test Centers, and Logistic Centers for tours at selected allied partner government laboratories and facilities.					
FY 2016 Accomplishments: Will continue USAF execution and management oversight of the ESEP and APEP programs and personnel.					
FY 2017 Plans: Will continue USAF execution and management oversight of the ESEP and APEP programs and personnel.					
FY 2018 Plans: Will continue USAF execution and management oversight of the ESEP and APEP programs and personnel.					
Title: International Partnership Activities	1.540	2.253	2.156		
Description: Funds USAF management, support, and oversight of IAC goals and objectives to build global partnerships in support of national security objectives. Funds USAF participation in NATO forums to promote harmonization and interoperability. Funds USAF support and participation in OSD bi-lateral IAC forums. Funds SAF/IA Australian liaison office. Funds technical assessments and discussions that support technology development activities and interoperability. Funds USAF efforts to enhance existing relationships with: Australia, Canada, Denmark, France, Germany, Israel, Italy, Japan, NATO, Netherlands, Norway, South Korea, Singapore, Spain, Sweden, and UK. Funds USAF efforts to strengthen/build IAC relationships with: Czech					

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
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>I International Activities</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Republic, Hungary, Poland, India, Finland, and Turkey. Funds USAF efforts to establish IAC relationships with: South Africa, Egypt, Brazil, Chile, and Taiwan.</p> <p>FY 2016 Accomplishments: Will continue ongoing management, support, and oversight of IAC goals and objectives to establish, sustain, expand and enhance mutually beneficial partnerships between the US and coalition partners to meet current and emerging global strategic challenges through optimization of interoperability, integration, and interdependence between coalition forces. Continuing efforts will have an enhanced focus on mutually beneficial partnerships within Asia.</p> <p>FY 2017 Plans: Will continue ongoing management, support, and oversight of IAC goals and objectives to establish, sustain, expand and enhance mutually beneficial partnerships between the US and coalition partners to meet current and emerging global strategic challenges through optimization of interoperability, integration, and interdependence between coalition forces. Continuing efforts will have an enhanced focus on mutually beneficial partnerships within Asia.</p> <p>FY 2018 Plans: Will continue ongoing management, support, and oversight of IAC goals and objectives to establish, sustain, expand and enhance mutually beneficial partnerships between the US and coalition partners to meet current and emerging global strategic challenges through optimization of interoperability, integration, and interdependence between coalition forces. Continuing efforts will have an enhanced focus on mutually beneficial partnerships in Asia.</p>				
<p>Title: International Armaments Cooperation (IAC) Agreement Activities</p> <p>Description: Funds the USAF's ability to identify, develop, process, negotiate, conclude, implement, and manage an increasing number of research, development, test, and evaluation (RDT&E) bilateral and multilateral IAC Agreements that meet the goals, objectives, and mission of the USAF and DoD in the Air Domain. IAC activities will meet warfighter needs and enhance interoperability by exploring cooperation with our partners in the areas of: materials and composites, human effectiveness, robotics, nanotechnology, coalition information sharing, biometrics, munitions design, hypersonics, alternative energy, improvised explosive devices (IED) defeat, weapons of mass destruction (WMD) defeat, autonomous control, distributed missions, training systems, lasers, weapon systems, remotely piloted aircraft, armaments interface, intelligence, surveillance and reconnaissance (ISR) capabilities, sustainment, gap analysis, simulators, combined logistics, software updates, mission planning systems, world-wide flight requirements, electronic warfare, safety, aging aircraft, airlift, tankers, trainers, system modifications, directed energy, weapon stores, acquisition, development, co-production, interoperability, maintenance, system development, and upgrades.</p> <p>FY 2016 Accomplishments:</p>		0.300	1.131	1.013

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1001004F <i>I International Activities</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Will continue to identify, develop, process, negotiate, conclude, implement, and manage the increasing number of RDT&E bilateral and multilateral IAs that meet the goals, objectives, and mission of the USAF and DoD in the Air Domain. Negotiations will continue on IAs not concluded during FY15. New Air Domain agreements and amendments will be initiated. FY 2017 Plans: Will continue to identify, develop, process, negotiate, conclude, implement, and manage the increasing number of RDT&E bilateral and multilateral IAs that meet the goals, objectives, and mission of the USAF and DoD in the Air Domain. Negotiations will continue on IAs not concluded during FY16. New Air Domain agreements and amendments will be initiated. FY 2018 Plans: Will continue to identify, develop, process, negotiate, conclude, implement, and manage the increasing number of RDT&E bilateral and multilateral IAs that meet the goals, objectives, and mission of the USAF and DoD in the Air Domain. Negotiations will continue on IAs not concluded during FY17. New Air Domain agreements and amendments will be initiated.				
Title: Air Force Materiel Command (AFMC) Description: Funds AFMC's ability to support IAC RDT&E activities which directly promotes international collaboration. Funds field level technical assessments and discussions that support technology identification and development activities in support of interoperability. FY 2016 Accomplishments: Will continue support of AFMC's ability to identify, assess, and develop new and continuing RDT&E activities which support interoperability and relationship building efforts with our international partners. FY 2017 Plans: Will continue support of AFMC's ability to identify, assess, and develop new and continuing RDT&E activities which support interoperability and relationship building efforts with our international partners. FY 2018 Plans: Will continue support of AFMC's ability to identify, assess, and develop new and continuing RDT&E activities which support interoperability and relationship building efforts with our international partners.		0.075	0.150	0.150
Title: International Space Cooperation Description: Funds the USAF's RDT&E efforts in the area of space cooperation with our international partners. Space cooperation with our allies enables the USAF access to critical geography for distributed ground systems, and remote test ranges for test and evaluation of space capabilities in electronically challenged environments, joint development and acquisition of space systems, and provides a foundation for long-term, full spectrum operational cooperation.		0.100	0.500	0.500

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 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 2016	FY 2017	FY 2018
FY 2016 Accomplishments: Will continue to identify, develop, process, negotiate, conclude, implement, and manage the bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Space Domain. Development and negotiation will continue on IAs not concluded during FY15. New Space Domain agreements and amendments will be initiated.				
FY 2017 Plans: Will continue to identify, develop, process, negotiate, conclude, implement, and manage the bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Space Domain. Development and negotiation will continue on IAs not concluded during FY16. New Space Domain agreements and amendments will be initiated.				
FY 2018 Plans: Will continue to identify, develop, process, negotiate, conclude, implement, and manage the bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Space Domain. Development and negotiation will continue on IAs not concluded during FY17. New Space Domain agreements and amendments will be initiated.				
Title: International Cyberspace Cooperation Description: Funds the USAF's ability to establish cooperative relationships with allies in the Cyberspace Domain to ensure interoperability, sharing of information on threats, and developing new capabilities to defeat threats to our critical information systems. Cyberspace requires significant research and development efforts and responsiveness to avoid technological surprises.		0.100	0.300	0.300
FY 2016 Accomplishments: Will continue to establish relationships and identify, develop, process, negotiate, conclude, implement, and manage bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Cyberspace Domain. Development and negotiation will continue on IAs not concluded during FY15. New Cyberspace Domain agreements and amendments will be initiated.				
FY 2017 Plans: Will continue to establish relationships and identify, develop, process, negotiate, conclude, implement, and manage bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Cyberspace Domain. Development and negotiation will continue on IAs not concluded during FY16. New Cyberspace Domain agreements and amendments will be initiated.				
FY 2018 Plans: Will continue to establish relationships and identify, develop, process, negotiate, conclude, implement, and manage bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Cyberspace Domain.				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1001004F <i>I International Activities</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Development and negotiation will continue on IAs not concluded during FY17. New Cyberspace Domain agreements and amendments will be initiated.				
Accomplishments/Planned Programs Subtotals		2.315	4.784	4.569
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy This program element is the only source of USAF funds to identify, develop, process, negotiate, conclude, implement, and manage IAC opportunities to: (a) acquire, develop, upgrade, sustain, and support common or interoperable equipment with our allies; (b) leverage USAF resources through cost sharing and economies of scale with our partners; (c) exploit the best US and allied technologies for equipping coalition forces; and (d) foster interoperability and commonality with our allies. We obtain these benefits only after IAC opportunities are identified, explored, assessed, developed and IAs are negotiated and concluded. This PE provides funds to execute up-front IAC responsibilities, realize cooperative opportunities, assess allied technologies and generate sound, cost-effective cooperative programs between the USAF and our international partners in the areas of Air, Space and Cyberspace. Once IAs are concluded they are transferred to the appropriate technology or systems program office and are then funded by the program office.				
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 1206116F I Space Test and Training Range Development							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	18.465	22.228	25.773	0.000	25.773	0.000	23.429	20.092	20.441	Continuing	Continuing
666156: Space Test and Training Range Development	-	18.465	22.228	25.773	0.000	25.773	0.000	23.429	20.092	20.441	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0606116F, Space Test and Training Range Development efforts were transferred to PE 1206116F, Space Test and Training Range Development due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206116F.

A. Mission Description and Budget Item Justification

Supports the development of Space Test and Training Range (STTR) capabilities critical for developmental and operational test, training, exercises and tactics development for Space Control systems and Joint National Space Architecture. Includes development, demonstration and delivery of test assets, special test equipment, capabilities and systems required to test, validate, and verify performance of integrated space control systems. Provides a safe, secure, controllable and repeatable environment for the testing and training of Space Control mission systems and operators that is both realistic and relevant. Additionally, this program develops test range assets for both the fixed node Space Range Operation Center (SROC) at Schriever AFB and a deployable capability to support complex Joint and AF exercises. The virtual range as part of the Family of Systems (FoS), called Big Top, is being developed to accomplish the STTR mission. Big Top integrates to a Distributed Mission Architecture, tying into both the Information Operations (IO) and Air ranges for increased realism and complexity required to prepare space operators for real-world threats. This technology will allow for the first-ever use of a realistic signal environment to increase the realism and efficiency of space control squadron training.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 1206116F I Space Test and Training Range Development				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	18.940	18.528	19.317	0.000	19.317	
Current President's Budget	18.465	22.228	25.773	0.000	25.773	
Total Adjustments	-0.475	3.700	6.456	0.000	6.456	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	-0.475	0.000				
• Other Adjustments	0.000	3.700	6.456	0.000	6.456	
Change Summary Explanation						
FY2017: \$3.7M FY2017 RAA increase to support development and delivery of mission specific emulation capabilities to the Counter Communications System (CCS) and Offensive and Defensive Space Control (OCS, DCS) operational units.						
FY2018: \$6.4M increase to fund Multi-Range Integration, integrate STTR into other Air Force Range capabilities.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Range Control				17.547	21.283	25.108
Description: Development and acquisition of mobile, transportable, and fixed range monitoring and communications capabilities for the space range.						
FY 2016 Accomplishments: Finalized test activities for Spiral 1 capability Developmental Testing (DT) and Operational Testing (OT). Continued development and deliveries of advanced live, virtual and constructive environment, closed loop training and advanced software simulation tools.						
FY 2017 Plans: Development and acquisition of mobile, transportable, signal monitoring and communications capabilities. Continue advanced live virtual and constructive environment and closed loop training and advanced software for the Space Test and Training Range.						
FY 2018 Plans: Continue development and acquisition of mobile, transportable, and fixed range monitoring and communications capabilities for the space range. Integrate STTR into other Air Force Range capabilities. Address Risk Management Framework (RMF) compliance, general obsolescence, outdated servers, database overhaul, Windows 10 migration, further hardening of hard drives,						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1206116F <i>I Space Test and Training Range Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
upgraded encryption, and software upgrades. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
Title: Bandwidth Support Description: Provides for leased SATCOM bandwidth for STTR operations. FY 2016 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. Small amounts of Ka bandwidth were utilized at the end of FY 2015 for testing. More extensive testing was accomplished in FY 2016. FY 2017 Plans: Provide required space range satellite communications bandwidth for exercise, testing and training of both offensive and defensive space control systems on the space range. FY 2018 Plans: Provide required space range satellite communications bandwidth for exercises, tests, and training of both offensive and defensive space control systems on the space range.		0.918	0.945	0.665
Accomplishments/Planned Programs Subtotals		18.465	22.228	25.773
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible.				
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 1206392F I Space and Missile Center (SMC) Civilian Workforce							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	169.196	176.666	169.887	0.000	169.887	171.780	174.270	177.600	181.341	Continuing	Continuing
664280: SMC Civilian Pay	-	169.196	176.666	169.887	0.000	169.887	171.780	174.270	177.600	181.341	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0606392F, SMC Civilian Workforce efforts were transferred to PE 1206392F, SMC Civilian Workforce due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206392F.

A. Mission Description and Budget Item Justification

The Space and Missile Systems Center (SMC) equips US and allied forces with operational space and missile systems, launch systems, and command and control infrastructure in support of global military and national security operations. SMC operates with over 6,300 people and an annual budget exceeding \$6.3B 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 1,499 civilian acquisition professionals providing the management, tools, and technical capabilities needed to oversee acquisition programs to include material solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support. This funding does not include costs for base operating support civilian personnel supporting the Los Angeles AFB 61 Air Base Group. Funding SMC civilian payroll from the RDT&E appropriation provides program managers the flexibility to hire additional civilian personnel with program dollars versus additional contractors in concert with Air Force initiatives in response to the Defense Acquisition Workforce Improvement Act. This program element supports both civilian pay and non-pay support requirements.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 1206392F I Space and Missile Center (SMC) Civilian Workforce				
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	176.196	176.666	188.532	0.000	188.532	
Current President's Budget	169.196	176.666	169.887	0.000	169.887	
Total Adjustments	-7.000	0.000	-18.645	0.000	-18.645	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	-7.000	0.000				
• SBIR/STTR Transfer	0.000	0.000				
• Other Adjustments	0.000	0.000	-18.645	0.000	-18.645	
Change Summary Explanation						
FY 2017: \$7.000M reduction for higher Air Force priorities						
FY 2018: \$9.473M transfer to Management Headquarters Activity (MHA) baseline in PE 1206398F; \$12.089M reduction for execution carryover; \$2.917M Fact-of-Life increase						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: SMC Acquisition Workforce				169.196	176.666	169.887
Description: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.						
FY 2016 Accomplishments: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.						
FY 2017 Plans: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.						
Note: Includes 41 acquisition civilian manpower authorizations transferred to this PE.						
FY 2018 Plans: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs. Note: 75 civilian manpower authorizations transferred to PE 1206398F/SMC Management HQ Authorizations.						
Accomplishments/Planned Programs Subtotals				169.196	176.666	169.887

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 1206392F <i>I Space and Missile Center (SMC) Civilian Workforce</i>	
D. Other Program Funding Summary (\$ in Millions) N/A		
Remarks N/A		
E. Acquisition Strategy N/A		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 1206398F I Space & Missile Systems Center - MHA
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	9.531	0.000	9.531	9.702	9.916	10.159	10.412	Continuing	Continuing
664280: SMC Civilian Pay	-	0.000	0.000	9.531	0.000	9.531	9.702	9.916	10.159	10.412	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space and Missile Systems Center (SMC) equips US and allied forces with operational space and missile systems, launch systems, and command and control infrastructure in support of global military and national security operations. SMC operates with over 6,300 people and an annual budget exceeding \$6.3B 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.

Program Element C6398F Space and Missile Systems Center - Major Headquarters Activities (MHA) was established to improve overall performance, strengthen business operations, and achieve efficiencies, effectiveness and cost savings that can be transferred to higher priority needs.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	9.531	0.000	9.531
Total Adjustments	0.000	0.000	9.531	0.000	9.531
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	9.531	0.000	9.531

Change Summary Explanation

FY2018 \$9.476M ZBT from Program C6392F for creation of MHA Baseline (75 Authorizations) at SMC

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force								Date: May 2017			
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 1206398F / <i>Space & Missile Systems Center - MHA</i>						

C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: SMC - Major Headquarters Activities				-	-	9.531
Description: To improve overall performance, strengthen business operations, and achieve efficiencies, effectiveness and cost savings						
FY 2018 Plans: To improve overall performance, strengthen business operations, and achieve efficiencies, effectiveness and cost savings						
Accomplishments/Planned Programs Subtotals				-	-	9.531

D. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>						<u>Cost To</u>
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
E. Acquisition Strategy N/A											
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 1206860F I Rocket Systems Launch Program (SPACE)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	21.245	11.198	20.975	0.000	20.975	0.000	19.869	17.825	18.135	Continuing	Continuing
661023: Rocket System Launch Program (RSLP)	-	21.245	11.198	20.975	0.000	20.975	0.000	19.869	17.825	18.135	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0605860F, Rocket Systems Launch Program efforts were transferred to PE 1206860F, Rocket Systems Launch Program due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206860F.

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, aging surveillance, 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.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 1206860F I Rocket Systems Launch Program (SPACE)				
B. Program Change Summary (\$ in Millions)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget		21.792	11.198	20.914	0.000	20.914
Current President's Budget		21.245	11.198	20.975	0.000	20.975
Total Adjustments		-0.547	0.000	0.061	0.000	0.061
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		-0.547	0.000			
• Other Adjustments		0.000	0.000	0.061	0.000	0.061
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Storage/Refurbishment/Demil				16.901	6.947	16.160
Description: Storage, refurbishment, inventory control, and demil/disposal of deactivated Minuteman, Peacekeeper and other missile flight test assets						
FY 2016 Accomplishments: Continued storage, refurbishment, inventory control, and demil/disposal of deactivated Minuteman, Peacekeeper and other missile flight test assets and performed research and development support operations as required. Investigated and developed shipping throughput capacity to maximize opportunity for motor disposal. Continued support activities such as, but not limited to sustainment and refurbishment of support equipment, mission support, special studies, etc.						
FY 2017 Plans: Continue storage, refurbishment, inventory control, and demil/disposal of deactivated Minuteman, Peacekeeper and other missile flight test assets and perform research and development support operations as required. Investigate and develop shipping throughput capacity to maximize opportunity for motor disposal. Continue support activities such as, but not limited to sustainment and refurbishment of support equipment, mission support, special studies, etc.						
FY 2018 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,						

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1206860F <i>I Rocket Systems Launch Program (SPACE)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
replacement and refurbishment of support equipment, mission support, special studies, etc. Initiate support to extend certification period of refurbished motors.				
Title: Aging Surveillance Description: Perform aging surveillance-related activities on stored motors FY 2016 Accomplishments: Continued performing aging surveillance-related activities on stored motors; continued performing analyses/studies to identify and evaluate potential safety-related issues affecting stored motors; continued program office support and related support activities such as, but not limited to mission support, special studies, etc. FY 2017 Plans: Continue performing aging surveillance-related activities on stored motors; continue performing analyses/studies to identify and evaluate potential safety-related issues affecting stored motors; continue program office support and related support activities such as, but not limited to mission support, special studies, etc. FY 2018 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.		4.049	4.251	4.215
Title: Other Launch Support Services Description: Perform launch services activities FY 2016 Accomplishments: Completed SR19 requalification effort. Awarded the PolarCube cubesat launch to Spaceflight, Inc. as a rideshare to be launched within 24 months. PolarCube is an experimental cubesat sponsored by the AF Research Lab, to demonstrate the collection of temperature profiles through clouds. FY 2017 Plans: Defer launch vehicle acquisition, processing, launch services support, mission assurance, and operations to launch RDT&E payloads. FY 2018 Plans:		0.295	0.000	0.600

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1206860F <i>I Rocket Systems Launch Program (SPACE)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Continue launch vehicle acquisition, processing, launch services support, mission assurance, and operations to launch RDT&E payloads.				
Accomplishments/Planned Programs Subtotals		21.245	11.198	20.975
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 1206864F I Space Test Program (STP)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	28.143	27.070	25.398	0.000	25.398	25.812	26.293	26.750	27.299	Continuing	Continuing
662617: Free-Flyer Spacecraft Missions	-	28.143	27.070	25.398	0.000	25.398	25.812	26.293	26.750	27.299	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018, PE 0605864F, Space Test Program (STP) efforts were transferred to PE 1206864F, Space Test Program (STP) due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206864F.

A. Mission Description and Budget Item Justification

The Space Test Program (STP) conducts space test missions for the purpose of accelerating DoD space technology transformation while lowering developmental risk. The program flies an optimally selected number of DoD-sponsored experiments consistent with Space Experiments Review Board (SERB) priority, opportunity, and funding. STP missions provide a cost-effective way to flight test new militarily relevant space system technologies, concepts, and designs, providing a way to:

- Support the acquisition block development approach
- Demonstrate and develop responsive research and development (R&D) space capabilities
- Provide early operational capabilities to quickly react to new developments
- Perform operational risk reduction through direct flight test of prototype components
- Improve operational design by characterizing the space environment, event, or sensor physics proposed for an operational system/system upgrade
- Develop, integrate, test, and acquire advanced payload support hardware for launch vehicles (LV) and human-rated spaceflight vehicles

The Deputy Secretary of Defense Space Test Program Management & Funding Policy, issued in July 2002, reaffirmed STP as the primary provider of spaceflight for the DoD space research community. The July 2002 policy statement also reaffirmed STP's role as the single manager for all DoD payloads on the International Space Station (ISS).

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force				Date: May 2017	
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 1206864F I Space Test Program (STP)			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	28.143	27.070	25.325	0.000	25.325
Current President's Budget	28.143	27.070	25.398	0.000	25.398
Total Adjustments	0.000	0.000	0.073	0.000	0.073
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.073	0.000	0.073
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017
Title: Payload Integration				18.170	18.051
Description: Integrate payloads onto spaceflight missions, including free-flyer payloads, hosted payloads, sounding rockets, experiments on the International Space Station, and commercial missions. Includes acquisition of associated spacecraft and integration hardware.					
FY 2016 Accomplishments: Continued support to the STP-2 launch mission carrying 16 SERB experiments. Continued the integration of the Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE) Spacecraft Platform to host five SERB experiments from the Air Force Research Laboratory (AFRL) requiring flight to geo-synchronous orbit (GEO). Continued development of STP Satellite #4 (STPSat-4) to host five SERB payloads for launch and deployment from the ISS in 2017. Continued development of STP Satellite #5 (STPSat-5) to host four SERB payloads for a polar orbit launch in 2017. Completed integration of the STP-Houston 5 (H5) experiment payload pallet for flight on the ISS, hosting six SERB experiments. Continued the design of STPSat-6, which hosts seven SERB payloads, and will serve as the prime payload for the STP-3 medium launch mission to GEO. Continued payload integration on to STP-Houston 6 (H6) hosting six SERB experiments. Provided the unique program costs required for the operation of the Space Test Program (STP) in its management and oversight role, including program management, administrative, information technology, travel and supply support.					
FY 2017 Plans:					

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force		Date: May 2017		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1206864F / <i>Space Test Program (STP)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Continue payload integration efforts onto spaceflight missions (STPSat-4 and STPSat-5). Complete the design of STPSat-6 and begin the acquisition and integration of STPSat-6, and STP-H6. Continue to provide the unique program costs required for the operation of the STP in its management and oversight role including program management, administrative, information technology, travel and supply support. FY 2018 Plans: Continue payload integration on to STPSat-6, STP-H6, and other efforts onto spaceflight missions. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
Title: Launch Vehicle and Launch Services 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. FY 2016 Accomplishments: Continued integration efforts for the Kestrel Eye II spacecraft for a commercial launch/deployment via NASA's NanoRacks contract. Coordinated support from AFSPC for the next medium launch mission, STP-3, as a direct inject to GEO launch. FY 2017 Plans: Continue purchase of launch services for STPSat-5, launch vehicles, and launch vehicle support for free-flyer payloads, hosted payloads, sounding rockets, experiments on the ISS, and commercial spaceflight missions. Launch STP-2 medium launch mission, launch STP-H5 to ISS, and launch Kestrel Eye II from ISS. FY 2018 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. Plan to launch STPSat-5, EAGLE on the AFSPC-11, and additional payloads to the ISS in FY18.		8.261	5.745	4.161
Title: On Orbit Satellite Operations Description: Execute first-year operations and operations support for STP-sponsored missions. FY 2016 Accomplishments: Continued operations support for STP-sponsored missions, including operations for the STP Satellite #3 (STPSat-3), which hosted six experimental payloads. FY 2017 Plans:		1.712	3.274	3.882

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force							Date: May 2017				
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>				R-1 Program Element (Number/Name) PE 1206864F / <i>Space Test Program (STP)</i>							
C. Accomplishments/Planned Programs (\$ in Millions)							FY 2016	FY 2017	FY 2018		
Complete forecasted launch and early-orbit checkout of the Demonstration and Science Experiment (DSX) and NASA's Green Propellant Infusion Mission (GPIM) carrying SERB experiments on STP-2.											
FY 2018 Plans: Continue support of forecasted launch and early orbit checkout of the DSX mission on STP-2. Continue first-year operations and/or operations support for STP-sponsored missions, DSX and GPIM.											
Accomplishments/Planned Programs Subtotals											28.143
D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											
E. Acquisition Strategy 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.											