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**Department of Defense
Fiscal Year (FY) 2019 Budget Estimates**

February 2018



Air Force

Justification Book Volume 3b of 3

Research, Development, Test & Evaluation, Air Force

Vol-III Part 2

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Air Force • Budget Estimates FY 2019 • RDT&E Program

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Department of Defense
 FY 2019 President's Budget
 Exhibit R-1 FY 2019 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

01 Feb 2018

Appropriation	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO
Research, Development, Test & Eval, AF	28,381,681	27,577,477	27,577,477	365,205	365,205
Total Research, Development, Test & Evaluation	28,381,681	27,577,477	27,577,477	365,205	365,205

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Department of Defense
 FY 2019 President's Budget
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 Total Obligational Authority
 (Dollars in Thousands)

01 Feb 2018

Appropriation	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	
	Emergency Requests**	Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	Total PB Requests* with CR Adj Base + OCO + Emergency**	Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	Remaining Req with CR Adj Base + OCO + Emergency
Research, Development, Test & Eval, AF	255,744	-255,744		28,198,426	-255,744	27,942,682
Total Research, Development, Test & Evaluation	255,744	-255,744		28,198,426	-255,744	27,942,682

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Department of Defense
FY 2019 President's Budget
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(Dollars in Thousands)

01 Feb 2018

Appropriation -----	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Research, Development, Test & Eval, AF	39,892,149	600,465	40,492,614
Total Research, Development, Test & Evaluation	39,892,149	600,465	40,492,614

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Department of Defense
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 (Dollars in Thousands)

01 Feb 2018

Summary Recap of Budget Activities	FY 2017	FY 2018	FY 2018	FY 2018	FY 2018
	(Base + OCO)	PB Request with CR Adj Base	Total PB Requests* with CR Adj Base	PB Request with CR Adj OCO	Total PB Requests+ with CR Adj OCO
Basic Research	521,594	505,259	505,259		
Applied Research	1,314,271	1,284,114	1,284,114		
Advanced Technology Development	792,497	794,017	794,017		
Advanced Component Development & Prototypes	2,822,781	4,605,030	4,605,030	13,200	13,200
System Development & Demonstration	3,983,019	4,476,762	4,476,762		
Management Support	1,690,840	2,663,875	2,663,875		
Operational Systems Development	17,256,679	20,585,302	20,585,302	122,158	122,158
Undistributed		-7,336,882	-7,336,882	229,847	229,847
Total Research, Development, Test & Evaluation	28,381,681	27,577,477	27,577,477	365,205	365,205

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01 Feb 2018

Summary Recap of Budget Activities	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018
	Emergency Requests**	Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	Total PB Requests* with CR Adj Base + OCO + Emergency**	Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs
Basic Research				505,259	505,259
Applied Research				1,284,114	1,284,114
Advanced Technology Development				794,017	794,017
Advanced Component Development & Prototypes	90,500	-90,500		4,708,730	-90,500 4,618,230
System Development & Demonstration				4,476,762	4,476,762
Management Support				2,663,875	2,663,875
Operational Systems Development	165,244	-165,244		20,872,704	-165,244 20,707,460
Undistributed				-7,107,035	-7,107,035
Total Research, Development, Test & Evaluation	255,744	-255,744		28,198,426	-255,744 27,942,682

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Total Obligational Authority
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01 Feb 2018

Summary Recap of Budget Activities -----	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Basic Research	517,819		517,819
Applied Research	1,312,342		1,312,342
Advanced Technology Development	814,797		814,797
Advanced Component Development & Prototypes	6,529,943	13,495	6,543,438
System Development & Demonstration	5,272,191		5,272,191
Management Support	2,839,511		2,839,511
Operational Systems Development	22,605,546	586,970	23,192,516
Undistributed			
Total Research, Development, Test & Evaluation	39,892,149	600,465	40,492,614

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	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO
Summary Recap of FYDP Programs					
Strategic Forces	658,404	825,038	825,038		
General Purpose Forces	2,060,061	2,962,365	2,962,365	9,750	9,750
Intelligence and Communications	2,048,032	1,466,925	1,466,925	5,400	5,400
Mobility Forces	476,577	602,629	602,629		
Research and Development	10,034,179	10,713,989	10,713,989	7,800	7,800
Central Supply and Maintenance	93,625	109,419	109,419		
Training Medical and Other	3,251	3,615	3,615		
Administration and Associated Activities	31,237	-7,214,983	-7,214,983	229,847	229,847
Support of Other Nations	4,626	4,569	4,569		
Space		3,165,909	3,165,909		
Classified Programs	12,971,689	14,938,002	14,938,002	112,408	112,408
Total Research, Development, Test & Evaluation	28,381,681	27,577,477	27,577,477	365,205	365,205

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Department of Defense
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01 Feb 2018

	FY 2018 Emergency Requests** Emergency	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency
Summary Recap of FYDP Programs						
Strategic Forces				825,038		825,038
General Purpose Forces				2,972,115		2,972,115
Intelligence and Communications	90,500	-90,500		1,562,825	-90,500	1,472,325
Mobility Forces				602,629		602,629
Research and Development				10,721,789		10,721,789
Central Supply and Maintenance				109,419		109,419
Training Medical and Other				3,615		3,615
Administration and Associated Activities				-6,985,136		-6,985,136
Support of Other Nations				4,569		4,569
Space				3,165,909		3,165,909
Classified Programs	165,244	-165,244		15,215,654	-165,244	15,050,410
Total Research, Development, Test & Evaluation	255,744	-255,744		28,198,426	-255,744	27,942,682

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 (Dollars in Thousands)

01 Feb 2018

	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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Summary Recap of FYDP Programs			

Strategic Forces	1,064,875		1,064,875
General Purpose Forces	3,287,655	53,049	3,340,704
Intelligence and Communications	1,394,674	54,600	1,449,274
Mobility Forces	916,041		916,041
Research and Development	12,027,571		12,027,571
Central Supply and Maintenance	97,134		97,134
Training Medical and Other	3,578		3,578
Administration and Associated Activities	130,882		130,882
Support of Other Nations	3,998		3,998
Space	4,717,811	18,495	4,736,306
Classified Programs	16,247,930	474,321	16,722,251
Total Research, Development, Test & Evaluation	39,892,149	600,465	40,492,614

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Summary Recap of Budget Activities	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO
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Undistributed		-7,336,882	-7,336,882	229,847	229,847
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Summary Recap of Budget Activities	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	
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01 Feb 2018

	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO

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Summary Recap of FYDP Programs					

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General Purpose Forces	2,060,061	2,962,365	2,962,365	9,750	9,750
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Mobility Forces	476,577	602,629	602,629		
Research and Development	10,034,179	10,713,989	10,713,989	7,800	7,800
Central Supply and Maintenance	93,625	109,419	109,419		
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01 Feb 2018

	FY 2018 Emergency Requests**	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency
Summary Recap of Budget Activities						

Summary Recap of FYDP Programs						

Strategic Forces				825,038		825,038
General Purpose Forces				2,972,115		2,972,115
Intelligence and Communications	90,500	-90,500		1,562,825	-90,500	1,472,325
Mobility Forces				602,629		602,629
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Classified Programs	165,244	-165,244		15,215,654	-165,244	15,050,410
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Total Obligational Authority
(Dollars in Thousands)

01 Feb 2018

Summary Recap of Budget Activities	FY 2019 Base	FY 2019 OCO	FY 2019 Total

Summary Recap of FYDP Programs			

Strategic Forces	1,064,875		1,064,875
General Purpose Forces	3,287,655	53,049	3,340,704
Intelligence and Communications	1,394,674	54,600	1,449,274
Mobility Forces	916,041		916,041
Research and Development	12,027,571		12,027,571
Central Supply and Maintenance	97,134		97,134
Training Medical and Other	3,578		3,578
Administration and Associated Activities	130,882		130,882
Support of Other Nations	3,998		3,998
Space	4,717,811	18,495	4,736,306
Classified Programs	16,247,930	474,321	16,722,251
Total Research, Development, Test & Evaluation	39,892,149	600,465	40,492,614

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Department of the Air Force
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 (Dollars in Thousands)

01 Feb 2018

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

Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests* with CR Adj OCO	S e c
1	0601102F	Defense Research Sciences	01	370,595	342,919	342,919			U
2	0601103F	University Research Initiatives	01	137,775	147,923	147,923			U
3	0601108F	High Energy Laser Research Initiatives	01	13,224	14,417	14,417			U
		Basic Research		521,594	505,259	505,259			
4	0602102F	Materials	02	158,243	124,264	124,264			U
5	0602201F	Aerospace Vehicle Technologies	02	130,923	124,678	124,678			U
6	0602202F	Human Effectiveness Applied Research	02	110,012	108,784	108,784			U
7	0602203F	Aerospace Propulsion	02	192,583	192,695	192,695			U
8	0602204F	Aerospace Sensors	02	160,339	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	119,670	116,503	116,503			U
11	0602602F	Conventional Munitions	02	110,074	112,195	112,195			U
12	0602605F	Directed Energy Technology	02	127,365	132,993	132,993			U
13	0602788F	Dominant Information Sciences and Methods	02	165,517	167,818	167,818			U
14	0602890F	High Energy Laser Research	02	39,545	43,049	43,049			U
15	1206601F	Space Technology	02						U
		Applied Research		1,314,271	1,284,114	1,284,114			

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16 0603112F	Advanced Materials for Weapon Systems	03	54,095	37,856	37,856	U
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01 Feb 2018

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

Line No	Program Element Number	Item	Act	FY 2018 Emergency Requests**	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency	S
1	0601102F	Defense Research Sciences	01				342,919		342,919	U
2	0601103F	University Research Initiatives	01				147,923		147,923	U
3	0601108F	High Energy Laser Research Initiatives	01				14,417		14,417	U
		Basic Research					505,259		505,259	
4	0602102F	Materials	02				124,264		124,264	U
5	0602201F	Aerospace Vehicle Technologies	02				124,678		124,678	U
6	0602202F	Human Effectiveness Applied Research	02				108,784		108,784	U
7	0602203F	Aerospace Propulsion	02				192,695		192,695	U
8	0602204F	Aerospace Sensors	02				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				116,503		116,503	U
11	0602602F	Conventional Munitions	02				112,195		112,195	U
12	0602605F	Directed Energy Technology	02				132,993		132,993	U
13	0602788F	Dominant Information Sciences and Methods	02				167,818		167,818	U
14	0602890F	High Energy Laser Research	02				43,049		43,049	U
15	1206601F	Space Technology	02							U
		Applied Research					1,284,114		1,284,114	

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16 0603112F Advanced Materials for Weapon 03
Systems

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01 Feb 2018

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

Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
1	0601102F	Defense Research Sciences	01	348,322		348,322	U
2	0601103F	University Research Initiatives	01	154,991		154,991	U
3	0601108F	High Energy Laser Research Initiatives	01	14,506		14,506	U
		Basic Research		517,819		517,819	
4	0602102F	Materials	02	125,373		125,373	U
5	0602201F	Aerospace Vehicle Technologies	02	130,547		130,547	U
6	0602202F	Human Effectiveness Applied Research	02	112,518		112,518	U
7	0602203F	Aerospace Propulsion	02	190,919		190,919	U
8	0602204F	Aerospace Sensors	02	166,534		166,534	U
9	0602298F	Science and Technology Management - Major Headquarters Activities	02	8,288		8,288	U
10	0602601F	Space Technology	02				U
11	0602602F	Conventional Munitions	02	112,841		112,841	U
12	0602605F	Directed Energy Technology	02	141,898		141,898	U
13	0602788F	Dominant Information Sciences and Methods	02	162,420		162,420	U
14	0602890F	High Energy Laser Research	02	43,359		43,359	U
15	1206601F	Space Technology	02	117,645		117,645	U
		Applied Research		1,312,342		1,312,342	

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16 0603112F	Advanced Materials for Weapon Systems	03	34,426	34,426	U
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Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
17	0603199F	Sustainment Science and Technology (S&T)	03	19,994	22,811	22,811			U
18	0603203F	Advanced Aerospace Sensors	03	39,854	40,978	40,978			U
19	0603211F	Aerospace Technology Dev/Demo	03	128,358	115,966	115,966			U
20	0603216F	Aerospace Propulsion and Power Technology	03	104,695	104,499	104,499			U
21	0603270F	Electronic Combat Technology	03	64,591	60,551	60,551			U
22	0603401F	Advanced Spacecraft Technology	03	69,338	58,910	58,910			U
23	0603444F	Maui Space Surveillance System (MSSS)	03	11,493	10,433	10,433			U
24	0603456F	Human Effectiveness Advanced Technology Development	03	25,784	33,635	33,635			U
25	0603601F	Conventional Weapons Technology	03	105,487	167,415	167,415			U
26	0603605F	Advanced Weapons Technology	03	47,358	45,502	45,502			U
27	0603680F	Manufacturing Technology Program	03	62,272	46,450	46,450			U
28	0603788F	Battlespace Knowledge Development and Demonstration	03	52,274	49,011	49,011			U
29	0303467F	SENSR Spectrum Pipeline SRF	03	6,904					U
		Advanced Technology Development		792,497	794,017	794,017			
30	0603260F	Intelligence Advanced Development	04	5,598	5,652	5,652			U
31	0603438F	Space Control Technology	04	8,506			7,800	7,800	U

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32 0603742F	Combat Identification Technology	04	23,551	24,397	24,397	U
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17	0603199F	Sustainment Science and Technology (S&T)	03				22,811		22,811	U
18	0603203F	Advanced Aerospace Sensors	03				40,978		40,978	U
19	0603211F	Aerospace Technology Dev/Demo	03				115,966		115,966	U
20	0603216F	Aerospace Propulsion and Power Technology	03				104,499		104,499	U
21	0603270F	Electronic Combat Technology	03				60,551		60,551	U
22	0603401F	Advanced Spacecraft Technology	03				58,910		58,910	U
23	0603444F	Maui Space Surveillance System (MSSS)	03				10,433		10,433	U
24	0603456F	Human Effectiveness Advanced Technology Development	03				33,635		33,635	U
25	0603601F	Conventional Weapons Technology	03				167,415		167,415	U
26	0603605F	Advanced Weapons Technology	03				45,502		45,502	U
27	0603680F	Manufacturing Technology Program	03				46,450		46,450	U
28	0603788F	Battlespace Knowledge Development and Demonstration	03				49,011		49,011	U
29	0303467F	SENSR Spectrum Pipeline SRF	03							U
		Advanced Technology Development					794,017		794,017	
30	0603260F	Intelligence Advanced Development	04				5,652		5,652	U
31	0603438F	Space Control Technology	04				7,800		7,800	U

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32 0603742F Combat Identification Technology 04

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
17	0603199F	Sustainment Science and Technology (S&T)	03	15,150		15,150	U
18	0603203F	Advanced Aerospace Sensors	03	39,968		39,968	U
19	0603211F	Aerospace Technology Dev/Demo	03	121,002		121,002	U
20	0603216F	Aerospace Propulsion and Power Technology	03	115,462		115,462	U
21	0603270F	Electronic Combat Technology	03	55,319		55,319	U
22	0603401F	Advanced Spacecraft Technology	03	54,895		54,895	U
23	0603444F	Maui Space Surveillance System (MSSS)	03	10,674		10,674	U
24	0603456F	Human Effectiveness Advanced Technology Development	03	36,463		36,463	U
25	0603601F	Conventional Weapons Technology	03	194,981		194,981	U
26	0603605F	Advanced Weapons Technology	03	43,368		43,368	U
27	0603680F	Manufacturing Technology Program	03	42,025		42,025	U
28	0603788F	Battlespace Knowledge Development and Demonstration	03	51,064		51,064	U
29	0303467F	SENSR Spectrum Pipeline SRF	03				U
		Advanced Technology Development		814,797		814,797	
30	0603260F	Intelligence Advanced Development	04	5,568		5,568	U
31	0603438F	Space Control Technology	04				U

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32 0603742F Combat Identification Technology 04 18,194 18,194 U

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33	0603790F	NATO Research and Development	04	4,174	3,851	3,851			U
34	0603830F	Space Security and Defense Program	04	32,399					U
35	0603851F	Intercontinental Ballistic Missile - Dem/Val	04	99,949	10,736	10,736			U
36	0603859F	Pollution Prevention - Dem/Val	04	3,500	2	2			U
37	0604015F	Long Range Strike - Bomber	04	1,290,307	2,003,580	2,003,580			U
38	0604201F	Integrated Avionics Planning and Development	04		65,458	65,458			U
39	0604257F	Advanced Technology and Sensors	04	34,818	68,719	68,719			U
40	0604288F	National Airborne Ops Center (NAOC) Recap	04		7,850	7,850			U
41	0604317F	Technology Transfer	04	8,080	3,295	3,295			U
42	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program	04	52,706	17,365	17,365			U
43	0604414F	Cyber Resiliency of Weapon Systems-ACS	04		32,253	32,253			U
44	0604422F	Weather System Follow-on	04	82,506					U
45	0604425F	Space Situation Awareness Systems	04	9,901					U
46	0604776F	Deployment & Distribution Enterprise R&D	04	25,890	26,222	26,222			U
47	0604857F	Operationally Responsive Space	04	17,976					U

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48	0604858F	Tech Transition Program	04	378,126	840,650	840,650	U
49	0605230F	Ground Based Strategic Deterrent	04	109,260	215,721	215,721	U

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33	0603790F	NATO Research and Development	04				3,851		3,851	U
34	0603830F	Space Security and Defense Program	04							U
35	0603851F	Intercontinental Ballistic Missile - Dem/Val	04				10,736		10,736	U
36	0603859F	Pollution Prevention - Dem/Val	04				2		2	U
37	0604015F	Long Range Strike - Bomber	04				2,003,580		2,003,580	U
38	0604201F	Integrated Avionics Planning and Development	04				65,458		65,458	U
39	0604257F	Advanced Technology and Sensors	04				68,719		68,719	U
40	0604288F	National Airborne Ops Center (NAOC) Recap	04				7,850		7,850	U
41	0604317F	Technology Transfer	04				3,295		3,295	U
42	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program	04				17,365		17,365	U
43	0604414F	Cyber Resiliency of Weapon Systems-ACS	04				32,253		32,253	U
44	0604422F	Weather System Follow-on	04							U
45	0604425F	Space Situation Awareness Systems	04							U
46	0604776F	Deployment & Distribution Enterprise R&D	04				26,222		26,222	U
47	0604857F	Operationally Responsive Space	04							U

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48 0604858F	Tech Transition Program	04	840,650	840,650 U
49 0605230F	Ground Based Strategic Deterrent	04	215,721	215,721 U

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33	0603790F	NATO Research and Development	04	2,305		2,305	U
34	0603830F	Space Security and Defense Program	04				U
35	0603851F	Intercontinental Ballistic Missile - Dem/Val	04	41,856		41,856	U
36	0603859F	Pollution Prevention - Dem/Val	04				U
37	0604015F	Long Range Strike - Bomber	04	2,314,196		2,314,196	U
38	0604201F	Integrated Avionics Planning and Development	04	14,894		14,894	U
39	0604257F	Advanced Technology and Sensors	04	34,585		34,585	U
40	0604288F	National Airborne Ops Center (NAOC) Recap	04	9,740		9,740	U
41	0604317F	Technology Transfer	04	12,960		12,960	U
42	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program	04	71,501		71,501	U
43	0604414F	Cyber Resiliency of Weapon Systems-ACS	04	62,618		62,618	U
44	0604422F	Weather System Follow-on	04				U
45	0604425F	Space Situation Awareness Systems	04				U
46	0604776F	Deployment & Distribution Enterprise R&D	04	28,350		28,350	U
47	0604857F	Operationally Responsive Space	04				U

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48	0604858F	Tech Transition Program	04	1,186,075	1,186,075	U
49	0605230F	Ground Based Strategic Deterrent	04	345,041	345,041	U

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50	0207110F	Next Generation Air Dominance	04	22,272	294,746	294,746			U
51	0207455F	Three Dimensional Long-Range Radar (3DELRR)	04	47,166	10,645	10,645			U
52	0208099F	Unified Platform (UP)	04						U
53	0305164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04	297,975					U
54	0305236F	Common Data Link Executive Agent (CDL EA)	04	40,293	41,509	41,509			U
55	0305601F	Mission Partner Environments	04						U
56	0306250F	Cyber Operations Technology Development	04	205,048	226,287	226,287	5,400	5,400	U
57	0306415F	Enabled Cyber Activities	04	15,842	16,687	16,687			U
58	0408011F	Special Tactics / Combat Control	04		4,500	4,500			U
59	0901410F	Contracting Information Technology System	04	6,938	15,867	15,867			U
60	1203164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04		253,939	253,939			U
61	1203710F	EO/IR Weather Systems	04		10,000	10,000			U
62	1206422F	Weather System Follow-on	04		112,088	112,088			U
63	1206425F	Space Situation Awareness Systems	04		34,764	34,764			U
64	1206434F	Midterm Polar MILSATCOM System	04		63,092	63,092			U

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65	1206438F	Space Control Technology	04	7,842	7,842	U
66	1206730F	Space Security and Defense Program	04	41,385	41,385	U

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50	0207110F	Next Generation Air Dominance	04				294,746		294,746	U
51	0207455F	Three Dimensional Long-Range Radar (3DELRR)	04				10,645		10,645	U
52	0208099F	Unified Platform (UP)	04							U
53	0305164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04							U
54	0305236F	Common Data Link Executive Agent (CDL EA)	04				41,509		41,509	U
55	0305601F	Mission Partner Environments	04							U
56	0306250F	Cyber Operations Technology Development	04	90,500	-90,500		322,187	-90,500	231,687	U
57	0306415F	Enabled Cyber Activities	04				16,687		16,687	U
58	0408011F	Special Tactics / Combat Control	04				4,500		4,500	U
59	0901410F	Contracting Information Technology System	04				15,867		15,867	U
60	1203164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04				253,939		253,939	U
61	1203710F	EO/IR Weather Systems	04				10,000		10,000	U
62	1206422F	Weather System Follow-on	04				112,088		112,088	U
63	1206425F	Space Situation Awareness Systems	04				34,764		34,764	U
64	1206434F	Midterm Polar MILSATCOM System	04				63,092		63,092	U

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65 1206438F	Space Control Technology	04	7,842	7,842 U
66 1206730F	Space Security and Defense Program	04	41,385	41,385 U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
50	0207110F	Next Generation Air Dominance	04	503,997		503,997	U
51	0207455F	Three Dimensional Long-Range Radar (3DELRR)	04	40,326		40,326	U
52	0208099F	Unified Platform (UP)	04	29,800		29,800	U
53	0305164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04				U
54	0305236F	Common Data Link Executive Agent (CDL EA)	04	41,880		41,880	U
55	0305601F	Mission Partner Environments	04	10,074		10,074	U
56	0306250F	Cyber Operations Technology Development	04	253,825		253,825	U
57	0306415F	Enabled Cyber Activities	04	16,325		16,325	U
58	0408011F	Special Tactics / Combat Control	04				U
59	0901410F	Contracting Information Technology System	04	17,577		17,577	U
60	1203164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04	286,629		286,629	U
61	1203710F	EO/IR Weather Systems	04	7,940		7,940	U
62	1206422F	Weather System Follow-on	04	138,052		138,052	U
63	1206425F	Space Situation Awareness Systems	04	39,338		39,338	U
64	1206434F	Midterm Polar MILSATCOM System	04	383,113		383,113	U

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65 1206438F	Space Control Technology	04	91,018	1,100	92,118	U
66 1206730F	Space Security and Defense Program	04	45,542		45,542	U

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67	1206760F	Protected Tactical Enterprise Service (PTES)	04		18,150	18,150			U
68	1206761F	Protected Tactical Service (PTS)	04		24,201	24,201			U
69	1206855F	Protected SATCOM Services (PSCS) - Aggregated	04		16,000	16,000			U
70	1206857F	Operationally Responsive Space	04		87,577	87,577			U
		Advanced Component Development & Prototypes		2,822,781	4,605,030	4,605,030	13,200	13,200	
71	0604200F	Future Advanced Weapon Analysis & Programs	05		5,100	5,100			U
72	0604201F	Integrated Avionics Planning and Development	05		101,203	101,203			U
73	0604222F	Nuclear Weapons Support	05		3,009	3,009			U
74	0604270F	Electronic Warfare Development	05	4,986	2,241	2,241			U
75	0604281F	Tactical Data Networks Enterprise	05	78,167	38,250	38,250			U
76	0604287F	Physical Security Equipment	05	63,101	19,739	19,739			U
77	0604329F	Small Diameter Bomb (SDB) - EMD	05	37,603	38,979	38,979			U
78	0604421F	Counterspace Systems	05	32,618					U
79	0604425F	Space Situation Awareness Systems	05	25,540					U
80	0604426F	Space Fence	05	162,510					U
81	0604429F	Airborne Electronic Attack	05	8,589	7,091	7,091			U

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82 0604441F Space Based Infrared System (SBIRS) 05 161,966
High EMD

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67	1206760F	Protected Tactical Enterprise Service (PTES)	04				18,150		18,150	U
68	1206761F	Protected Tactical Service (PTS)	04				24,201		24,201	U
69	1206855F	Protected SATCOM Services (PSCS) - Aggregated	04				16,000		16,000	U
70	1206857F	Operationally Responsive Space	04				87,577		87,577	U
	Advanced Component Development & Prototypes			90,500	-90,500		4,708,730	-90,500	4,618,230	
71	0604200F	Future Advanced Weapon Analysis & Programs	05				5,100		5,100	U
72	0604201F	Integrated Avionics Planning and Development	05				101,203		101,203	U
73	0604222F	Nuclear Weapons Support	05				3,009		3,009	U
74	0604270F	Electronic Warfare Development	05				2,241		2,241	U
75	0604281F	Tactical Data Networks Enterprise	05				38,250		38,250	U
76	0604287F	Physical Security Equipment	05				19,739		19,739	U
77	0604329F	Small Diameter Bomb (SDB) - EMD	05				38,979		38,979	U
78	0604421F	Counterspace Systems	05							U
79	0604425F	Space Situation Awareness Systems	05							U
80	0604426F	Space Fence	05							U
81	0604429F	Airborne Electronic Attack	05				7,091		7,091	U

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82 0604441F Space Based Infrared System (SBIRS) 05
High EMD

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
67	1206760F	Protected Tactical Enterprise Service (PTES)	04	51,419		51,419	U
68	1206761F	Protected Tactical Service (PTS)	04	29,776		29,776	U
69	1206855F	Protected SATCOM Services (PSCS) - Aggregated	04	29,379		29,379	U
70	1206857F	Operationally Responsive Space	04	366,050	12,395	378,445	U
		Advanced Component Development & Prototypes		6,529,943	13,495	6,543,438	
71	0604200F	Future Advanced Weapon Analysis & Programs	05	39,602		39,602	U
72	0604201F	Integrated Avionics Planning and Development	05	58,531		58,531	U
73	0604222F	Nuclear Weapons Support	05	4,468		4,468	U
74	0604270F	Electronic Warfare Development	05	1,909		1,909	U
75	0604281F	Tactical Data Networks Enterprise	05	207,746		207,746	U
76	0604287F	Physical Security Equipment	05	14,421		14,421	U
77	0604329F	Small Diameter Bomb (SDB) - EMD	05	73,158		73,158	U
78	0604421F	Counterspace Systems	05				U
79	0604425F	Space Situation Awareness Systems	05				U
80	0604426F	Space Fence	05				U
81	0604429F	Airborne Electronic Attack	05	7,153		7,153	U

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82 0604441F Space Based Infrared System (SBIRS) 05
High EMD

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83	0604602F	Armament/Ordnance Development	05	21,507	46,540	46,540			U
84	0604604F	Submunitions	05	2,503	2,705	2,705			U
85	0604617F	Agile Combat Support	05	49,005	31,240	31,240			U
86	0604618F	Joint Direct Attack Munition	05	9,901					U
87	0604706F	Life Support Systems	05	8,710	9,060	9,060			U
88	0604735F	Combat Training Ranges	05	57,200	87,350	87,350			U
89	0604800F	F-35 - EMD	05	433,903	292,947	292,947			U
90	0604853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05	381,360					U
91	0604932F	Long Range Standoff Weapon	05	102,350	451,290	451,290			U
92	0604933F	ICBM Fuze Modernization	05	172,946	178,991	178,991			U
93	0605030F	Joint Tactical Network Center (JTNC)	05	1,131	12,736	12,736			U
94	0605031F	Joint Tactical Network (JTN)	05		9,319	9,319			U
95	0605213F	F-22 Modernization Increment 3.2B	05	67,717	13,600	13,600			U
96	0605214F	Ground Attack Weapons Fuze Development	05	903					U
97	0605221F	KC-46	05	211,509	93,845	93,845			U
98	0605223F	Advanced Pilot Training	05	7,107	105,999	105,999			U
99	0605229F	Combat Rescue Helicopter	05	263,327	354,485	354,485			U

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100 0605278F	HC/MC-130 Recap RDT&E	05	8,707	U
101 0605431F	Advanced EHF MILSATCOM (SPACE)	05	221,584	U

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83	0604602F	Armament/Ordnance Development	05				46,540		46,540	U
84	0604604F	Submunitions	05				2,705		2,705	U
85	0604617F	Agile Combat Support	05				31,240		31,240	U
86	0604618F	Joint Direct Attack Munition	05							U
87	0604706F	Life Support Systems	05				9,060		9,060	U
88	0604735F	Combat Training Ranges	05				87,350		87,350	U
89	0604800F	F-35 - EMD	05				292,947		292,947	U
90	0604853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05							U
91	0604932F	Long Range Standoff Weapon	05				451,290		451,290	U
92	0604933F	ICBM Fuze Modernization	05				178,991		178,991	U
93	0605030F	Joint Tactical Network Center (JTNC)	05				12,736		12,736	U
94	0605031F	Joint Tactical Network (JTN)	05				9,319		9,319	U
95	0605213F	F-22 Modernization Increment 3.2B	05				13,600		13,600	U
96	0605214F	Ground Attack Weapons Fuze Development	05							U
97	0605221F	KC-46	05				93,845		93,845	U
98	0605223F	Advanced Pilot Training	05				105,999		105,999	U
99	0605229F	Combat Rescue Helicopter	05				354,485		354,485	U

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100 0605278F HC/MC-130 Recap RDT&E 05

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101 0605431F Advanced EHF MILSATCOM (SPACE) 05

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
83	0604602F	Armament/Ordnance Development	05	58,590		58,590	U
84	0604604F	Submunitions	05	2,990		2,990	U
85	0604617F	Agile Combat Support	05	20,028		20,028	U
86	0604618F	Joint Direct Attack Munition	05	15,787		15,787	U
87	0604706F	Life Support Systems	05	8,919		8,919	U
88	0604735F	Combat Training Ranges	05	35,895		35,895	U
89	0604800F	F-35 - EMD	05	69,001		69,001	U
90	0604853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05				U
91	0604932F	Long Range Standoff Weapon	05	614,920		614,920	U
92	0604933F	ICBM Fuze Modernization	05	172,902		172,902	U
93	0605030F	Joint Tactical Network Center (JTNC)	05				U
94	0605031F	Joint Tactical Network (JTN)	05				U
95	0605213F	F-22 Modernization Increment 3.2B	05				U
96	0605214F	Ground Attack Weapons Fuze Development	05				U
97	0605221F	KC-46	05	88,170		88,170	U
98	0605223F	Advanced Pilot Training	05	265,465		265,465	U
99	0605229F	Combat Rescue Helicopter	05	457,652		457,652	U

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100 0605278F HC/MC-130 Recap RDT&E 05 U

101 0605431F Advanced EHF MILSATCOM (SPACE) 05 U

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102	0605432F	Polar MILSATCOM (SPACE)	05	44,306					U
103	0605433F	Wideband Global SATCOM (SPACE)	05	73,901					U
104	0605458F	Air & Space Ops Center 10.2 RDT&E	05	21,109	119,745	119,745			U
105	0605830F	Acq Workforce- Global Battle Mgmt	05						U
106	0605931F	B-2 Defensive Management System	05	278,437	194,570	194,570			U
107	0101125F	Nuclear Weapons Modernization	05	131,063	91,237	91,237			U
108	0207171F	F-15 EPAWSS	05	241,495	209,847	209,847			U
109	0207328F	Stand In Attack Weapon	05		3,400	3,400			U
110	0207423F	Advanced Communications Systems	05						U
111	0207701F	Full Combat Mission Training	05	10,809	16,727	16,727			U
112	0303267F	Auctioned Spectrum Relocation Fund	05	54,499					U
113	0303367F	Spectrum Access Research and Development	05	62,053					U
114	0305176F	Combat Survivor Evader Locator	05	30,282					U
115	0307581F	JSTARS Recap	05	113,334	417,201	417,201			U
116	0401310F	C-32 Executive Transport Recapitalization	05		6,017	6,017			U
117	0401319F	Presidential Aircraft Recapitalization (PAR)	05	311,252	434,069	434,069			U
118	0701212F	Automated Test Systems	05	14,029	18,528	18,528			U

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119 1203176F	Combat Survivor Evader Locator	05	24,967	24,967	U
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102	0605432F	Polar MILSATCOM (SPACE)	05							U
103	0605433F	Wideband Global SATCOM (SPACE)	05							U
104	0605458F	Air & Space Ops Center 10.2 RDT&E	05				119,745		119,745	U
105	0605830F	Acq Workforce- Global Battle Mgmt	05							U
106	0605931F	B-2 Defensive Management System	05				194,570		194,570	U
107	0101125F	Nuclear Weapons Modernization	05				91,237		91,237	U
108	0207171F	F-15 EPAWSS	05				209,847		209,847	U
109	0207328F	Stand In Attack Weapon	05				3,400		3,400	U
110	0207423F	Advanced Communications Systems	05							U
111	0207701F	Full Combat Mission Training	05				16,727		16,727	U
112	0303267F	Auctioned Spectrum Relocation Fund	05							U
113	0303367F	Spectrum Access Research and Development	05							U
114	0305176F	Combat Survivor Evader Locator	05							U
115	0307581F	JSTARS Recap	05				417,201		417,201	U
116	0401310F	C-32 Executive Transport Recapitalization	05				6,017		6,017	U
117	0401319F	Presidential Aircraft Recapitalization (PAR)	05				434,069		434,069	U
118	0701212F	Automated Test Systems	05				18,528		18,528	U

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119 1203176F Combat Survivor Evader Locator 05

24,967

24,967 U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
102	0605432F	Polar MILSATCOM (SPACE)	05				U
103	0605433F	Wideband Global SATCOM (SPACE)	05				U
104	0605458F	Air & Space Ops Center 10.2 RDT&E	05				U
105	0605830F	Acq Workforce- Global Battle Mgmt	05	3,617		3,617	U
106	0605931F	B-2 Defensive Management System	05	261,758		261,758	U
107	0101125F	Nuclear Weapons Modernization	05	91,907		91,907	U
108	0207171F	F-15 EPAWSS	05	137,095		137,095	U
109	0207328F	Stand In Attack Weapon	05	43,175		43,175	U
110	0207423F	Advanced Communications Systems	05	14,888		14,888	U
111	0207701F	Full Combat Mission Training	05	1,015		1,015	U
112	0303267F	Auctioned Spectrum Relocation Fund	05				U
113	0303367F	Spectrum Access Research and Development	05				U
114	0305176F	Combat Survivor Evader Locator	05				U
115	0307581F	JSTARS Recap	05				U
116	0401310F	C-32 Executive Transport Recapitalization	05	7,943		7,943	U
117	0401319F	Presidential Aircraft Recapitalization (PAR)	05	673,032		673,032	U
118	0701212F	Automated Test Systems	05	13,653		13,653	U

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119 1203176F Combat Survivor Evader Locator 05 939 939 U

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120	1203269F	GPS IIIC	05						U
121	1203940F	Space Situation Awareness Operations	05		10,029	10,029			U
122	1206421F	Counterspace Systems	05		66,370	66,370			U
123	1206425F	Space Situation Awareness Systems	05		48,448	48,448			U
124	1206426F	Space Fence	05		35,937	35,937			U
125	1206431F	Advanced EHF MILSATCOM (SPACE)	05		145,610	145,610			U
126	1206432F	Polar MILSATCOM (SPACE)	05		33,644	33,644			U
127	1206433F	Wideband Global SATCOM (SPACE)	05		14,263	14,263			U
128	1206441F	Space Based Infrared System (SBIRS) High EMD	05		311,844	311,844			U
129	1206442F	Evolved SBIRS	05		71,018	71,018			U
130	1206853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05		297,572	297,572			U
		System Development & Demonstration		3,983,019	4,476,762	4,476,762			
131	0604256F	Threat Simulator Development	06	21,377	35,405	35,405			U
132	0604759F	Major T&E Investment	06	64,538	82,874	82,874			U
133	0605101F	RAND Project Air Force	06	33,373	34,346	34,346			U
134	0605502F	Small Business Innovation Research	06	407,570					U
135	0605712F	Initial Operational Test & Evaluation	06	13,829	15,523	15,523			U

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136 0605807F	Test and Evaluation Support	06	676,417	678,289	678,289	U
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120	1203269F	GPS IIIC	05							U
121	1203940F	Space Situation Awareness Operations	05				10,029		10,029	U
122	1206421F	Counterspace Systems	05				66,370		66,370	U
123	1206425F	Space Situation Awareness Systems	05				48,448		48,448	U
124	1206426F	Space Fence	05				35,937		35,937	U
125	1206431F	Advanced EHF MILSATCOM (SPACE)	05				145,610		145,610	U
126	1206432F	Polar MILSATCOM (SPACE)	05				33,644		33,644	U
127	1206433F	Wideband Global SATCOM (SPACE)	05				14,263		14,263	U
128	1206441F	Space Based Infrared System (SBIRS) High EMD	05				311,844		311,844	U
129	1206442F	Evolved SBIRS	05				71,018		71,018	U
130	1206853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05				297,572		297,572	U
		System Development & Demonstration		-----	-----	-----	4,476,762	-----	4,476,762	
131	0604256F	Threat Simulator Development	06				35,405		35,405	U
132	0604759F	Major T&E Investment	06				82,874		82,874	U
133	0605101F	RAND Project Air Force	06				34,346		34,346	U
134	0605502F	Small Business Innovation Research	06							U
135	0605712F	Initial Operational Test & Evaluation	06				15,523		15,523	U

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136 0605807F Test and Evaluation Support

06

678,289

678,289 U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
120	1203269F	GPS IIIC	05	451,889		451,889	U
121	1203940F	Space Situation Awareness Operations	05	46,668		46,668	U
122	1206421F	Counterspace Systems	05	20,676		20,676	U
123	1206425F	Space Situation Awareness Systems	05	134,463		134,463	U
124	1206426F	Space Fence	05	20,215		20,215	U
125	1206431F	Advanced EHF MILSATCOM (SPACE)	05	151,506		151,506	U
126	1206432F	Polar MILSATCOM (SPACE)	05	27,337		27,337	U
127	1206433F	Wideband Global SATCOM (SPACE)	05	3,970		3,970	U
128	1206441F	Space Based Infrared System (SBIRS) High EMD	05	60,565		60,565	U
129	1206442F	Evolved SBIRS	05	643,126		643,126	U
130	1206853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05	245,447		245,447	U
		System Development & Demonstration		5,272,191		5,272,191	
131	0604256F	Threat Simulator Development	06	34,256		34,256	U
132	0604759F	Major T&E Investment	06	91,844		91,844	U
133	0605101F	RAND Project Air Force	06	34,614		34,614	U
134	0605502F	Small Business Innovation Research	06				U
135	0605712F	Initial Operational Test & Evaluation	06	18,043		18,043	U

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136 0605807F Test and Evaluation Support 06 692,784 692,784 U

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137	0605826F	Acq Workforce- Global Power	06		219,809	219,809			U
138	0605827F	Acq Workforce- Global Vig & Combat Sys	06		223,179	223,179			U
139	0605828F	Acq Workforce- Global Reach	06		138,556	138,556			U
140	0605829F	Acq Workforce- Cyber, Network, & Bus Sys	06		221,393	221,393			U
141	0605830F	Acq Workforce- Global Battle Mgmt	06		152,577	152,577			U
142	0605831F	Acq Workforce- Capability Integration	06		196,561	196,561			U
143	0605832F	Acq Workforce- Advanced Prgm Technology	06		28,322	28,322			U
144	0605833F	Acq Workforce- Nuclear Systems	06		126,611	126,611			U
145	0605860F	Rocket Systems Launch Program (SPACE)	06	10,899					U
146	0605864F	Space Test Program (STP)	06	40,507					U
147	0605898F	Management HQ - R&D	06		9,154	9,154			U
148	0605976F	Facilities Restoration and Modernization - Test and Evaluation Support	06	134,111	135,507	135,507			U
149	0605978F	Facilities Sustainment - Test and Evaluation Support	06	28,091	28,720	28,720			U
150	0606017F	Requirements Analysis and Maturation	06	45,134	35,453	35,453			U

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151 0606116F Space Test and Training Range
Development

06

17,912

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137	0605826F	Acq Workforce- Global Power	06				219,809		219,809	U
138	0605827F	Acq Workforce- Global Vig & Combat Sys	06				223,179		223,179	U
139	0605828F	Acq Workforce- Global Reach	06				138,556		138,556	U
140	0605829F	Acq Workforce- Cyber, Network, & Bus Sys	06				221,393		221,393	U
141	0605830F	Acq Workforce- Global Battle Mgmt	06				152,577		152,577	U
142	0605831F	Acq Workforce- Capability Integration	06				196,561		196,561	U
143	0605832F	Acq Workforce- Advanced Prgm Technology	06				28,322		28,322	U
144	0605833F	Acq Workforce- Nuclear Systems	06				126,611		126,611	U
145	0605860F	Rocket Systems Launch Program (SPACE)	06							U
146	0605864F	Space Test Program (STP)	06							U
147	0605898F	Management HQ - R&D	06				9,154		9,154	U
148	0605976F	Facilities Restoration and Modernization - Test and Evaluation Support	06				135,507		135,507	U
149	0605978F	Facilities Sustainment - Test and Evaluation Support	06				28,720		28,720	U
150	0606017F	Requirements Analysis and Maturation	06				35,453		35,453	U

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151 0606116F Space Test and Training Range 06
Development

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

Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
137	0605826F	Acq Workforce- Global Power	06	233,924		233,924	U
138	0605827F	Acq Workforce- Global Vig & Combat Sys	06	263,488		263,488	U
139	0605828F	Acq Workforce- Global Reach	06	153,591		153,591	U
140	0605829F	Acq Workforce- Cyber, Network, & Bus Sys	06	232,315		232,315	U
141	0605830F	Acq Workforce- Global Battle Mgmt	06	169,868		169,868	U
142	0605831F	Acq Workforce- Capability Integration	06	226,219		226,219	U
143	0605832F	Acq Workforce- Advanced Prgm Technology	06	38,400		38,400	U
144	0605833F	Acq Workforce- Nuclear Systems	06	125,761		125,761	U
145	0605860F	Rocket Systems Launch Program (SPACE)	06				U
146	0605864F	Space Test Program (STP)	06				U
147	0605898F	Management HQ - R&D	06	10,642		10,642	U
148	0605976F	Facilities Restoration and Modernization - Test and Evaluation Support	06	162,216		162,216	U
149	0605978F	Facilities Sustainment - Test and Evaluation Support	06	28,888		28,888	U
150	0606017F	Requirements Analysis and Maturation	06	35,285		35,285	U

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151 0606116F Space Test and Training Range 06
Development

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Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
152	0606392F	Space and Missile Center (SMC) Civilian Workforce	06	171,666					U
153	0308602F	ENTEPRISE INFORMATION SERVICES (EIS)	06	4,265	29,049	29,049			U
154	0702806F	Acquisition and Management Support	06	14,168	14,980	14,980			U
155	0804731F	General Skill Training	06	1,353	1,434	1,434			U
156	0909999F	Financing for Cancelled Account Adjustments	06	1,004					U
157	1001004F	International Activities	06	4,626	4,569	4,569			U
158	1206116F	Space Test and Training Range Development	06		25,773	25,773			U
159	1206392F	Space and Missile Center (SMC) Civilian Workforce	06		169,887	169,887			U
160	1206398F	Space & Missile Systems Center - MHA	06		9,531	9,531			U
161	1206860F	Rocket Systems Launch Program (SPACE)	06		20,975	20,975			U
162	1206864F	Space Test Program (STP)	06		25,398	25,398			U
		Management Support		1,690,840	2,663,875	2,663,875			
163	0603423F	Global Positioning System III - Operational Control Segment	07	376,645					U
164	0604222F	Nuclear Weapons Support	07		27,579	27,579			U
165	0604233F	Specialized Undergraduate Flight Training	07	17,754	5,776	5,776			U

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166 0604445F	Wide Area Surveillance	07	50,486	16,247	16,247	U
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Line No	Program Element Number	Item	Act	FY 2018 Emergency Requests**	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency	S
152	0606392F	Space and Missile Center (SMC) Civilian Workforce	06							U
153	0308602F	ENTEPRISE INFORMATION SERVICES (EIS)	06				29,049		29,049	U
154	0702806F	Acquisition and Management Support	06				14,980		14,980	U
155	0804731F	General Skill Training	06				1,434		1,434	U
156	0909999F	Financing for Cancelled Account Adjustments	06							U
157	1001004F	International Activities	06				4,569		4,569	U
158	1206116F	Space Test and Training Range Development	06				25,773		25,773	U
159	1206392F	Space and Missile Center (SMC) Civilian Workforce	06				169,887		169,887	U
160	1206398F	Space & Missile Systems Center - MHA	06				9,531		9,531	U
161	1206860F	Rocket Systems Launch Program (SPACE)	06				20,975		20,975	U
162	1206864F	Space Test Program (STP)	06				25,398		25,398	U
		Management Support					2,663,875		2,663,875	
163	0603423F	Global Positioning System III - Operational Control Segment	07							U
164	0604222F	Nuclear Weapons Support	07				27,579		27,579	U
165	0604233F	Specialized Undergraduate Flight Training	07				5,776		5,776	U

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166 0604445F Wide Area Surveillance

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
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152	0606392F	Space and Missile Center (SMC) Civilian Workforce	06				U
153	0308602F	ENTEPRISE INFORMATION SERVICES (EIS)	06	20,545		20,545	U
154	0702806F	Acquisition and Management Support	06	12,367		12,367	U
155	0804731F	General Skill Training	06	1,448		1,448	U
156	0909999F	Financing for Cancelled Account Adjustments	06				U
157	1001004F	International Activities	06	3,998		3,998	U
158	1206116F	Space Test and Training Range Development	06	23,254		23,254	U
159	1206392F	Space and Missile Center (SMC) Civilian Workforce	06	169,912		169,912	U
160	1206398F	Space & Missile Systems Center - MHA	06	10,508		10,508	U
161	1206860F	Rocket Systems Launch Program (SPACE)	06	19,721		19,721	U
162	1206864F	Space Test Program (STP)	06	25,620		25,620	U
		Management Support		2,839,511		2,839,511	
163	0603423F	Global Positioning System III - Operational Control Segment	07				U
164	0604222F	Nuclear Weapons Support	07				U
165	0604233F	Specialized Undergraduate Flight Training	07	11,344		11,344	U

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166 0604445F Wide Area Surveillance

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Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests* with CR Adj OCO	S e c
167	0605018F	AF Integrated Personnel and Pay System (AF-IPPS)	07	9,956	21,915	21,915			U
168	0605024F	Anti-Tamper Technology Executive Agency	07	32,646	33,150	33,150			U
169	0605117F	Foreign Materiel Acquisition and Exploitation	07	58,360	66,653	66,653			U
170	0605278F	HC/MC-130 Recap RDT&E	07		38,579	38,579			U
171	0606018F	NC3 Integration	07		12,636	12,636			U
172	0606942F	Assessments and Evaluations Cyber Vulnerabilities	07						U
173	0101113F	B-52 Squadrons	07	74,550	111,910	111,910			U
174	0101122F	Air-Launched Cruise Missile (ALCM)	07	437	463	463			U
175	0101126F	B-1B Squadrons	07	4,562	62,471	62,471			U
176	0101127F	B-2 Squadrons	07	122,973	193,108	193,108			U
177	0101213F	Minuteman Squadrons	07	173,718	210,845	210,845			U
178	0101313F	Integrated Strategic Planning and Analysis Network (ISPAN) - USSTRATCOM	07	39,120	25,736	25,736			U
179	0101316F	Worldwide Joint Strategic Communications	07	5,876	6,272	6,272			U
180	0101324F	Integrated Strategic Planning & Analysis Network	07		11,032	11,032			U

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181 0101328F	ICBM Reentry Vehicles	07				U
183 0102110F	UH-1N Replacement Program	07	86,856	108,617	108,617	U

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167	0605018F	AF Integrated Personnel and Pay System (AF-IPPS)	07				21,915		21,915	U
168	0605024F	Anti-Tamper Technology Executive Agency	07				33,150		33,150	U
169	0605117F	Foreign Materiel Acquisition and Exploitation	07				66,653		66,653	U
170	0605278F	HC/MC-130 Recap RDT&E	07				38,579		38,579	U
171	0606018F	NC3 Integration	07				12,636		12,636	U
172	0606942F	Assessments and Evaluations Cyber Vulnerabilities	07							U
173	0101113F	B-52 Squadrons	07				111,910		111,910	U
174	0101122F	Air-Launched Cruise Missile (ALCM)	07				463		463	U
175	0101126F	B-1B Squadrons	07				62,471		62,471	U
176	0101127F	B-2 Squadrons	07				193,108		193,108	U
177	0101213F	Minuteman Squadrons	07				210,845		210,845	U
178	0101313F	Integrated Strategic Planning and Analysis Network (ISPAN) - USSTRATCOM	07				25,736		25,736	U
179	0101316F	Worldwide Joint Strategic Communications	07				6,272		6,272	U
180	0101324F	Integrated Strategic Planning & Analysis Network	07				11,032		11,032	U

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181 0101328F	ICBM Reentry Vehicles	07		U
183 0102110F	UH-1N Replacement Program	07	108,617	108,617 U

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167	0605018F	AF Integrated Personnel and Pay System (AF-IPPS)	07	47,287		47,287	U
168	0605024F	Anti-Tamper Technology Executive Agency	07	32,770		32,770	U
169	0605117F	Foreign Materiel Acquisition and Exploitation	07	68,368		68,368	U
170	0605278F	HC/MC-130 Recap RDT&E	07	32,574		32,574	U
171	0606018F	NC3 Integration	07	26,112		26,112	U
172	0606942F	Assessments and Evaluations Cyber Vulnerabilities	07	99,100		99,100	U
173	0101113F	B-52 Squadrons	07	280,414		280,414	U
174	0101122F	Air-Launched Cruise Missile (ALCM)	07	5,955		5,955	U
175	0101126F	B-1B Squadrons	07	76,030		76,030	U
176	0101127F	B-2 Squadrons	07	105,561		105,561	U
177	0101213F	Minuteman Squadrons	07	156,047		156,047	U
178	0101313F	Integrated Strategic Planning and Analysis Network (ISPAN) - USSTRATCOM	07				U
179	0101316F	Worldwide Joint Strategic Communications	07	10,442		10,442	U
180	0101324F	Integrated Strategic Planning & Analysis Network	07	22,833		22,833	U

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181 0101328F	ICBM Reentry Vehicles	07	18,412	18,412	U
183 0102110F	UH-1N Replacement Program	07	288,022	288,022	U

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Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests* with CR Adj OCO	S e c
184	0102326F	Region/Sector Operation Control Center Modernization Program	07	10,868	3,347	3,347			U
185	0105921F	Service Support to STRATCOM - Space Activities	07	8,381					U
186	0205219F	MQ-9 UAV	07	167,239	201,394	201,394			U
187	0205671F	Joint Counter RCIED Electronic Warfare	07						U
188	0207131F	A-10 Squadrons	07	11,353	17,459	17,459			U
189	0207133F	F-16 Squadrons	07	132,113	246,578	246,578			U
190	0207134F	F-15E Squadrons	07	344,184	320,271	320,271			U
191	0207136F	Manned Destructive Suppression	07	12,697	15,106	15,106			U
192	0207138F	F-22A Squadrons	07	364,691	610,942	610,942			U
193	0207142F	F-35 Squadrons	07	73,905	334,530	334,530			U
194	0207161F	Tactical AIM Missiles	07	51,499	34,952	34,952			U
195	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	53,320	61,322	61,322			U
196	0207227F	Combat Rescue - Pararescue	07	350	693	693			U
197	0207247F	AF TENCAP	07	28,412					U
198	0207249F	Precision Attack Systems Procurement	07	625	1,714	1,714			U
199	0207253F	Compass Call	07	13,723	14,040	14,040			U

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200 0207268F	Aircraft Engine Component Improvement Program	07	106,049	109,243	109,243	U
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184	0102326F	Region/Sector Operation Control Center Modernization Program	07				3,347		3,347	U
185	0105921F	Service Support to STRATCOM - Space Activities	07							U
186	0205219F	MQ-9 UAV	07				201,394		201,394	U
187	0205671F	Joint Counter RCIED Electronic Warfare	07							U
188	0207131F	A-10 Squadrons	07				17,459		17,459	U
189	0207133F	F-16 Squadrons	07				246,578		246,578	U
190	0207134F	F-15E Squadrons	07				320,271		320,271	U
191	0207136F	Manned Destructive Suppression	07				15,106		15,106	U
192	0207138F	F-22A Squadrons	07				610,942		610,942	U
193	0207142F	F-35 Squadrons	07				334,530		334,530	U
194	0207161F	Tactical AIM Missiles	07				34,952		34,952	U
195	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07				61,322		61,322	U
196	0207227F	Combat Rescue - Pararescue	07				693		693	U
197	0207247F	AF TENCAP	07							U
198	0207249F	Precision Attack Systems Procurement	07				1,714		1,714	U
199	0207253F	Compass Call	07				14,040		14,040	U

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200 0207268F Aircraft Engine Component
Improvement Program

07

109,243

109,243 U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
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184	0102326F	Region/Sector Operation Control Center Modernization Program	07	9,252		9,252	U
185	0105921F	Service Support to STRATCOM - Space Activities	07				U
186	0205219F	MQ-9 UAV	07	115,345	4,500	119,845	U
187	0205671F	Joint Counter RCIED Electronic Warfare	07		4,000	4,000	U
188	0207131F	A-10 Squadrons	07	26,738	1,000	27,738	U
189	0207133F	F-16 Squadrons	07	191,564		191,564	U
190	0207134F	F-15E Squadrons	07	192,883		192,883	U
191	0207136F	Manned Destructive Suppression	07	15,238		15,238	U
192	0207138F	F-22A Squadrons	07	603,553		603,553	U
193	0207142F	F-35 Squadrons	07	549,501		549,501	U
194	0207161F	Tactical AIM Missiles	07	37,230		37,230	U
195	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	61,393		61,393	U
196	0207227F	Combat Rescue - Pararescue	07	647		647	U
197	0207247F	AF TENCAP	07				U
198	0207249F	Precision Attack Systems Procurement	07	14,891		14,891	U
199	0207253F	Compass Call	07	13,901		13,901	U

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200 0207268F	Aircraft Engine Component Improvement Program	07	121,203	121,203	U
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201	0207277F	ISR Innovations	07				5,750	5,750	U
202	0207325F	Joint Air-to-Surface Standoff Missile (JASSM)	07	23,108	29,932	29,932			U
203	0207410F	Air & Space Operations Center (AOC)	07	29,916	26,956	26,956			U
204	0207412F	Control and Reporting Center (CRC)	07	12,854	2,450	2,450			U
205	0207417F	Airborne Warning and Control System (AWACS)	07	85,727	151,726	151,726			U
206	0207418F	Tactical Airborne Control Systems	07	2,353	3,656	3,656			U
208	0207431F	Combat Air Intelligence System Activities	07	15,461	13,420	13,420			U
209	0207444F	Tactical Air Control Party-Mod	07	11,437	10,623	10,623			U
210	0207448F	C2ISR Tactical Data Link	07	1,406	1,754	1,754			U
211	0207452F	DCAPES	07	13,286	17,382	17,382			U
212	0207573F	National Technical Nuclear Forensics	07		2,307	2,307			U
213	0207581F	Joint Surveillance/Target Attack Radar System (JSTARS)	07						U
214	0207590F	Seek Eagle	07	28,204	25,397	25,397			U
215	0207601F	USAF Modeling and Simulation	07	14,828	10,175	10,175			U
216	0207605F	Wargaming and Simulation Centers	07	4,090	12,839	12,839			U
217	0207610F	Battlefield Abn Comm Node (BACN)	07						U

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218 0207697F	Distributed Training and Exercises	07	4,241	4,190	4,190	U
219 0208006F	Mission Planning Systems	07	69,104	85,531	85,531	U

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201	0207277F	ISR Innovations	07				5,750		5,750	U
202	0207325F	Joint Air-to-Surface Standoff Missile (JASSM)	07				29,932		29,932	U
203	0207410F	Air & Space Operations Center (AOC)	07				26,956		26,956	U
204	0207412F	Control and Reporting Center (CRC)	07				2,450		2,450	U
205	0207417F	Airborne Warning and Control System (AWACS)	07				151,726		151,726	U
206	0207418F	Tactical Airborne Control Systems	07				3,656		3,656	U
208	0207431F	Combat Air Intelligence System Activities	07				13,420		13,420	U
209	0207444F	Tactical Air Control Party-Mod	07				10,623		10,623	U
210	0207448F	C2ISR Tactical Data Link	07				1,754		1,754	U
211	0207452F	DCAPES	07				17,382		17,382	U
212	0207573F	National Technical Nuclear Forensics	07				2,307		2,307	U
213	0207581F	Joint Surveillance/Target Attack Radar System (JSTARS)	07							U
214	0207590F	Seek Eagle	07				25,397		25,397	U
215	0207601F	USAF Modeling and Simulation	07				10,175		10,175	U
216	0207605F	Wargaming and Simulation Centers	07				12,839		12,839	U
217	0207610F	Battlefield Abn Comm Node (BACN)	07							U

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218 0207697F	Distributed Training and Exercises	07	4,190	4,190 U
219 0208006F	Mission Planning Systems	07	85,531	85,531 U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
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201	0207277F	ISR Innovations	07				U
202	0207325F	Joint Air-to-Surface Standoff Missile (JASSM)	07	60,062		60,062	U
203	0207410F	Air & Space Operations Center (AOC)	07	106,102		106,102	U
204	0207412F	Control and Reporting Center (CRC)	07	6,413		6,413	U
205	0207417F	Airborne Warning and Control System (AWACS)	07	120,664		120,664	U
206	0207418F	Tactical Airborne Control Systems	07	2,659		2,659	U
208	0207431F	Combat Air Intelligence System Activities	07	10,316		10,316	U
209	0207444F	Tactical Air Control Party-Mod	07	6,149		6,149	U
210	0207448F	C2ISR Tactical Data Link	07	1,738		1,738	U
211	0207452F	DCAPES	07	13,297		13,297	U
212	0207573F	National Technical Nuclear Forensics	07	1,788		1,788	U
213	0207581F	Joint Surveillance/Target Attack Radar System (JSTARS)	07	14,888		14,888	U
214	0207590F	Seek Eagle	07	24,699		24,699	U
215	0207601F	USAF Modeling and Simulation	07	17,078		17,078	U
216	0207605F	Wargaming and Simulation Centers	07	6,141		6,141	U
217	0207610F	Battlefield Abn Comm Node (BACN)	07		42,349	42,349	U

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218 0207697F	Distributed Training and Exercises	07	4,225	4,225	U
219 0208006F	Mission Planning Systems	07	63,653	63,653	U

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220	0208007F	Tactical Deception	07		3,761	3,761			U
221	0208087F	AF Offensive Cyberspace Operations	07	24,109	35,693	35,693	4,000	4,000	U
222	0208088F	AF Defensive Cyberspace Operations	07	38,035	20,964	20,964			U
223	0208097F	Joint Cyber Command and Control (JCC2)	07						U
224	0208099F	Unified Platform (UP)	07						U
228	0208288F	Intel Data Applications	07						U
229	0301017F	Global Sensor Integrated on Network (GSIN)	07	3,296	3,549	3,549			U
230	0301112F	Nuclear Planning and Execution System (NPES)	07	3,926	4,371	4,371			U
236	0301400F	Space Superiority Intelligence	07	12,380					U
237	0301401F	Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness	07		3,721	3,721			U
238	0302015F	E-4B National Airborne Operations Center (NAOC)	07	25,104	35,467	35,467			U
239	0303001F	Family of Advanced BLoS Terminals (FAB-T)	07	50,071					U
240	0303131F	Minimum Essential Emergency Communications Network (MEECN)	07	40,099	48,841	48,841			U
241	0303133F	High Frequency Radio Systems	07						U

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242	0303140F	Information Systems Security Program	07	36,074	42,973	42,973	U
243	0303141F	Global Combat Support System	07	50	105	105	U

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220	0208007F	Tactical Deception	07				3,761		3,761	U
221	0208087F	AF Offensive Cyberspace Operations	07				39,693		39,693	U
222	0208088F	AF Defensive Cyberspace Operations	07				20,964		20,964	U
223	0208097F	Joint Cyber Command and Control (JCC2)	07							U
224	0208099F	Unified Platform (UP)	07							U
228	0208288F	Intel Data Applications	07							U
229	0301017F	Global Sensor Integrated on Network (GSIN)	07				3,549		3,549	U
230	0301112F	Nuclear Planning and Execution System (NPES)	07				4,371		4,371	U
236	0301400F	Space Superiority Intelligence	07							U
237	0301401F	Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness	07				3,721		3,721	U
238	0302015F	E-4B National Airborne Operations Center (NAOC)	07				35,467		35,467	U
239	0303001F	Family of Advanced BLoS Terminals (FAB-T)	07							U
240	0303131F	Minimum Essential Emergency Communications Network (MEECN)	07				48,841		48,841	U
241	0303133F	High Frequency Radio Systems	07							U

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242 0303140F	Information Systems Security Program	07	42,973	42,973 U
243 0303141F	Global Combat Support System	07	105	105 U

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220	0208007F	Tactical Deception	07	6,949		6,949	U
221	0208087F	AF Offensive Cyberspace Operations	07	40,526		40,526	U
222	0208088F	AF Defensive Cyberspace Operations	07	24,166		24,166	U
223	0208097F	Joint Cyber Command and Control (JCC2)	07	13,000		13,000	U
224	0208099F	Unified Platform (UP)	07	28,759		28,759	U
228	0208288F	Intel Data Applications	07		1,200	1,200	U
229	0301017F	Global Sensor Integrated on Network (GSIN)	07	3,579		3,579	U
230	0301112F	Nuclear Planning and Execution System (NPES)	07	29,620		29,620	U
236	0301400F	Space Superiority Intelligence	07				U
237	0301401F	Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness	07	6,633		6,633	U
238	0302015F	E-4B National Airborne Operations Center (NAOC)	07	57,758		57,758	U
239	0303001F	Family of Advanced BLoS Terminals (FAB-T)	07				U
240	0303131F	Minimum Essential Emergency Communications Network (MEECN)	07	99,088		99,088	U
241	0303133F	High Frequency Radio Systems	07	51,612		51,612	U

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242 0303140F Information Systems Security Program 07 34,612 34,612 U

243 0303141F Global Combat Support System 07 U

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244	0303142F	Global Force Management - Data Initiative	07	1,851	2,147	2,147			U
246	0304260F	Airborne SIGINT Enterprise	07	95,284	121,948	121,948			U
247	0304310F	Commercial Economic Analysis	07		3,544	3,544			U
250	0305015F	C2 Air Operations Suite - C2 Info Services	07						U
251	0305020F	CCMD Intelligence Information Technology	07	1,507	1,542	1,542			U
252	0305099F	Global Air Traffic Management (GATM)	07	4,219	4,453	4,453			U
253	0305110F	Satellite Control Network (SPACE)	07	14,099					U
254	0305111F	Weather Service	07	24,193	26,654	26,654			U
255	0305114F	Air Traffic Control, Approach, and Landing System (ATCAL)	07	17,732	6,306	6,306			U
256	0305116F	Aerial Targets	07	2,981	21,295	21,295			U
259	0305128F	Security and Investigative Activities	07	405	415	415			U
260	0305145F	Arms Control Implementation	07	4,667					U
261	0305146F	Defense Joint Counterintelligence Activities	07	339	3,867	3,867			U
264	0305173F	Space and Missile Test and Evaluation Center	07	4,250					U
265	0305174F	Space Innovation, Integration and	07	6,233					U

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266 0305179F Integrated Broadcast Service (IBS) 07 8,833

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244	0303142F	Global Force Management - Data Initiative	07				2,147		2,147	U
246	0304260F	Airborne SIGINT Enterprise	07				121,948		121,948	U
247	0304310F	Commercial Economic Analysis	07				3,544		3,544	U
250	0305015F	C2 Air Operations Suite - C2 Info Services	07							U
251	0305020F	CCMD Intelligence Information Technology	07				1,542		1,542	U
252	0305099F	Global Air Traffic Management (GATM)	07				4,453		4,453	U
253	0305110F	Satellite Control Network (SPACE)	07							U
254	0305111F	Weather Service	07				26,654		26,654	U
255	0305114F	Air Traffic Control, Approach, and Landing System (ATCAL)	07				6,306		6,306	U
256	0305116F	Aerial Targets	07				21,295		21,295	U
259	0305128F	Security and Investigative Activities	07				415		415	U
260	0305145F	Arms Control Implementation	07							U
261	0305146F	Defense Joint Counterintelligence Activities	07				3,867		3,867	U
264	0305173F	Space and Missile Test and Evaluation Center	07							U
265	0305174F	Space Innovation, Integration and	07							U

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266 0305179F Integrated Broadcast Service (IBS) 07

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244	0303142F	Global Force Management - Data Initiative	07	2,170		2,170	U
246	0304260F	Airborne SIGINT Enterprise	07	106,873		106,873	U
247	0304310F	Commercial Economic Analysis	07	3,472		3,472	U
250	0305015F	C2 Air Operations Suite - C2 Info Services	07	8,608		8,608	U
251	0305020F	CCMD Intelligence Information Technology	07	1,586		1,586	U
252	0305099F	Global Air Traffic Management (GATM)	07	4,492		4,492	U
253	0305110F	Satellite Control Network (SPACE)	07				U
254	0305111F	Weather Service	07	26,942	3,000	29,942	U
255	0305114F	Air Traffic Control, Approach, and Landing System (ATCAL)	07	6,271		6,271	U
256	0305116F	Aerial Targets	07	8,383		8,383	U
259	0305128F	Security and Investigative Activities	07	418		418	U
260	0305145F	Arms Control Implementation	07				U
261	0305146F	Defense Joint Counterintelligence Activities	07	3,845		3,845	U
264	0305173F	Space and Missile Test and Evaluation Center	07				U
265	0305174F	Space Innovation, Integration and	07				U

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266 0305179F Integrated Broadcast Service (IBS) 07

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267	0305182F	Spacelift Range System (SPACE)	07	21,082					U
268	0305202F	Dragon U-2	07	37,217	34,486	34,486			U
269	0305205F	Endurance Unmanned Aerial Vehicles	07	50,000					U
270	0305206F	Airborne Reconnaissance Systems	07	13,465	4,450	4,450			U
271	0305207F	Manned Reconnaissance Systems	07	20,975	14,269	14,269			U
272	0305208F	Distributed Common Ground/Surface Systems	07	18,898	27,501	27,501			U
273	0305220F	RQ-4 UAV	07	244,807	214,849	214,849			U
274	0305221F	Network-Centric Collaborative Targeting	07	18,088	18,842	18,842			U
275	0305238F	NATO AGS	07	38,904	44,729	44,729			U
276	0305240F	Support to DCGS Enterprise	07	23,084	26,349	26,349			U
277	0305265F	GPS III Space Segment	07	165,794					U
278	0305600F	International Intelligence Technology and Architectures	07	2,360	3,491	3,491			U
279	0305614F	JSPOC Mission System	07	76,467					U
280	0305881F	Rapid Cyber Acquisition	07	4,123	4,899	4,899			U
281	0305906F	NCCM - TW/AA System	07	4,951					U
282	0305913F	NUDET Detection System (SPACE)	07	21,093					U
283	0305940F	Space Situation Awareness Operations	07	92,482					U

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284 0305984F	Personnel Recovery Command & Ctrl (PRC2)	07	2,445	2,445	U
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267	0305182F	Spacelift Range System (SPACE)	07							U
268	0305202F	Dragon U-2	07				34,486		34,486	U
269	0305205F	Endurance Unmanned Aerial Vehicles	07							U
270	0305206F	Airborne Reconnaissance Systems	07				4,450		4,450	U
271	0305207F	Manned Reconnaissance Systems	07				14,269		14,269	U
272	0305208F	Distributed Common Ground/Surface Systems	07				27,501		27,501	U
273	0305220F	RQ-4 UAV	07				214,849		214,849	U
274	0305221F	Network-Centric Collaborative Targeting	07				18,842		18,842	U
275	0305238F	NATO AGS	07				44,729		44,729	U
276	0305240F	Support to DCGS Enterprise	07				26,349		26,349	U
277	0305265F	GPS III Space Segment	07							U
278	0305600F	International Intelligence Technology and Architectures	07				3,491		3,491	U
279	0305614F	JSPOC Mission System	07							U
280	0305881F	Rapid Cyber Acquisition	07				4,899		4,899	U
281	0305906F	NCMC - TW/AA System	07							U
282	0305913F	NUDET Detection System (SPACE)	07							U
283	0305940F	Space Situation Awareness Operations	07							U

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284 0305984F Personnel Recovery Command & Ctrl 07
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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
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267	0305182F	Spacelift Range System (SPACE)	07				U
268	0305202F	Dragon U-2	07	48,518	22,100	70,618	U
269	0305205F	Endurance Unmanned Aerial Vehicles	07				U
270	0305206F	Airborne Reconnaissance Systems	07	175,334		175,334	U
271	0305207F	Manned Reconnaissance Systems	07	14,223		14,223	U
272	0305208F	Distributed Common Ground/Surface Systems	07	24,554	29,500	54,054	U
273	0305220F	RQ-4 UAV	07	221,690		221,690	U
274	0305221F	Network-Centric Collaborative Targeting	07	14,288		14,288	U
275	0305238F	NATO AGS	07	51,527		51,527	U
276	0305240F	Support to DCGS Enterprise	07	26,579		26,579	U
277	0305265F	GPS III Space Segment	07				U
278	0305600F	International Intelligence Technology and Architectures	07	8,464		8,464	U
279	0305614F	JSPOC Mission System	07				U
280	0305881F	Rapid Cyber Acquisition	07	4,303		4,303	U
281	0305906F	NCMC - TW/AA System	07				U
282	0305913F	NUDET Detection System (SPACE)	07				U
283	0305940F	Space Situation Awareness Operations	07				U

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284 0305984F Personnel Recovery Command & Ctrl 07 2,466 2,466 U
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285	0307577F	Intelligence Mission Data (IMD)	07		8,684	8,684			U
286	0308699F	Shared Early Warning (SEW)	07	6,154					U
287	0401115F	C-130 Airlift Squadron	07	15,599	10,219	10,219			U
288	0401119F	C-5 Airlift Squadrons (IF)	07	65,057	22,758	22,758			U
289	0401130F	C-17 Aircraft (IF)	07	12,021	34,287	34,287			U
290	0401132F	C-130J Program	07	16,199	26,821	26,821			U
291	0401134F	Large Aircraft IR Countermeasures (LAIRCM)	07	5,011	5,283	5,283			U
292	0401218F	KC-135s	07		9,942	9,942			U
293	0401219F	KC-10s	07	3,500	7,933	7,933			U
294	0401314F	Operational Support Airlift	07	13,332	6,681	6,681			U
295	0401318F	CV-22	07	27,704	22,519	22,519			U
296	0401840F	AMC Command and Control System	07		3,510	3,510			U
297	0408011F	Special Tactics / Combat Control	07	6,902	8,090	8,090			U
298	0702207F	Depot Maintenance (Non-IF)	07	1,507	1,528	1,528			U
299	0708055F	Maintenance, Repair & Overhaul System	07		31,677	31,677			U
300	0708610F	Logistics Information Technology (LOGIT)	07	53,369	33,344	33,344			U
301	0708611F	Support Systems Development	07	10,552	9,362	9,362			U

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302 0804743F	Other Flight Training	07	1,841	2,074	2,074	U
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285	0307577F	Intelligence Mission Data (IMD)	07				8,684		8,684	U
286	0308699F	Shared Early Warning (SEW)	07							U
287	0401115F	C-130 Airlift Squadron	07				10,219		10,219	U
288	0401119F	C-5 Airlift Squadrons (IF)	07				22,758		22,758	U
289	0401130F	C-17 Aircraft (IF)	07				34,287		34,287	U
290	0401132F	C-130J Program	07				26,821		26,821	U
291	0401134F	Large Aircraft IR Countermeasures (LAIRCM)	07				5,283		5,283	U
292	0401218F	KC-135s	07				9,942		9,942	U
293	0401219F	KC-10s	07				7,933		7,933	U
294	0401314F	Operational Support Airlift	07				6,681		6,681	U
295	0401318F	CV-22	07				22,519		22,519	U
296	0401840F	AMC Command and Control System	07				3,510		3,510	U
297	0408011F	Special Tactics / Combat Control	07				8,090		8,090	U
298	0702207F	Depot Maintenance (Non-IF)	07				1,528		1,528	U
299	0708055F	Maintenance, Repair & Overhaul System	07				31,677		31,677	U
300	0708610F	Logistics Information Technology (LOGIT)	07				33,344		33,344	U
301	0708611F	Support Systems Development	07				9,362		9,362	U

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302 0804743F Other Flight Training

07

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285	0307577F	Intelligence Mission Data (IMD)	07	4,117		4,117	U
286	0308699F	Shared Early Warning (SEW)	07				U
287	0401115F	C-130 Airlift Squadron	07	105,988		105,988	U
288	0401119F	C-5 Airlift Squadrons (IF)	07	25,071		25,071	U
289	0401130F	C-17 Aircraft (IF)	07	48,299		48,299	U
290	0401132F	C-130J Program	07	15,409		15,409	U
291	0401134F	Large Aircraft IR Countermeasures (LAIRCM)	07	4,334		4,334	U
292	0401218F	KC-135s	07	3,493		3,493	U
293	0401219F	KC-10s	07	6,569		6,569	U
294	0401314F	Operational Support Airlift	07	3,172		3,172	U
295	0401318F	CV-22	07	18,502		18,502	U
296	0401840F	AMC Command and Control System	07	1,688		1,688	U
297	0408011F	Special Tactics / Combat Control	07	2,541		2,541	U
298	0702207F	Depot Maintenance (Non-IF)	07	1,897		1,897	U
299	0708055F	Maintenance, Repair & Overhaul System	07	50,933		50,933	U
300	0708610F	Logistics Information Technology (LOGIT)	07	13,787		13,787	U
301	0708611F	Support Systems Development	07	4,497		4,497	U

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302 0804743F	Other Flight Training	07	2,022	2,022	U
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303	0808716F	Other Personnel Activities	07	57	107	107			U
304	0901202F	Joint Personnel Recovery Agency	07	3,556	2,006	2,006			U
305	0901218F	Civilian Compensation Program	07	2,878	3,780	3,780			U
306	0901220F	Personnel Administration	07	4,968	7,472	7,472			U
307	0901226F	Air Force Studies and Analysis Agency	07	1,415	1,563	1,563			U
308	0901538F	Financial Management Information Systems Development	07	10,478	91,211	91,211			U
309	1201921F	Service Support to STRATCOM - Space Activities	07		14,255	14,255			U
310	1202247F	AF TENCAP	07		31,914	31,914			U
311	1203001F	Family of Advanced BLoS Terminals (FAB-T)	07		32,426	32,426			U
312	1203110F	Satellite Control Network (SPACE)	07		18,808	18,808			U
314	1203165F	NAVSTAR Global Positioning System (Space and Control Segments)	07		10,029	10,029			U
315	1203173F	Space and Missile Test and Evaluation Center	07		25,051	25,051			U
316	1203174F	Space Innovation, Integration and Rapid Technology Development	07		11,390	11,390			U
317	1203179F	Integrated Broadcast Service (IBS)	07		8,747	8,747			U
318	1203182F	Spacelift Range System (SPACE)	07		10,549	10,549			U

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319 1203265F	GPS III Space Segment	07	243,435	243,435	U
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303	0808716F	Other Personnel Activities	07				107		107	U
304	0901202F	Joint Personnel Recovery Agency	07				2,006		2,006	U
305	0901218F	Civilian Compensation Program	07				3,780		3,780	U
306	0901220F	Personnel Administration	07				7,472		7,472	U
307	0901226F	Air Force Studies and Analysis Agency	07				1,563		1,563	U
308	0901538F	Financial Management Information Systems Development	07				91,211		91,211	U
309	1201921F	Service Support to STRATCOM - Space Activities	07				14,255		14,255	U
310	1202247F	AF TENCAP	07				31,914		31,914	U
311	1203001F	Family of Advanced BLoS Terminals (FAB-T)	07				32,426		32,426	U
312	1203110F	Satellite Control Network (SPACE)	07				18,808		18,808	U
314	1203165F	NAVSTAR Global Positioning System (Space and Control Segments)	07				10,029		10,029	U
315	1203173F	Space and Missile Test and Evaluation Center	07				25,051		25,051	U
316	1203174F	Space Innovation, Integration and Rapid Technology Development	07				11,390		11,390	U
317	1203179F	Integrated Broadcast Service (IBS)	07				8,747		8,747	U
318	1203182F	Spacelift Range System (SPACE)	07				10,549		10,549	U

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319 1203265F GPS III Space Segment

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303	0808716F	Other Personnel Activities	07	108		108	U
304	0901202F	Joint Personnel Recovery Agency	07	2,023		2,023	U
305	0901218F	Civilian Compensation Program	07	3,772		3,772	U
306	0901220F	Personnel Administration	07	6,358		6,358	U
307	0901226F	Air Force Studies and Analysis Agency	07	1,418		1,418	U
308	0901538F	Financial Management Information Systems Development	07	99,734		99,734	U
309	1201921F	Service Support to STRATCOM - Space Activities	07	14,161		14,161	U
310	1202247F	AF TENCAP	07	26,986	5,000	31,986	U
311	1203001F	Family of Advanced BLoS Terminals (FAB-T)	07	80,168		80,168	U
312	1203110F	Satellite Control Network (SPACE)	07	17,808		17,808	U
314	1203165F	NAVSTAR Global Positioning System (Space and Control Segments)	07	8,937		8,937	U
315	1203173F	Space and Missile Test and Evaluation Center	07	59,935		59,935	U
316	1203174F	Space Innovation, Integration and Rapid Technology Development	07	21,019		21,019	U
317	1203179F	Integrated Broadcast Service (IBS)	07	8,568		8,568	U
318	1203182F	Spacelift Range System (SPACE)	07	10,641		10,641	U

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319 1203265F GPS III Space Segment 07 144,543 144,543 U

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320	1203400F	Space Superiority Intelligence	07		12,691	12,691			U
321	1203614F	JSpOC Mission System	07		99,455	99,455			U
322	1203620F	National Space Defense Center	07		18,052	18,052			U
323	1203699F	Shared Early Warning (SEW)	07		1,373	1,373			U
324	1203906F	NCMC - TW/AA System	07		5,000	5,000			U
325	1203913F	NUDET Detection System (SPACE)	07		31,508	31,508			U
326	1203940F	Space Situation Awareness Operations	07		99,984	99,984			U
327	1206423F	Global Positioning System III - Operational Control Segment	07		510,938	510,938			U
9999	9999999999	Classified Programs		12,971,689	14,938,002	14,938,002	112,408	112,408	U
		Operational Systems Development		17,256,679	20,585,302	20,585,302	122,158	122,158	
328	0901560F	Continuing Resolution Programs	20		-7,336,882	-7,336,882	229,847	229,847	U
		Undistributed			-7,336,882	-7,336,882	229,847	229,847	
Total Research, Development, Test & Eval, AF				28,381,681	27,577,477	27,577,477	365,205	365,205	

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320	1203400F	Space Superiority Intelligence	07				12,691		12,691	U
321	1203614F	JSpOC Mission System	07				99,455		99,455	U
322	1203620F	National Space Defense Center	07				18,052		18,052	U
323	1203699F	Shared Early Warning (SEW)	07				1,373		1,373	U
324	1203906F	NCMC - TW/AA System	07				5,000		5,000	U
325	1203913F	NUDET Detection System (SPACE)	07				31,508		31,508	U
326	1203940F	Space Situation Awareness Operations	07				99,984		99,984	U
327	1206423F	Global Positioning System III - Operational Control Segment	07				510,938		510,938	U
9999	9999999999	Classified Programs		165,244	-165,244		15,215,654	-165,244	15,050,410	U
		Operational Systems Development					20,872,704		20,707,460	
328	0901560F	Continuing Resolution Programs	20				-7,107,035		-7,107,035	U
		Undistributed					-7,107,035		-7,107,035	
Total Research, Development, Test & Eval, AF				255,744	-255,744		28,198,426	-255,744	27,942,682	

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320	1203400F	Space Superiority Intelligence	07	16,278		16,278	U
321	1203614F	JSpOC Mission System	07	72,256		72,256	U
322	1203620F	National Space Defense Center	07	42,209		42,209	U
323	1203699F	Shared Early Warning (SEW)	07				U
324	1203906F	NCMC - TW/AA System	07				U
325	1203913F	NUDET Detection System (SPACE)	07	19,778		19,778	U
326	1203940F	Space Situation Awareness Operations	07	19,572		19,572	U
327	1206423F	Global Positioning System III - Operational Control Segment	07	513,235		513,235	U
9999	9999999999	Classified Programs		16,247,930	474,321	16,722,251	U
		Operational Systems Development		22,605,546	586,970	23,192,516	
328	0901560F	Continuing Resolution Programs	20				U
		Undistributed					
Total Research, Development, Test & Eval, AF				39,892,149	600,465	40,492,614	

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In the Fiscal Year (FY) 2019 President's Budget

RDT&E Exhibits in Budget Activity 7

are split into two books:

Vol-III Part 1

Vol-III Part 2

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	3.296	3.549	3.579	0.000	3.579	3.647	3.709	3.787	3.856	Continuing	Continuing
675368: <i>GSIN (Global Integrated Sensor Network)</i>	-	3.296	3.549	3.579	0.000	3.579	3.647	3.709	3.787	3.856	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	3.470	3.549	3.606	0.000	3.606
Current President's Budget	3.296	3.549	3.579	0.000	3.579
Total Adjustments	-0.174	0.000	-0.027	0.000	-0.027
• Congressional General Reductions	-0.078	0.000			
• Congressional Directed Reductions	0.000	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	-0.096	0.000	-0.027	0.000	-0.027

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>Title: Radar/MASINT, other technical intelligence, and Allied Systems</p> <p>Description: Radar/Measurement and Signals Intelligence (MASINT)/ Technical Intelligence (TI): Designs, develops, exposes and integrates data from various radars, MASINT and other technical intelligence sensors in regions of the world where we currently do not have coverage. Provide real time data from the sensors that previously reported in hours or days after events. Space Situational Awareness (SSA): Designs, develops, tests, exposes, and integrates SSA data from previously untapped sensors into space production systems and the Global Information Grid (GIG). Develop implementation plans to mature data exposure capabilities.</p> <p>Non-traditional Data Pre Processor (NDPP): Designs, develops, exposes and integrates Space Situational Awareness (SSA) data from Commercial, Owner-Operator, and Allied non-traditional sensors into space production systems and Space Catalog via the Global Information Grid. Develops implementation plans to mature data exposure capabilities.</p> <p>Army Navy Transportable Radar (AN/TPY-2): Designs, develops, tests, exposes, and integrates SSA data from the missile defense AN/TPY-2 sensor into space production systems and the GIG.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Assist in developing plans to address JUONs. Advocate and secure addition RDT&E funding if necessary - Continue developing and releasing periodic configuration control processes. - Continue technical outreach processes for new GSIN data consumers and providers. - Deliver new GSIN capabilities to match evolving DISA Enterprise Service updates. - Ensure common XML data schema is compatible with newly delivered capability. - Continue development of new and improved data services. -- Continued development and deployment of Radar/MASINT Phase 2 (including operational testing and fielding activities). 	0.594	2.320	2.007

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
-- Begin development and deployment of Radar/MASINT Phase 3 (including operational testing and fielding activities).				
<p>FY 2019 Plans:</p> <ul style="list-style-type: none"> - Continue developing and releasing periodic configuration control processes. - Continue technical outreach processes for new GSIN data consumers and providers. - Deliver new GSIN capabilities to match evolving DISA Enterprise Service updates. - Continue development of new and improved data services. - Complete development of Radar/MASINT Phase 3. <p>FY 2018 to FY 2019 Increase/Decrease Statement: Program funding decreased according to the FY19 requirements.</p>				
<p>Title: GSIN Data Integration: Launch Characterization Data Services Net Centric Data Integration Schema Configuration Control Technical Outreach</p> <p>Description: Develop common XML net-enabled data schemas and configuration management processes and procedures for Missile Warning, Missile Defense, Space, MASINT/Technical Intelligence, and Sensor data to manage the XML schema and associated XML messaging and services. Develop technical outreach for potential new GSIN data consumers and providers who require GSIN sensor data. Upgrade GSIN capabilities as DISA Enterprise Services evolve. Continue modifications to data services. Support integration of GSIN sensor data into appropriate registries/catalogs. Continue development of GSIN data services to enable visualization in a common operating picture. Conduct studies and demonstrations of SSA capabilities, data correlation, and assessment services for risk reduction evaluations.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue developing and releasing periodic configuration control processes. - Continue technical outreach processes for new GSIN data consumers and providers. - Deliver new GSIN capabilities to match evolving DISA Enterprise Service updates. - Ensured common XML data schema was compatible with newly delivered capability. - Continue development of new and improved data services. <p>-- Continued development and deployment of MASINT Phase 2 (including operational testing and fielding activities). -- Began development and deployment of MASINT Phase 3 (including operational testing and fielding activities).</p> <p>FY 2019 Plans:</p> <ul style="list-style-type: none"> - Continue developing and releasing periodic configuration control processes. - Continue technical outreach processes for new GSIN data consumers and providers. - Deliver new GSIN capabilities to match evolving DISA Enterprise Service updates. - Continue development of new and improved data services. 		2.702	1.229	1.572

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
- Complete development of MASINT Project 3 (including operational testing and fielding activities).			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Program funding increased according to the FY19 requirements.			
Accomplishments/Planned Programs Subtotals	3.296	3.549	3.579

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

N/A

Remarks

E. Acquisition Strategy

GSIN uses existing government contract vehicles (from agencies such as Missile Defense Agency (MDA) or Air Force Life Cycle Management Center (AFLCMC) to develop and modernize the combined SSA/MW/MD/MASINT/TI data exposure architecture and solution. The contracts are managed by the relevant organizations contracting office. GSIN does not award or manage any contracts. The AFLCMC at Hanscom AFB, (AFLCMC/HB) provides necessary program management, financial management, and other support as may be applicable for GSIN.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>	Project (Number/Name) 675368 / <i>GSIN (Global Integrated Sensor Network)</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GSIN OPSCAP Status Capability	C/CPAF	Northrop Grumman : Omaha, NE	-	2.696	Aug 2017	0.488	Dec 2017	-		-		-	Continuing	Continuing	-
GSIN Non-traditional Space Situational Awareness Data Exposure	C/CPAF	Harris Group : Colorado Springs, CO	-	0.000		-		-		-		-	Continuing	Continuing	-
GSIN Net-centric Command and Control Data Exposure	C/CPAF	LM : Huntsville, AL	-	-		-		-		-		-	Continuing	Continuing	-
GSIN Space Situational Awareness Data Exposure - MASINT/TI 3	C/CPAF	Raytheon : Boston, MA	-	0.206	Sep 2017	-		-		-		-	Continuing	Continuing	-
GSIN Space Situational Awareness Data Exposure - MASINT/TI 4	C/CPAF	Raytheon : Colorado Springs, CO	-	0.000	Oct 2016	1.600	Dec 2017	-		-		-	Continuing	Continuing	-
GSIN Space Situational Awareness Data Exposure - MASINT/TI 5&6	C/CPAF	MIT : Boston, MA	-	0.000		0.000		2.088	Apr 2019	-		2.088	Continuing	Continuing	-
Publisher/Recorder	C/CPAF	Northrop Grumman : Omaha, NE	-	-		0.956	Nov 2017	1.000	Nov 2018	-		1.000	Continuing	Continuing	-
Strategic Study	C/CPAF	KBR Wyle : Omaha, ND	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	2.902		3.044		3.088		-		3.088	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GSIN Program Management Administration	C/FFP	Various : Omaha, NE	-	0.394	Oct 2016	0.505	Oct 2017	0.491	Oct 2018	-		0.491	Continuing	Continuing	-
Subtotal			-	0.394		0.505		0.491		-		0.491	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>	Project (Number/Name) 675368 / <i>GSIN (Global Integrated Sensor Network)</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GSIN Data Exposure																												
GSIN Data Exposure (NDPP) Development	■																											
GSIN Data Exposure (NDPP) Production		■																										
GSIN Data Exposure (NDPP) Fielding/ Testing			■	■																								
GSIN Data Exposure (NDPP) Operational				■																								
GSIN Data Exposure (NC2) Design and Development	■																											
GSIN Data Exposure (NC2) Fielding	■	■	■	■																								
GSIN Data Exposure (NC2) Operational					■																							
GSIN Data Exposure (MASINT 2) Concept Development	■	■	■	■																								
GSIN Data Exposure (MASINT 2) Design and Development					■	■	■																					
GSIN Data Exposure (MASINT 2) Production/ Fielding						■																						
GSIN Data Exposure (MASINT 2) Operational								■																				
GSIN Data Exposure (MASINT 3) Concept Design		■	■	■																								
GSIN Data Exposure (MASINT 3) Design and Development					■	■	■																					
GSIN Data Exposure (MASINT 3) Production/ Fielding								■																				
GSIN Data Exposure (MASINT 3) Integration and Testing									■																			
GSIN Data Exposure (MASINT 3) Operational									■																			

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>	Project (Number/Name) 675368 / <i>GSIN (Global Integrated Sensor Network)</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GSIN Data Exposure (MASINT 4) Concept Design																												
GSIN Data Exposure (MASINT 4) Design and Development																												
GSIN Data Exposure (MASINT 4) Production/Fielding																												
GSIN Data Exposure (MASINT 4) Integration and Testing																												
GSIN Data Exposure (MASINT 4) Operational																												
GSIN Data Exposure (MASINT 5) Design and Development																												
GSIN Data Exposure (MASINT 5) Production/Fielding																												
GSIN Data Exposure (MASINT 5) Integration and Testing																												
GSIN Data Exposure (MASINT 5) Operational																												
GSIN Data Exposure (Radar/MASINT 6) Design and Development																												
GSIN Data Exposure (Radar/MASINT 6) Production/Fielding																												
GSIN Data Exposure (Radar/MASINT 6) Integration and Testing																												
GSIN Data Exposure (Radar/MASINT 6) Operational																												
GSIN Data Exposure (Radar/MASINT 7) Design and Development																												
GSIN Data Exposure (Radar/MASINT 7) Production/Fielding																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>	Project (Number/Name) 675368 / <i>GSIN (Global Integrated Sensor Network)</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																				
GSIN Data Exposure (Radar/MASINT 7) Integration and Testing																																																
GSIN Data Exposure (Radar/MASINT 7) Operational																																																
GSIN Publisher/Recorder Design/Development																																																
GSIN Publisher/Recorder Production/Fielding																																																
GSIN Publisher/Recorder Integration and Testing																																																
GSIN Complete Deployment of Publisher Recorder																																																
GSIN OPSCAP Status Design and Development																																																
GSIN OPSCAP Status Production/Fielding																																																
GSIN OPSCAP Status Integration and Testing																																																
GSIN OPSCAP Status Operational																																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>	Project (Number/Name) 675368 / <i>GSIN (Global Integrated Sensor Network)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
GSIN Data Exposure				
GSIN Data Exposure (NDPP) Development	1	2017	1	2017
GSIN Data Exposure (NDPP) Production	2	2017	2	2017
GSIN Data Exposure (NDPP) Fielding/Testing	3	2017	4	2017
GSIN Data Exposure (NDPP) Operational	4	2017	4	2017
GSIN Data Exposure (NC2) Design and Development	1	2017	1	2017
GSIN Data Exposure (NC2) Fielding	1	2017	4	2017
GSIN Data Exposure (NC2) Operational	1	2018	1	2018
GSIN Data Exposure (MASINT 2) Concept Development	1	2017	1	2018
GSIN Data Exposure (MASINT 2) Design and Development	2	2018	3	2018
GSIN Data Exposure (MASINT 2) Production/Fielding	3	2018	3	2018
GSIN Data Exposure (MASINT 2) Operational	4	2018	4	2018
GSIN Data Exposure (MASINT 3) Concept Design	3	2017	1	2018
GSIN Data Exposure (MASINT 3) Design and Development	2	2018	3	2018
GSIN Data Exposure (MASINT 3) Production/Fielding	4	2018	4	2018
GSIN Data Exposure (MASINT 3) Integration and Testing	1	2019	1	2019
GSIN Data Exposure (MASINT 3) Operational	1	2019	1	2019
GSIN Data Exposure (MASINT 4) Concept Design	2	2018	3	2018
GSIN Data Exposure (MASINT 4) Design and Development	4	2018	4	2018
GSIN Data Exposure (MASINT 4) Production/Fielding	1	2019	2	2019
GSIN Data Exposure (MASINT 4) Integration and Testing	3	2019	3	2019
GSIN Data Exposure (MASINT 4) Operational	4	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i>	Project (Number/Name) 675368 / <i>GSIN (Global Integrated Sensor Network)</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
GSIN Data Exposure (MASINT 5) Design and Development	3	2019	4	2019
GSIN Data Exposure (MASINT 5) Production/Fielding	1	2020	2	2020
GSIN Data Exposure (MASINT 5) Integration and Testing	3	2020	3	2020
GSIN Data Exposure (MASINT 5) Operational	4	2020	4	2020
GSIN Data Exposure (Radar/MASINT 6) Design and Development	1	2021	4	2021
GSIN Data Exposure (Radar/MASINT 6) Production/Fielding	1	2022	2	2022
GSIN Data Exposure (Radar/MASINT 6) Integration and Testing	3	2022	3	2022
GSIN Data Exposure (Radar/MASINT 6) Operational	4	2022	4	2022
GSIN Data Exposure (Radar/MASINT 7) Design and Development	3	2022	4	2022
GSIN Data Exposure (Radar/MASINT 7) Production/Fielding	1	2023	2	2023
GSIN Data Exposure (Radar/MASINT 7) Integration and Testing	3	2023	3	2023
GSIN Data Exposure (Radar/MASINT 7) Operational	4	2023	4	2023
GSIN Publisher/Recorder Design/Development	2	2018	2	2019
GSIN Publisher/Recorder Production/Fielding	2	2019	2	2020
GSIN Publisher/Recorder Integration and Testing	2	2020	2	2020
GSIN Complete Deployment of Publisher Recorder	3	2020	3	2020
GSIN OPSCAP Status Design and Development	4	2017	1	2018
GSIN OPSCAP Status Production/Fielding	2	2018	2	2018
GSIN OPSCAP Status Integration and Testing	3	2018	3	2018
GSIN OPSCAP Status Operational	4	2018	4	2018

Note

Program transitioned to 03010107F in FY16.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	0.000	3.926	4.371	29.620	0.000	29.620	35.010	31.978	14.344	25.632	Continuing	Continuing
673768: <i>Nuclear Planning and Execution System (NPES)</i>	0.000	3.926	4.371	29.620	0.000	29.620	35.010	31.978	14.344	25.632	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	4.060	4.371	17.043	0.000	17.043
Current President's Budget	3.926	4.371	29.620	0.000	29.620
Total Adjustments	-0.134	0.000	12.577	0.000	12.577
• 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	-0.134	0.000	12.577	0.000	12.577

Change Summary Explanation

Funding for FY19-23 was increased to accelerate the schedule and decrease overall program costs.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
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<p>Title: Nuclear Planning and Execution System (NPES) Modernization</p> <p>Description: - The NPES program will use proven and mature software engineering, technologies, and design tenets to provide a modern, secure, interoperable and reliable Nuclear Command and Control (NC2) capability for USSTRATCOM and other users as appropriate.</p> <ul style="list-style-type: none"> - It will update and/or replace existing system software and improve reliability and sustainability. - It will also seek to reduce total ownership cost. <p>FY 2018 Plans: Risk reduction activities will evaluate interface prototypes and source selection.</p> <ul style="list-style-type: none"> - Evaluate graphical user interface prototype - Generate program milestone decision products and artifacts - Conduct technical studies and analyses in support of software design development <p>FY 2019 Plans: -FY19 will be the first year of Development and Fielding (D&F).</p>	3.926	4.371	29.620
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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
-The NPES recap developer will be producing operational software code (Agile Development) based on a product backlog of requirements prioritized by the user's representative and participation by the NPES user community. The developer will produce Modular Open Systems Architecture (MOSA) software for early delivery to users.			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funding for FY19 was increased to accelerate NPES schedule.			
Accomplishments/Planned Programs Subtotals	3.926	4.371	29.620

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPAF 03 Line Item 833140: <i>Strategic Command and Control</i>	-	2.330	2.278	-	2.278	2.317	2.359	2.401	2.444	Continuing	Continuing

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

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

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

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 030112F / <i>Nuclear Planning and Execution System (NPES)</i>	Project (Number/Name) 673768 / <i>Nuclear Planning and Execution System (NPES)</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Pre Milestone B Risk Reduction	Various	NSWCDD : Offutt AFB, NE	-	2.039	Nov 2016	1.445	Nov 2017	0.000		-		0.000	Continuing	Continuing	-
Primary Development	Various	NSWCDD : Offutt AFB, NE	-	-		-		24.115	Nov 2018	-		24.115	Continuing	Continuing	-
Development Suites & Infrastructure	C/TBD	NSWCDD : Offutt AFB, NE	-	-		-		2.000	Jun 2019	-		2.000	Continuing	Continuing	-
Subtotal			-	2.039		1.445		26.115		-		26.115	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Technical Engineering Services	Various	Various : Offutt AFB, NE	-	0.981	Jan 2017	1.841	Jan 2018	2.000	Jan 2019	-		2.000	Continuing	Continuing	-
Subtotal			-	0.981		1.841		2.000		-		2.000	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
T&E	Various	Various : Offutt AFB, NE	-	-		0.054	Jul 2018	0.474	Nov 2018	-		0.474	Continuing	Continuing	-
Subtotal			-	-		0.054		0.474		-		0.474	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Offutt AFB, NE	-	0.906	Jan 2017	1.031	Feb 2018	1.031	Feb 2019	-		1.031	Continuing	Continuing	-
Subtotal			-	0.906		1.031		1.031		-		1.031	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force							Date: February 2018				
Appropriation/Budget Activity 3600 / 7			R-1 Program Element (Number/Name) PE 0301112F / Nuclear Planning and Execution System (NPES)				Project (Number/Name) 673768 / Nuclear Planning and Execution System (NPES)				

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	3.926	4.371	29.620	-	29.620	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>	Project (Number/Name) 673768 / <i>Nuclear Planning and Execution System (NPES)</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023					
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
NPES																														
Pre Milestone B Risk Reduction Analyses	████████████████																													
Development SOW Release					████████████																									
Milestone B Decision (Sep 2018)									████																					
IOC Development and Test									████████████████████																					
FOC Development and Test																			████████											
Post IOC Enhancements																						████████████████								

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>	Project (Number/Name) 673768 / <i>Nuclear Planning and Execution System (NPES)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
NPES				
Pre Milestone B Risk Reduction Analyses	1	2017	4	2018
Development SOW Release	2	2018	4	2018
Milestone B Decision (Sep 2018)	4	2018	4	2018
IOC Development and Test	1	2019	4	2020
FOC Development and Test	2	2021	3	2021
Post IOC Enhancements	4	2021	3	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0301400F / <i>Space Superiority Intelligence</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	12.380	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A051: <i>Space Superiority - Advanced Intelligence Systems</i>	-	12.380	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

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	13.880	0.000	0.000	0.000	0.000
Current President's Budget	12.380	0.000	0.000	0.000	0.000
Total Adjustments	-1.500	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-1.500	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0301401F / <i>Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	3.721	6.633	0.000	6.633	3.575	2.908	3.185	3.243	Continuing	Continuing
67A051: <i>Space Superiority - Advanced Intelligence Systems</i>	-	0.000	3.721	6.633	0.000	6.633	3.575	2.908	3.185	3.243	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.000	3.721	6.683	0.000	6.683
Current President's Budget	0.000	3.721	6.633	0.000	6.633
Total Adjustments	0.000	0.000	-0.050	0.000	-0.050
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.050	0.000	-0.050

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

	FY 2017	FY 2018	FY 2019
Title: Cross Domain OPIR	-	2.400	1.350

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0301401F / <i>Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Description: Develop Cross Domain OPIR that delivers a mechanism to provide reach-back support for battlespace awareness functions and manages the timely transfer of newly developed tools to operational users. specifically by developing tools & tradecraft on a flexible architecture allowing easy integration.</p> <p>FY 2018 Plans: Develop tools & tradecraft on a flexible architecture that allows easy integration of new capabilities into air component operations by providing advanced "state of art" algorithms and tools for the warfighter.</p> <p>FY 2019 Plans: Continue development of tools & tradecraft on a flexible architecture that allows easy integration of new capabilities into air component operations by providing advanced "state of art" algorithms and tools for the warfighter.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Program decrease based on program requirements.</p>				
<p>Title: TAC OPIR Processing</p> <p>Description: Develop tactical OPIR processing comprised of software development, controlled multi-level security interface that provides data access and processing services for a robust and flexible network architecture.</p> <p>FY 2018 Plans: Develop software for a controlled multi-level security interface.</p> <p>FY 2019 Plans: Develop software for a controlled multi-level security interface.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Program increased based on requirements.</p>		-	1.321	5.283
Accomplishments/Planned Programs Subtotals		-	3.721	6.633
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
E. Acquisition Strategy				
All contracts funded in this program will be awarded using competitive procedures to the maximum extent possible.				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0301401F / <i>Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness</i>
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F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018		
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0301401F / Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness				Project (Number/Name) 67A051 / Space Superiority - Advanced Intelligence Systems						

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Cross Domain OPIR	C/CPFF	NASIC : Dayton, OH	-	0.000		2.400	May 2018	1.350	May 2019	-		1.350	Continuing	Continuing	-	
Tactical OPIR Processing	C/CPFF	NASIC : Dayton, OH	-	0.000		1.321	May 2018	5.283	May 2019	-		5.283	Continuing	Continuing	-	
Subtotal			-	0.000		3.721		6.633		-		6.633	Continuing	Continuing	N/A	
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			-	0.000		3.721		6.633		-		6.633	Continuing	Continuing	N/A	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301401F / Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness	Project (Number/Name) 67A051 / Space Superiority - Advanced Intelligence Systems

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Cross Domain OPIR																												
Algorithm Development	[REDACTED]																											
Tactical OPIR Processing																												
Hardware Purchases, Software Development	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0301401F / Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness	Project (Number/Name) 67A051 / Space Superiority - Advanced Intelligence Systems

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Cross Domain OPIR</i>				
Algorithm Development	3	2018	3	2023
<i>Tactical OPIR Processing</i>				
Hardware Purchases, Software Development	3	2018	3	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	25.104	35.467	57.758	0.000	57.758	70.173	3.474	0.000	0.000	Continuing	Continuing
674777: <i>E-4B Aircraft Modernization</i>	-	25.104	35.467	57.758	0.000	57.758	70.173	3.474	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 This program, BA 7, PE 0302015F, project 674777, E-4B Mobile User Objective System (MUOS), is a new start.
 This program, BA 7, PE 0302015F, project 674777, Survivable SHF, is a new start.

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

A. Mission Description and Budget Item Justification

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>
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- The MUOS program upgrades the E-4B's Ultra-High Frequency Radio transmitters to be MUOS capable to meet E-4B Capability Development Document (CDD) and CJCSI 6251_01D requirements. MUOS provides securable data and full duplex voice communications while simultaneously monitoring a second frequency. The MUOS upgrade will provide interoperability with MUOS waveforms for voice and data communications and with other nuclear and national C2 centers and aircraft by replacing the legacy USC-42 UHF SATCOM radios with a MUOS capable radio.

- Survivable SHF will upgrade and replace portions of the E-4B's SHF system to meet existing Presidential Policy Directive (PPD)-35 and National Security Presidential Directive (NSPD)-51/Homeland Security Presidential Directive (HSPD)-20 requirements and to ensure continued connectivity and interoperability as satellite and communications infrastructure evolves. Expected modifications include, but are not limited to, component and sub-system upgrades and replacement of portions of the current SHF system that are obsolete or near end of service life. A replacement to the SHF system is required as secure, survivable communications capability transitions from the Defense Satellite Communications System (DSCS).

This program element may include necessary civilian pay expenses required to manage, execute, and deliver E-4B weapon system capability; furthermore, it may include support funding for emerging modification requirements to support PMA, A&AS, equipment and other as required.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	30.948	35.467	13.283	0.000	13.283
Current President's Budget	25.104	35.467	57.758	0.000	57.758
Total Adjustments	-5.844	0.000	44.475	0.000	44.475
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-4.900	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.944	0.000			
• Other Adjustments	0.000	0.000	44.475	0.000	44.475

Change Summary Explanation

FY17 Congressional mark for Recap exces of \$4.9M

FY19 funding increased by a total of \$44.5M, with adjustments to the AEHF/PNVC (\$11.4M), LFTS (\$25.2M), SHF Modernization (\$2.1M) and MUOS (\$5.8M) programs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Advanced Extremely High Frequency (AEHF) Compatible Terminal/Presidential National Voice Capability (PNVC)</p> <p>Description: Integrate AEHF Compatible Terminal/PNVC capability onto the E-4B NAOC platform to replace the existing MILSTAR/SECN system.</p> <p>FY 2018 Plans: Prepare for Milestone C decision, including determining entrance/exit criteria, update Acquisition Strategy and draft Capabilities Production Document (CPD); continue efforts in preparation for installation and testing of prototype kit onto aircraft.</p> <p>FY 2019 Base Plans: Install first prototype kit and conduct remaining activities leading up to the installation of the second prototype kit. Milestone C to be achieved by 4QFY19.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increase due to FabT/PNVC B Kit delays and clarification of requirements.</p>	0.349	15.438	24.745	-	24.745
<p>Title: National Airborne Ops Center (NAOC) Recap</p> <p>Description: National Airborne Ops Center (NAOC) Recap</p> <p>FY 2018 Plans: NONE - In FY18 E-4B Recapitalization efforts are executed under PE0604288F</p> <p>FY 2019 Base Plans: None - In FY18 E-4B Recapitalization efforts are executed under PE0604288F.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: NONE - In FY18 E-4B Recapitalization efforts are executed under PE0604288F</p>	1.000	0.000	0.000	-	0.000
<p>Title: E-4B Low Frequency Transmit System (LFTS)</p> <p>Description: Replaces the E-4B's legacy Very Low Frequency/Low Frequency (VLF/LF) Transmit System, which is over 35 years old and is past its useful life. This capability is required to comply with Presidential Policy Directive (PPD)-35 to ensure there is assured connectivity between civilian and military leadership and military forces during all stages of conflict and/or national emergencies.</p>	23.755	20.029	25.167	-	25.167

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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FY 2018 Plans:
 - Installation of prototype during Programmed Depot Maintenance, initial ground system testing and preparation for Ground and Flight testing at Offutt AFB.

FY 2019 Base Plans:
 Complete ground and flight test activities on first prototype install at Offutt AFB after PDM completion.

FY 2018 to FY 2019 Increase/Decrease Statement:
 Funding increased from FY18 to FY19 due to the prototype testing and evaluation scheduled during FY19, which has a higher cost than the installation during FY18.

<p>Title: E-4B Mobile User Objective System (MUOS)</p> <p>Description: The MUOS program upgrades E-4B Ultra-High Frequency Radio transmitters to be MUOS capable to meet the E-4B CDD and CJCSI 6251_01D. MUOS provides securable data and full duplex voice communications while simultaneously monitoring a second frequency. The MUOS upgrade will provide interoperability with MUOS waveforms for voice and data communications and with other nuclear and national C2 centers and aircraft by replacing the legacy USC-42 UHF SATCOM radio system.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans: Prepare for Acquisition Strategy decision, including document development, aircraft integration, and test of the MUOS system on one E-4B.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased because FY19 is the first year of funding for the effort.</p>	0.000	0.000	5.757	-	5.757
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<p>Title: Survivable SHF</p> <p>Description: SHF Modernization will upgrade and replace portions of the E-4B's SHF system to meet existing Presidential Policy Directive (PPD)-35 and National Security Presidential Directive (NSPD)-51/Homeland Security Presidential Directive (HSPD)-20 requirements and to ensure continued connectivity and interoperability as satellite and communications infrastructure evolves.</p> <p>FY 2018 Plans:</p>	-	0.000	2.089	0.000	2.089
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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A					
FY 2019 Base Plans: Perform obsolesce, reliability, and maintainability study to determine scope of modification.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased because FY19 is the first year of funding for the effort.					
Accomplishments/Planned Programs Subtotals	25.104	35.467	57.758	0.000	57.758

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• RDTE 04 PE0604288F BA04: <i>National Airborne Operations Center (NAOC) Recap</i>	0.000	7.850	9.740	-	9.740	19.549	101.011	135.532	138.000	Continuing	Continuing
• APAF 05 Line Item E00400: <i>E-4B Nat Airborne Ops Center (NAOC)</i>	53.348	30.493	67.858	-	67.858	48.477	83.896	52.318	0.000	Continuing	Continuing
• APAF 06 Line Item 000999: <i>Initial Spares/Repair Parts</i>	5.338	1.072	1.061	-	1.061	0.332	0.339	0.346	0.352	Continuing	Continuing

Remarks

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

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

R-1 Program Element (Number/Name)
PE 0302015F / *E-4B National Airborne Operations Center (NAOC)*

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0302015F / E-4B National Airborne Operations Center (NAOC)	Project (Number/Name) 674777 / E-4B Aircraft Modernization
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AEHF Compatible Terminal-Risk Study 2	C/CPFF	Raytheon : Largo, FL	-	-		-		-		-		-	Continuing	Continuing	2.489
AEHF/PNVC Integration	C/CPFF	Raytheon : Largo, FL	-	0.349		15.438	Mar 2018	24.745	Oct 2018	-		24.745	Continuing	Continuing	44.471
LFTS Development	SS/CPFI	Boeing : OKC, OK	-	23.755	Dec 2016	20.029	Nov 2017	25.167	Nov 2018	-		25.167	Continuing	Continuing	103.857
E-4B Recapitalization	TBD	TBD: TBD : TBD	-	1.000		-		-		-		-	Continuing	Continuing	-
MUOS	TBD	Boeing : OKC, OK	-	-		-		5.757	Feb 2019	-		5.757	Continuing	Continuing	-
Survivable SHF	TBD	L-3 : SLC, UT	-	-		-		2.089	Feb 2019	-		2.089	Continuing	Continuing	-
Subtotal			-	25.104		35.467		57.758		-		57.758	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	25.104	35.467	57.758	-	57.758	Continuing	Continuing	N/A

Remarks

FY17: Recap funding supports E-4B NAOC Sustainment Study and Recap CONOPS analysis.

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

FY18 & FY19 LFTS funding supports installation and test of prototype LFTS system under Boeing's ESS contract.

FY18 & FY19 AEHF funding incrementally funds AEHF EMD and prototype installation efforts under DMEA contract.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0302015F / E-4B National Airborne Operations Center (NAOC)	Project (Number/Name) 674777 / E-4B Aircraft Modernization

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
E-4B Aircraft Modernization																												
AEHF Compatible Terminal/PNVC Risk Reduction																												
AEHF Compatible Terminal/PNVC Integration																												
AEHF Compatible Terminal/PNVC Milestone Decision B																												
AEHF Compatible Terminal/PNVC PDR																												
AEHF Compatible Terminal/PNVC CDR																												
AEHF Compatible Terminal/PNVC Integration DT																												
AEHF Compatible Terminal/PNVC Milestone Decision C																												
LFTS Modification Design and Development																												
LFTS Modification Integration and Testing																												
LFTS Modification Milestone Decision C																												
MUOS Modification Integration and Testing																												
MUOS Modification Milestone Decision C																												
Survivable SHF Study																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>	Project (Number/Name) 674777 / <i>E-4B Aircraft Modernization</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>E-4B Aircraft Modernization</i>				
AEHF Compatible Terminal/PNVC Risk Reduction	1	2017	4	2020
AEHF Compatible Terminal/PNVC Integration	1	2017	2	2021
AEHF Compatible Terminal/PNVC Milestone Decision B	1	2017	1	2017
AEHF Compatible Terminal/PNVC PDR	3	2018	3	2018
AEHF Compatible Terminal/PNVC CDR	4	2018	4	2018
AEHF Compatible Terminal/PNVC Integration DT	3	2020	3	2020
AEHF Compatible Terminal/PNVC Milestone Decision C	4	2019	4	2019
LFTS Modification Design and Development	1	2017	2	2017
LFTS Modification Integration and Testing	1	2017	3	2019
LFTS Modification Milestone Decision C	3	2017	3	2017
MUOS Modification Integration and Testing	2	2019	2	2020
MUOS Modification Milestone Decision C	2	2020	2	2020
Survivable SHF Study	2	2019	2	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0303001F / Family of Advanced BLoS Terminals (FAB-T)
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	50.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
672490: Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)	-	50.071	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

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	52.578	0.000	0.000	0.000	0.000
Current President's Budget	50.071	0.000	0.000	0.000	0.000
Total Adjustments	-2.507	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	7.740	0.000			
• SBIR/STTR Transfer	-0.047	0.000			
• Other Adjustments	-10.200	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	40.099	48.841	99.088	0.000	99.088	65.839	91.814	51.466	9.643	Continuing	Continuing
672832: <i>MEECN System Improvements</i>	-	13.572	0.923	25.942	0.000	25.942	0.948	0.966	0.987	1.005	Continuing	Continuing
672835: <i>Common VLF/LF Receiver Inc 2</i>	-	4.310	22.526	9.559	0.000	9.559	29.683	82.499	50.463	8.628	Continuing	Continuing
676029: <i>Global Aircrew Strategic Network Terminal</i>	-	18.463	10.026	14.692	0.000	14.692	0.000	0.001	0.000	0.000	Continuing	Continuing
676030: <i>Global ASNT Inc 2</i>	-	3.754	15.366	48.895	0.000	48.895	35.208	8.348	0.016	0.010	Continuing	Continuing

Note

Nuclear Command, Control, and Communications (NC3) Dem/Val, is an FY19 new start (\$25.012M), to be executed in the MEECN System Improvements (MSI) Program 0303131F, Project 672832. In FY20, NC3 Dem/Val efforts will be transferred to Program 0604001F, Project 646020, in order to provide greater transparency.

A. Mission Description and Budget Item Justification

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

The MEECN portfolio modernizes the systems necessary to effectively provide assured communications connectivity between the President and the strategic deterrence forces in stressed environments.

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

NC3 Dem/Val is required for advanced concept development and prototyping of next generation NC3 systems. This program ensures a responsive design and development engineering infrastructure to address evolving Nuclear Deterrence Operations mission requirements, emerging issues and technology insertion/technology

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	
<p>application on the NC3 Weapon System, future strategic systems/capability, and other common strategic areas where appropriate, and develop enhanced multi-use capabilities. The NC3 Dem/Val Program will provide technology maturation and risk reduction activities to support the NC3 Weapon System (AN/USQ-225). Activity will reduce life cycle costs, inform technology maturation & risk reduction efforts, improve system performance, mitigate evolving threats, and ensure both viability and durability of the NC3 Weapon System.</p> <p>Common Very Low Frequency/Low Frequency (VLF/LF) Receiver (CVR) Increment 2 (CVR Inc. 2) will deliver a survivable, beyond-line-of-sight path for Emergency Action Message (EAM) reception. The intent of CVR Inc. 2 is to develop and produce a common VLF/LF receiver, capable of implementing an interoperable waveform, to integrate into current and future airborne and ground based platforms, improve system performance, and reduce supportability costs through commonality. The program will also lead the development of the Uniform MEECN Mode (UMM) waveform expected to be used by the United States' Air Force and Navy.</p> <p>Global Aircrew Strategic Network Terminal (Global ASNT) replaces inadequate, unsustainable strategic communications equipment at bomber, tanker and reconnaissance Wing Command Posts (WCPs), Nuclear Task Forces, Munitions Support Squadrons (MUNSS), and for Mobile Support Teams (MSTs). Global ASNT is a ground-based system that will provide survivable, secure communication paths to receive Emergency Action Messages (EAMs), Force Management messages, and Force Direction messages and disseminate them to bomber, tanker, and reconnaissance aircrews.</p> <p>Global ASNT is being fielded in separate capability increments. Global ASNT Increment 1 (Inc. 1) includes early system engineering support for the planning and development for the future Global ASNT Increments.</p> <p>Global ASNT Inc. 1 fields required Extremely High Frequency/Advanced Extremely High Frequency (EHF/AEHF) capabilities and replaces inadequate, unsustainable strategic mobile and fixed-site Single Channel Anti-jam Man-Portable (SCAMP) terminals and Secure, Mobile, Anti-Jam, Reliable, Tactical - Terminal (SMART-T) equipment.</p> <p>Global ASNT Increment 2 delivers a replacement Aircrew Alerting System (AAS) consisting of personal and general alerting equipment, and High Frequency (HF) and Ultra High Frequency (UHF) capabilities. Increment 2 replaces inadequate, unsustainable Electromagnetic Pulse Hardened Dispersal Communication (EHDC) systems and Aircrew Alerting Communications Electromagnetic Pulse (AACE) systems.</p> <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver nuclear weapon support capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.</p> <p>This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal years.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	47.471	48.841	82.603	0.000	82.603
Current President's Budget	40.099	48.841	99.088	0.000	99.088
Total Adjustments	-7.372	0.000	16.485	0.000	16.485
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-9.372	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	2.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	16.485	0.000	16.485

Change Summary Explanation

FY 2017 PB Congressional Mark (-\$7.3M) Excess funds; FFRDC Reductions (Section 8024(f))(-\$0.714M); Below Threshold Reprogramming (+\$2.0M); Small Business Innovation Adjustment (\$-1.358M)
 FY 2019 PB MSI NC3 Dem/Val increase (+\$25.012M); CVRi2 Rephase to align with program execution(-\$55.143M); ASNTi1 increase to mitigate CCD Re-Validation issues(+ \$14.530M); ASNTi2 increase for continuation of EMD phase(+32.093M)

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>					Project (Number/Name) 672832 / <i>MEECN System Improvements</i>		
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
672832: <i>MEECN System Improvements</i>	-	13.572	0.923	25.942	0.000	25.942	0.948	0.966	0.987	1.005	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Nuclear Command, Control, and Communications (NC3) Dem/Val, is an FY19 new start (\$25.2M), to be executed in the MEECN System Improvements (MSI) line Program 0303131F, Project 672832. In FY20, NC3 Dem/ Val efforts will be transferred to Program 0604001F, Project 646020, in order to provide greater transparency.

A. Mission Description and Budget Item Justification

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

NC3 Dem/Val is required for advanced concept development and prototyping of next generation NC3 systems. This program ensures a responsive design and development engineering infrastructure to address evolving NDO mission requirements, emerging issues and technology insertion/technology application on the NC3 Weapon System, future strategic systems/capability, and other common strategic areas where appropriate, and develop enhanced multi-use capabilities. The NC3 Dem/Val Program will provide technology maturation and risk reduction activities to support the NC3 Weapon System (AN/USQ-225). Activity will reduce life cycle costs, inform technology maturation & risk reduction efforts, improve system performance, mitigate evolving threats, and ensure both viability and durability of the NC3 Weapon System.

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

	FY 2017	FY 2018	FY 2019
Title: MEECN System Improvements	13.572	0.923	25.942
Description: Conduct NC3 technology testing, integrate the NC3 Weapon System, build comprehensive technology strategies and roadmaps. Conduct VLF/LF tradeoff analysis. Deliver results of analytic tasks in an annual NC3 report.			
NC3 Dem/Val activities will include but not limited to; conducting studies, analysis, and prototyping; test bed activities; exercise participation; developing modeling and simulation of identified NC3 WS architecture; integrated NC3 WS testing, validation, and certification; and direct mission support contracts in support of the above.			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 672832 / <i>MEECN System Improvements</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p><i>FY 2018 Plans:</i> Continue to refresh NC3 Architecture Roadmap Complete NC3 Annual Report - FY18</p> <p><i>FY 2019 Plans:</i> Continue to refresh NC3 Architecture Roadmap Complete NC3 Annual Report - FY19 Begin design and development engineering Perform analysis of engineering issues and technology insertion Develop enhanced multiuse capabilities Conduct technology maturation and risk reduction activities Evaluate integrated technology, representative modes, and prototype systems</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY19 increase of \$25.012M for NC3 Dem/Val</p>			
Accomplishments/Planned Programs Subtotals	13.572	0.923	25.942

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

N/A

Remarks

D. Acquisition Strategy

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

To conduct NC3 Dem/Val essential activities a combination of competitively awarded contracts, as well as sole source contracts, may be used to augment AF organic capabilities with technical skill sets from FFRDCs, UARCs, and industry Advisory and Assistance Services (A&AS) providers.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 672832 / <i>MEECN System Improvements</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MSI - NC3 Roadmap	MIPR	JHU APL : Laurel, MD	-	0.594	Oct 2017	0.690	Oct 2018	0.460	Oct 2019	-		0.460	Continuing	Continuing	-
NC3 Dem/Val	TBD	Various : Various	-	-		-		25.012	Feb 2019	-		25.012	Continuing	Continuing	-
NC3 Integration (FFRDC)	TBD	Various : Various	-	8.000	Apr 2018	-		-		-		-	Continuing	Continuing	-
Global Assured Comm	MIPR	Various : Various	-	2.000	Apr 2018	-		-		-		-	Continuing	Continuing	-
Subtotal			-	10.594		0.690		25.472		-		25.472	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NC3 Stand-up	Various	Various : Various	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	-		-		-		-		-	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MSI PSC (Eng/Acq Spt/Travel/IMPAC)	Various	Various : Various	-	0.978	Oct 2016	0.233	Oct 2017	0.470	Oct 2018	0.000		0.470	Continuing	Continuing	-
NC3 PEO Standup	Various	Various : Various	-	-		-		-		-		-	Continuing	Continuing	-
NC3 Integration (A&AS)	Various	Various : Various	-	2.000	Feb 2018	-		-		-		-	Continuing	Continuing	-
Subtotal			-	2.978		0.233		0.470		0.000		0.470	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	13.572	0.923	25.942	0.000	25.942	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 672832 / <i>MEECN System Improvements</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
MEECN System Improvement																													
NC3 Integration																													
MEECN System Improvement																													
NC3 Annual Report - FY18																													
NC3 Annual Report - FY19																													
NC3 Annual Report - FY20																													
NC3 Annual Report - FY21																													
NC3 Annual Report - FY22																													
NC3 Annual Report - FY23																													
NC3 Dem/Val																													

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 672832 / <i>MEECN System Improvements</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>MEECN System Improvement</i>				
NC3 Integration	1	2017	4	2017
MEECN System Improvement	1	2017	4	2023
NC3 Annual Report - FY18	4	2018	4	2018
NC3 Annual Report - FY19	4	2019	4	2019
NC3 Annual Report - FY20	4	2020	4	2020
NC3 Annual Report - FY21	4	2021	4	2021
NC3 Annual Report - FY22	4	2022	4	2022
NC3 Annual Report - FY23	4	2023	4	2023
NC3 Dem/Val	1	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>					Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i>		
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
672835: <i>Common VLF/LF Receiver Inc 2</i>	-	4.310	22.526	9.559	0.000	9.559	29.683	82.499	50.463	8.628	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

A. Mission Description and Budget Item Justification

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

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

	FY 2017	FY 2018	FY 2019
Title: CVR Inc 2	4.310	22.526	9.559
Description: Pre-Milestone B Activities			
FY 2018 Plans:			
Continue pre-development and upfront system engineering activities			
Continue requirements and technology analysis and market research			
Continue inspection/modification of Waveguide Integrated Series of Programs (WISP)model			
Continue VLF/LF antenna characterization performance assessment			
Continue Validated Online Lifecycle Threat (VOLT) Assessment			
Continue VLF/LF and UMM Working Groups			
Complete Materiel Development Decision (MDD) and obtain Acquisition Decision Memorandum (ADM)			
Develop UMM Waveform Reference Architecture			
Develop acquisition strategy, requirements trades, mission analysis, and Government reference architecture in preparation for Milestone B			
Draft system requirements documentation and validate requirements			
Continue work on UMM VLF/LF Waveform Standard			
Develop Modeling and Simulation on UMM VLF/LF Waveform Standard			
Conduct Platform Interface Assessments			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Plan for and participate in AFGSC High Performance Team (HPT) Complete Broad Agency Announcement (BAA) Continue to develop RFP and Milestone B documentation			
<i>FY 2019 Plans:</i> Complete inspection/modification of Waveguide Integrated Series of Programs (WISP)model Complete VLF/LF antenna characterization performance assessment Continue VLF/LF and UMM Working Groups Complete UMM Waveform Reference Architecture Complete UMM VLF/LF waveform standard Complete Platform Interface Assessments Complete RFP Complete Milestone B documentation Conduct Competitive Source Selection			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Decrease of budget from FY2018 to FY2019 due to rephasing of program.			
Accomplishments/Planned Programs Subtotals	4.310	22.526	9.559

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 03 PE 0303131F: <i>CVR Inc 2</i>	-	-	-	-	-	-	-	6.378	49.202	Continuing	Continuing

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

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CVR Inc 2 - Early Development	Various	Various : TBD	-	1.052	Jul 2017	17.882	Mar 2018	3.463	Jan 2019	-		3.463	Continuing	Continuing	-
DMS (MITRE)	Various	Various : TBD	-	1.212	Apr 2017	0.475	Feb 2018	0.758	Oct 2018	-		0.758	Continuing	Continuing	-
DMS (Lincoln Lab)	Various	Various : TBD	-	-		0.314	Jan 2018	0.160	Oct 2018	-		0.160	Continuing	Continuing	-
Subtotal			-	2.264		18.671		4.381		-		4.381	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GFE	Various	Various : TBD	-	0.007	Sep 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.007		-		-		-		-	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PSC (Eng/Acq Spt/Travel/IMPAC)	Various	Various : TBD	-	1.671	Jun 2017	3.227	Oct 2017	2.905	Nov 2018	-		2.905	Continuing	Continuing	-
PSC - MITRE	Various	Various : TBD	-	0.368	May 2017	0.628	Nov 2017	2.273	Oct 2018	-		2.273	Continuing	Continuing	-
Subtotal			-	2.039		3.855		5.178		-		5.178	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	4.310	22.526	9.559	-	9.559	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CVR Inc. 2																												
Early Systems Engineering	■																											
Requirements Development	■																											
Materiel Development Decision (MDD)							■																					
RFP Release													■															
Milestone B Decision																	■											
Contract Award																	■											
Engineering and Manufacturing Development (EMD)																	■											

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>CVR Inc. 2</i>				
Early Systems Engineering	1	2017	4	2019
Requirements Development	1	2017	4	2019
Material Development Decision (MDD)	3	2018	3	2018
RFP Release	1	2020	1	2020
Milestone B Decision	2	2021	2	2021
Contract Award	3	2021	3	2021
Engineering and Manufacturing Development (EMD)	3	2021	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>					Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i>		
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
676029: <i>Global Aircrew Strategic Network Terminal</i>	-	18.463	10.026	14.692	0.000	14.692	0.000	0.001	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

	FY 2017	FY 2018	FY 2019
Title: Global ASNT Inc 1	18.463	10.026	14.692
Description: Engineering & Manufacturing Development (EMD)			
FY 2018 Plans: Complete Government Developmental Testing (DT) and start conduct of Operational Testing (OT) in preparation for Milestone C. Resolve any Deficiency Reports (DRs) identified in integration and test of system level hardware and software. Resolve any Deficiency Reports (DRs) identified in DT Develop MS C documentation and Engineering Change Orders (ECOs) Conduct satellite network simulations and associated MITRE lab analytic activities through DMS/PSC			
FY 2019 Plans: Complete Operational Testing (OT) in preparation for Milestone C Resolve any Deficiency Reports (DRs) identified in DT/OT testing. Resolve any outstanding Deficiency Reports (DRs) identified in integration and test of system level hardware and software.			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Complete satellite network simulations and associate MITRE lab analytic activities through DMS/PSC Complete Milestone C documentation and Engineering Change Orders (ECOs).			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Increase due to cost increases of delayed operational testing activities and engineering change order processing in preparation for Milestone C documentation.			
Accomplishments/Planned Programs Subtotals	18.463	10.026	14.692

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPAF 03 PE 0303131F: <i>Global ASNT Inc. 1 (834210)</i>	198.925	0.292	140.875	-	140.875	159.360	48.127	67.424	51.006	Continuing	Continuing
• OPAF 05 PE 0303131F: <i>Global ASNT Inc. 1 (861900)</i>	0.000	0.000	73.470	-	73.470	68.795	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>					Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i>						

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Global ASNT Inc 1 - Engineering & Manufacturing Development	C/FPIF	Raytheon : Marlborough, MA	-	9.896	Nov 2017	4.567	Feb 2018	11.630	Oct 2018	-		11.630	Continuing	Continuing	-
Global ASNT Inc 1 - Satellite Simulations	SS/FFP	MIT/Lincoln Laboratory : Lexington, MA	-	1.855	Mar 2018	-		1.143	Mar 2019	-		1.143	Continuing	Continuing	-
Subtotal			-	11.751		4.567		12.773		-		12.773	Continuing	Continuing	N/A

Remarks

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

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Global ASNT Inc 1 - MITRE Lab	SS/CPFF	MITRE : Bedford, MA	-	0.358	Oct 2017	0.380	Oct 2018	-		-		-	Continuing	Continuing	-
Global ASNT Inc 1 - Software Support	Various	Various : NV	-	0.611	Feb 2018	-		0.371	Feb 2019	-		0.371	Continuing	Continuing	-
Global ASNT Inc 1 - GFE	Various	Various : NV	-	0.003	Feb 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.972		0.380		0.371		-		0.371	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Global ASNT Inc 1 - Government Test and Evaluation	Various	Various : NV	-	0.926	Nov 2017	0.830	Apr 2018	0.540	Oct 2018	-		0.540	Continuing	Continuing	-
Global ASNT Inc 1 - NSA	MIPR	NSA, Maryland : NV	-	0.017	Feb 2017	0.011	Feb 2018	0.007	Nov 2018	-		0.007	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>				Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i>							

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	0.943		0.841		0.547		-		0.547	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Global ASNT Inc 1 - PSC (Eng/Acq Support, Travel)	Various	Various : NV	-	2.022	Jul 2017	2.166	Feb 2018	1.001	Oct 2018	-		1.001	Continuing	Continuing	-
Global ASNT Inc 1 - PSC (MITRE)	SS/CPFF	MITRE : Bedford, MA	-	2.775	Oct 2017	2.072	Oct 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	4.797		4.238		1.001		-		1.001	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	18.463	10.026	14.692	-	14.692	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Global ASNT Inc. 1																												
Global ASNT Inc 1 - Engineering and Manufacturing Development																												
Global ASNT Inc 1 - Test																												
Global ASNT Inc 1 - Milestone C Decision																												
Global ASNT Inc 1 - Production and Deployment																												
Global ASNT Inc 1 - IOC																												
Global ASNT Inc 1 - Interim Contractor Support																												
Global ASNT Inc 1 - FOC																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Global ASNT Inc. 1				
Global ASNT Inc 1 - Engineering and Manufacturing Development	1	2017	2	2019
Global ASNT Inc 1 - Test	4	2017	1	2019
Global ASNT Inc 1 - Milestone C Decision	2	2019	2	2019
Global ASNT Inc 1 - Production and Deployment	2	2019	4	2023
Global ASNT Inc 1 - IOC	4	2020	4	2020
Global ASNT Inc 1 - Interim Contractor Support	2	2020	4	2023
Global ASNT Inc 1 - FOC	4	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
676030: <i>Global ASNT Inc 2</i>	-	3.754	15.366	48.895	0.000	48.895	35.208	8.348	0.016	0.010	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

Global ASNT is being fielded in separate capability increments.

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

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

	FY 2017	FY 2018	FY 2019
Title: Global ASNT Inc 2	3.754	15.366	48.895
Description: Pre-Milestone B Activities			
FY 2018 Plans: Conduct MDD/ASP Review CDD and Modify it for HF Survivability Finalize documentation for Request for Proposal (RFP) Continue preparation for Milestone B and Contract Award			
FY 2019 Plans: Release Request for Proposal (RFP) Review proposal submissions and engage in Source Selection/Technical Evaluation Activities Complete preparation for Milestone B and Contract Award			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Increase due to ramp towards Milestone B and Contract award			
Accomplishments/Planned Programs Subtotals	3.754	15.366	48.895

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

N/A

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Global ASNT Inc 2 - Pre Milestone B Activities	TBD	Not specified. : TBD	-	3.146	Nov 2017	13.492	Mar 2018	4.192	Oct 2018	-		4.192	Continuing	Continuing	-
Prime Contract	TBD	Not specified. : TBD	-	-		-		42.567	Aug 2019	-		42.567	Continuing	Continuing	-
Subtotal			-	3.146		13.492		46.759		-		46.759	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Global ASNT Inc 2 - MITRE Lab	Various	MITRE : Bedford, MA	-	-		-		-		-		-	Continuing	Continuing	-
Global ASNT Inc 2 - Information Assurance	TBD	Not specified. : TBD	-	0.089	Jul 2017	0.256	Jul 2018	0.131	Jul 2019	-		0.131	Continuing	Continuing	-
Subtotal			-	0.089		0.256		0.131		-		0.131	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Global ASNT Inc 2 - Test Planning	Various	Various : NV	-	0.075	Jul 2017	1.118	Jul 2018	1.018	Jul 2019	-		1.018	Continuing	Continuing	-
Subtotal			-	0.075		1.118		1.018		-		1.018	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Global ASNT Inc 2 - PSC (Eng/Acq Support, Travel)	Various	Various : NV	-	0.444	Jun 2017	0.500	Feb 2018	0.987	Oct 2019	-		0.987	Continuing	Continuing	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Global ASNT Inc. 2	
Global ASNT Inc 2 Pre-Milestone B Activities	
Global ASNT Inc 2 - Release Request for Proposal	
Global ASNT Inc 2 - Milestone B Decision	
Global ASNT Inc 2 - Contract Award	
Global ASNT Inc 2 - Engineering and Manufacturing Development	
Global ASNT Inc 2 - Preliminary Design Review (PDR)	
Global ASNT Inc 2 - Critical Design Review (CDR)	
Global ASNT Inc 2 - Test	
Global ASNT Inc 2 - Milestone C Decision	
Global ASNT Inc 2 - Production & Deployment	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Global ASNT Inc. 2				
Global ASNT Inc 2 Pre-Milestone B Activities	1	2017	4	2018
Global ASNT Inc 2 - Release Request for Proposal	1	2019	1	2019
Global ASNT Inc 2 - Milestone B Decision	3	2019	3	2019
Global ASNT Inc 2 - Contract Award	4	2019	4	2019
Global ASNT Inc 2 - Engineering and Manufacturing Development	4	2019	4	2021
Global ASNT Inc 2 - Preliminary Design Review (PDR)	2	2020	2	2020
Global ASNT Inc 2 - Critical Design Review (CDR)	3	2020	3	2020
Global ASNT Inc 2 - Test	4	2021	3	2023
Global ASNT Inc 2 - Milestone C Decision	4	2023	4	2023
Global ASNT Inc 2 - Production & Deployment	4	2023	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303133F / <i>High Frequency Radio Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	51.612	0.000	51.612	15.881	0.000	0.000	0.000	0.000	67.493
675046: <i>Systems Engineering & Integration</i>	-	0.000	0.000	51.612	0.000	51.612	15.881	0.000	0.000	0.000	0.000	67.493
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
This program, BA 7, PE 0303133F, project 675046, High Frequency Radio System, is a new start.

A. Mission Description and Budget Item Justification

Development of High Frequency Radio Systems.

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	51.612	0.000	51.612
Total Adjustments	0.000	0.000	51.612	0.000	51.612
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	51.612	0.000	51.612

C. Accomplishments/Planned Programs (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>
Title: High Frequency Radio System	-	0.000	51.612
Description: Development of High Frequency Radio System			
FY 2018 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303133F / <i>High Frequency Radio Systems</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
N/A			
<i>FY 2019 Plans:</i> Development of High Frequency Radio System			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Beginning of new activity.			
Accomplishments/Planned Programs Subtotals	-	0.000	51.612

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

N/A

Remarks

E. Acquisition Strategy

Development of High Frequency Radio System.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0303133F / High Frequency Radio Systems				Project (Number/Name) 675046 / Systems Engineering & Integration							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
High Frequency Radio System	TBD	Not specified. : TBD	-	-		-		51.612		0.000		51.612	Continuing	Continuing	-
Subtotal			-	-		-		51.612		0.000		51.612	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		0.000		51.612		0.000		51.612	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303133F / <i>High Frequency Radio Systems</i>	Project (Number/Name) 675046 / <i>Systems Engineering & Integration</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>High Frequency Radio System</i>																												
Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303133F / <i>High Frequency Radio Systems</i>	Project (Number/Name) 675046 / <i>Systems Engineering & Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>High Frequency Radio System</i>				
Development	2	2019	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	36.074	42.973	34.612	0.000	34.612	29.788	11.156	12.380	12.604	Continuing	Continuing
674861: <i>EKMS (Electronic Key Management System)</i>	-	0.922	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
675100: <i>Cryptographic Modernization</i>	-	33.231	39.712	33.159	0.000	33.159	29.787	11.156	12.379	12.604	Continuing	Continuing
675231: <i>AF Key Management Enterprise (AF KME)</i>	-	1.921	3.261	1.453	0.000	1.453	0.001	0.000	0.001	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver ISSP weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	46.388	42.973	34.871	0.000	34.871
Current President's Budget	36.074	42.973	34.612	0.000	34.612
Total Adjustments	-10.314	0.000	-0.259	0.000	-0.259
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-9.000	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	-1.314	0.000			
• Other Adjustments	0.000	0.000	-0.259	0.000	-0.259

Change Summary Explanation

Reductions in FY17 funding due to Congressional appropriations mark for "forward funding".

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>					Project (Number/Name) 674861 / <i>EKMS (Electronic Key Management System)</i>		
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
674861: <i>EKMS (Electronic Key Management System)</i>	-	0.922	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Fill /Load Device Post Production SW Development	0.922	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 674861 / <i>EKMS (Electronic Key Management System)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: AF KME Post Production software development focuses on extending life of EKMS through transition to Key Management Infrastructure (KMI) capabilities. This will be accomplished via the Intermediary Application (iApp) software and Tri-Service development of KOV-21 replacement chip through Communications-Electronics Research, Development and Engineering Center (CERDEC) by U.S. Army. The iApp is designed to include all major Data Management Device (DMD) capabilities. The iApp is designed to meet certification and accreditation requirements and iApp user interface is designed for ease of adoption and minimal user training for EKMS DMD, Consolidated Tier 3 Testing Infrastructure (CETTI) User Application Software (UAS), and Simple Key Loader (SKL). The CERDEC effort develops a replacement KOV-21 Card for current Simple Key Loader (SKL) to extend life of SKL until KMI compatible key loader is available.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2019 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	0.922	0.000	0.000	0.000	0.000

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

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPAF 03 831010: <i>COMSEC Equipment</i>	10.622	9.378	0.000	-	0.000	0.000	0.000	-	-	Continuing	Continuing

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

D. Acquisition Strategy

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

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 674861 / <i>EKMS (Electronic Key Management System)</i>

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 674861 / <i>EKMS (Electronic Key Management System)</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

EKMS	
EKMS (Electronic Key Management System)	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 674861 / <i>EKMS (Electronic Key Management System)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
EKMS				
EKMS (Electronic Key Management System)	1	2017	3	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>					Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>		
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675100: <i>Cryptographic Modernization</i>	-	33.231	39.712	33.159	0.000	33.159	29.787	11.156	12.379	12.604	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: VINSON/ANDVT Cryptographic Modernization (VACM)	0.252	0.000	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: VINSON (VHF(Very High Frequency)/UHF(Ultra High Frequency) Wideband Tactical Secure Voice System Cryptographic Equipment)/ANDVT (Advanced Narrowband Digital Voice Terminal) Cryptographic Modernization (VACM) will develop and acquire cryptographic capability to replace the legacy capability on VINSON/ANDVT secure voice communications on aircraft, ships, and ground fixed and mobile platforms (Devices: KY-57/58, KY-99/100, KYV-5 and ARC-234 (with Embedded Crypto)).</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>					
<p>Title: Technology Development (TD)</p> <p>Description: Technical Development (TD) conducts concept development and early systems engineering activities to address evolving threats identified by NSA, algorithm obsolescence and Communications Security (COMSEC) capability gaps across AF and DoD mission areas. Identifies, further matures, or sponsors technology development efforts, plans and executes foundational technology demonstration efforts to reduce risks to COMSEC acquisitions. Analyze capability gaps that translate to requirements, build capability roadmaps, execute studies, and support cost estimates prior to Materiel Development Decision (MDD) for future cryptographic initiatives. Mitigates risk for thousands of AF and DoD users affected by algorithm obsolescence and ensures required security upgrades can be integrated into the AF and DoD enterprise. Works closely with NSA and other services to develop standards that increase security, prevent stove-pipe implementations, and facilitate efficient COMSEC enterprise management lifecycle management. Includes but is not limited to: Remote Integrated Toolkit (REMIT), Common Crypto Management, Transmission Security (TRANSEC) modernization, Trusted Sensors, Crypto Enterprise Tracking (CET), Advanced Cryptographic Capabilities Increment One (ACC Inc 1)/Cryptographic Modernization 2, Trusted Systems Network (TSN)/Supply Chain Risk Management (SCRM), Ground Operating Equipment (GOE) and MILSATCOM Crypto Mod (MCM).</p> <p>FY 2018 Plans: - Continue analysis and studies in support of Advanced Cryptographic Capabilities Increment One (ACC Inc 1) related efforts to include technical analysis on devices without suitable replacement options and the identification</p>	2.193	1.684	1.215	-	1.215

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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<p>of operational gaps as a result of ACC Inc 1. Execute analysis of the entire USAF cryptographic inventory to include the unidentified cryptographic devices that are not life cycle managed within CCSD. Conduct CONOPS analyses across the USAF enterprise to identify users that could utilize symmetric keying to mitigate replacement costs. Determine current industry developments and assess the replacement potential for ACC Inc 1 impacted devices.</p> <ul style="list-style-type: none"> - Continue analysis of studies for Cryptographic Modernization 2 (CM2) related efforts to include identification of crypto devices, associated capability gaps, determining program approach for devices that require replacement, conducting gap analysis, and comprehensive study of pre-placed key capable devices. Continue analysis and studies of CM2 related gaps to include next generation applicability, future algorithm impact, and vendor tracking of next generation devices. Identify various CCSD led efforts that are impacted by CM2 and sponsor various studies to determine if new algorithms are capable of operating in existing equipment. - Continue analysis of TRANSEC capability gaps, identify potential changes to TRANSEC approaches that may result in changes to key stream. Sponsor studies that support the early identification deltas early on and determine technology development and maturation efforts. - Continue to refine analysis for the replacement or upgrade of over 168,000 Air Force devices in support of the ACC Inc 1 initiative - Manage the CCSD hardware replacement effort in support of ACC Inc 1 - Complete the CCSD ACC Inc 1 Implementation Plan, a living document that will outline the roles and responsibilities, provide guidance on software fielding and hardware replacements, and explain the testing and support requirements for CCSD - Continue analysis support to DOD CIO and NSA for development of the updated CM2 ICD - Continue to analyze parts obsolescence, determine crypto modernization requirements, and recommend specific materiel solutions 					
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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<ul style="list-style-type: none"> - Assist CCSD Programs with developing their system security documentation (OPSEC Plans, Cybersecurity Plans, Security Classification Guidance (SCG), Integrated Threat Assessments (IT As), Anti-Tamper Planning and Program Protection Planning - Continue to evaluate Trusted Sensor candidate solutions for network intrusion detection and prevention - Develop the necessary TSN processes to deliver a trusted system (integrating all source supply chain information, threat to risk methodologies, mapping of both SCRM Key Practices and Risk Management Framework (RMF) mitigations, risk strategies, and technical mitigations for both H/W and S/W) - Provide both counterfeit detection (H/W analysis) and Malware Analysis (S/W analysis) - Assist CCSD programs with TSN contract language and clauses to effectively acquire trusted systems - Continue to refine analysis for the replacement or upgrade of Ground Operating Equipment (GOE) devices in support of the GOE initiative and associated activities in support of preparation for Decision Point 2 (DP-2) for a Materiel Development Decision (MDD) - Conduct analysis for the replacement or upgrade of legacy MILSATCOM crypto devices in support of the MILSATCOM Crypto Modernization (MCM) Initiative and associated activities in support of preparation for Decision Point 1 (DP-1) approval to refine a MCM CCTD and pursue a MOD at DP-2 <p><i>FY 2019 Base Plans:</i></p> <ul style="list-style-type: none"> - Continue to manage the CCSD execution of hardware replacement and software updates in support of the ACC Inc 1 initiative - Will provide technical guidance in support of ACC Inc 1 operational, testing and evaluation (OT&E) - Will analyze ACC Inc 1 impacts to AF users and provide technical guidance in support of user integration and test and follow-on fielding of modified crypto equipment - Will identify AF materiel solutions requiring modification or acquisition under the joint CM2 ICD to AF Lead Command to initiate 1067 modification or JCI OS documentation for follow-on acquisition 					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>- Will assist CCSD Programs with developing their system security documentation (OPSEC Plans, Cybersecurity Plans, Security Classification Guidance (SCG), Integrated Threat Assessments (IT As), Anti-Tamper Planning and Program Protection Planning</p> <p>- Will continue to refine analysis for the replacement or upgrade of legacy MILSATCOM crypto devices in support of the MCM Initiative and associated activities in support of preparation for Decision Point 2 (DP- 2), as well as refinement of development/acquisition strategies in support of MCM Initiative MOD</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease owing to higher Air Force priorities.</p>					
<p>Title: Mini Crypto (MC)</p> <p>Description: Mini Crypto (MC) is developing a Tactical Key Management (TKM) miniaturized cryptographic solution to protect Secret and Below (SaB) Command and Control (C2) and mission data for Size, Weight, and Power (SWaP) constrained platforms which currently have no cryptographic capability and transmit in the clear. MC's Tactical Key Management (TKM) solution has a self-generating key which removes the requirement for pre-placed keys and has the ability to add or remove users as tactical situation dictates.</p> <p>FY 2018 Plans: -Complete Milestone C documentation updates -Receive NSA Certification - Seek Milestone C approval from Program Executive Officer (PEO) -Perform Sufficiency of Operational Test Review (SOTR) -Support Mini Crypto Users to collect platform integration and operational assessment data -Prepare Engineering Change Proposals to address deficiencies identified in testing</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased because effort will end in FY 2018.</p>	7.668	2.506	0.000	-	0.000
<p>Title: Space Modular Common Crypto (SMCC)</p> <p>Description: Space Modular Common Crypto (SMCC) provides Information Assurance (IA) services for new satellite architectures via a family of common crypto solutions that integrate Telemetry, Tracking, and</p>	18.565	33.587	28.459	-	28.459

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Commanding (TT&C), Mission Data (MD), and/or Transmission Security (TRANSEC) key stream functions for the Air Force and Intelligence Community space systems.</p> <p>FY 2018 Plans: -Continue TMRR activities -Continue SMCC ACS development contract activities -Continue SMCC MLCS development contract activities</p> <p>FY 2019 Base Plans: -Will ramp down TMRR activities -Will continue SMCC ACS development contract activities -Will ramp down SMCC MLCS development contract activities</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funded decreased due to a ramp down in SMCC development contract activities</p>					
<p>Title: Algorithm Transition Compliance and Support</p> <p>Description: Supports AF Space Command (AF Cyber Core Function Lead) in Algorithm Transition Compliance and Support provides Information Assurance (IA) support that performs transition and governance efforts to effectively analyze 30 classified algorithms, thousands of associated COMSEC keying material short titles, and hundreds of equipment types. This effort also tracks and reports algorithm/device integration across the AF. Analysis (Analyzes), determines and monitors mitigation strategies; develops and plans technology demonstration efforts to ensure new algorithms can be integrated into the AF enterprise. Assesses current state of AF crypto across the enterprise. Develops and maintains a classified Crypto Modernization (CM) database system that tracks status of AF crypto device types that (and) is accessible by the CM community via SIPRNET. Efforts support NC3, ISR, all AF platforms, and most ground networks.</p> <p>FY 2018 Plans: -Continue to support algorithm transition and governance efforts to effectively track, analyze, and report on AF use of 30 classified algorithms in over 270,000 devices across the AF enterprise comprised of over 300 equipment types/families and requiring thousands of associated COMSEC keying material short titles</p> <p>- Continue analysis and development of a method and/or process to accurately transition, track, and manage crypto assets and COMSEC across the AF</p>	1.824	1.835	3.385	-	3.385

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>- Provide Crypto-Mod analysis database to AF community to assist in annual assessments during long term effort to develop enterprise capabilities based assessment (CBA) to identify management capability gaps</p> <p>- Conduct annual assessment of the state of the AF COMSEC report card and update Crypto and Cyber Roadmap</p> <p>- Continue to evaluate NSA recommendations for Advanced Cryptographic Capabilities suite of algorithms and identify related tasks which affect the AF</p> <p>FY 2019 Base Plans:</p> <p>- Will continue to analyze the AF Crypto and Cyber enterprise and provide situational awareness to significant risks related to aging inventory and vulnerabilities to the key exchange process</p> <p>- Will provide assessment of Commercial Solutions for Classified (CSfC) and Quantum Resistance Encryption impacts</p> <p>- Will continue to provide analysis of adequacy of COMSEC and Cyber products in support of NSA requirements, sustainment issues and the state of technology</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to Crypto Modernization 2 (CM2) support</p>					
<p>Title: Missile Electronic Encryption Device (MEED) Modification</p> <p>Description: The MEED Modification upgraded the legacy Missile Entry Control System (MECS) devices used to securely authenticate personnel attempting access to this Nation's ground-based Intercontinental Ballistic Missile (ICBM) facilities. This effort will bring the MEED equipment into compliance with current NSA information assurance (IA) security design guidance.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans:</p>	1.531	0.000	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A					
<p>Title: Classified Data At Rest (CDAR)</p> <p>Description: CDAR plans to develop and procure an NSA approved modernized cryptographic solution(s) for use in ISR, C2, and EW platforms exposed to hostile/uncontrolled environments. The enterprise cryptographic solution will encrypt/decrypt Top Secret and Below (TSAB) data at rest residing in a variety of data storage environments.</p> <p>FY 2018 Plans: -Complete systems engineering and concept development activities leading to Material Development Decision (MDD) -Conduct material solution analysis</p> <p>FY 2019 Base Plans: -Will continue material solution analysis</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>	0.100	0.100	0.100	-	0.100
<p>Title: Integrated Data Denial (IDD) Crypto</p> <p>Description: The United States Nuclear Detonation (NUDET) Detection System (USNDS) Program and Air Force Space Command have identified a need to replace the Integrated Data Denial (IDD) crypto devices within the USNDS architecture. The primary purpose of USNDS is to detect, locate, and report nuclear detonation in Earth's atmosphere or near space in near real time. IDD is a cryptographic component within the USNDS ground systems and is currently facing obsolescence issues.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>	1.098	0.000	0.000	-	0.000
Accomplishments/Planned Programs Subtotals	33.231	39.712	33.159	-	33.159

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 831010: <i>COMSEC Equipment</i>	50.045	57.527	42.885	-	42.885	50.356	49.107	49.951	49.951	Continuing	Continuing

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

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
VINSON/ANDVT Cryptographic Modernization (VACM)	C/CPIF	Raytheon Company : Ft Wayne, IN	-	0.240	Dec 2017	-		-		-		-	Continuing	Continuing	47.863
VINSON/ANDVT/ Cryptographic Modernization (ARC-234)	MIPR	Defense Microelectronic Activity : Sacramento, CA	-	-		-		-		-		-	Continuing	Continuing	32.737
Space Telemetry, Tracking & Commanding (TT&C) Aerospace Vehicle Equipment (AVE Inc 1)	C/CPFF	General Dynamics C4 Systems : Scottsdale, AZ	-	-		-		-		-		-	Continuing	Continuing	-
Tech Development	Various	MULTIPLE : MULTIPLE	-	0.250	Jan 2017	0.269	Jan 2018	0.226	Jan 2019	-		0.226	Continuing	Continuing	-
Mini Crypto	C/CPIF	VIASAT, INC : Carlsbad, CA	-	6.359	Apr 2017	1.717	Apr 2018	1.444	Apr 2019	-		1.444	Continuing	Continuing	-
Space Modular Common Crypto (SMCC)	C/CPIF	MULTIPLE : MULTIPLE	-	17.154	Feb 2017	27.166	Dec 2017	22.853	Dec 2018	-		22.853	Continuing	Continuing	-
Missile Electronic Encryption Device (MEED) Modernization	C/FFP	SAIC : Tampa, FL	-	0.472	Aug 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	24.475		29.152		24.523		-		24.523	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
VINSON/ANDVT Crypto Mod (VACM)	MIPR	MULTIPLE : MULTIPLE	-	-		-		-		-		-	Continuing	Continuing	5.001
Mini Crypto	Various	MULTIPLE : MULTIPLE	-	0.656	Mar 2017	0.441	Mar 2018	0.371	Mar 2019	-		0.371	Continuing	Continuing	-
Space Modular Common Crypto (SMCC)	Various	MULTIPLE : MULTIPLE	-	0.360	Oct 2016	2.153	Dec 2017	1.811	Dec 2018	-		1.811	Continuing	Continuing	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>Cryptographic Modernization APPN 3600, BA07, PE 0303140F, BPAC 675100</i>																												
VACM																												
Technology Development																												
Mini Crypto (MC)																												
Space Modular Common Crypto (SMCC)																												
Missile Electronic Encryption Device (MEED) Modernization																												
Classified Data at Rest (CDAR)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Cryptographic Modernization APPN 3600, BA07, PE 0303140F, BPAC 675100</i>				
VACM	1	2017	4	2017
Technology Development	1	2017	4	2023
Mini Crypto (MC)	1	2017	3	2018
Space Modular Common Crypto (SMCC)	1	2017	1	2020
Missile Electronic Encryption Device (MEED) Modernization	1	2017	1	2018
Classified Data at Rest (CDAR)	1	2017	3	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>				Project (Number/Name) 675231 / <i>AF Key Management Enterprise (AF KME)</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675231: <i>AF Key Management Enterprise (AF KME)</i>	-	1.921	3.261	1.453	0.000	1.453	0.001	0.000	0.001	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

In parallel with AF KMI, DoD and the Services are addressing the need for a new generation of future KMI-aware ECUs that will be capable of direct interaction with the DoD KMI Enterprise, under the Joint Crypto Modernization Initiative (PE0303140F, BPAC 675100, Cryptographic Modernization, supports this initiative). In some cases these new ECUs, although needing to be supported by KMI, will not be KMI network-connected. "Last mile" transport of black (aka benign, or encrypted) and red (unencrypted) keying material from a KMI client to a new generation ECU or current legacy ECU will need to be handled in the early years by one of two data transfer devices.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675231 / <i>AF Key Management Enterprise (AF KME)</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver ISSP weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Air Force KMI Last Mile Space & Naval Warfare Systems Command (SPAWAR) Support (Tier 3)</p> <p>Description: Support includes architectural planning, systems engineering, testing and studies and analyses for migration to the Key Management Infrastructure (KMI) (includes acquisition planning, systems integration, engineering support and System Program Office (SPO) support). Transitioned existing key management capabilities to AF KMI Last Mile Tier 3.</p> <p>FY 2018 Plans: -Continue to provide annual resources to SPAWAR to plan and execute specific profile testing for all Air Force ECUs -Continue MS App development based upon the existing iAPP software</p> <p>FY 2019 Base Plans: -Will continue to provide annual resources to SPAWAR to plan and execute specific profile Air Force ECUs -Will continue and develop and integrate/test MS App with existing Tier 3 Key Loaders</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to ramping down of development and test efforts</p>	0.129	3.144	1.453	-	1.453
<p>Title: Air Force KMI Last Mile (Tier 3)</p> <p>Description: Air Force KMI Last Mile Tier 3 early system engineering, risk reduction and engineering development to include: concept development for distribution, load and management elements of last mile; studies and analyses for technology possibilities and prototyping efforts for the last mile; and development of a certified KMI-aware, Product Delivery Enclave - enabled key load device.</p> <p>FY 2018 Plans: Contract termination expenses.</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>	1.792	0.117	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675231 / <i>AF Key Management Enterprise (AF KME)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funding decreased because effort ended in FY 2018.					
Accomplishments/Planned Programs Subtotals	1.921	3.261	1.453	-	1.453

C. Other Program Funding Summary (\$ in Millions)											
	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPAF 03 831010: <i>COMSEC Equipment</i>	3.972	2.283	2.673	-	2.673	2.643	1.971	2.931	2.984	Continuing	Continuing

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

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

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675231 / <i>AF Key Management Enterprise (AF KME)</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AF KMI Last Mile	C/CPHF	L3 Comm : Camden, NJ	-	0.671	Mar 2017	2.574	Mar 2018	1.258	Mar 2019	-		1.258	Continuing	Continuing	13.364
Subtotal			-	0.671		2.574		1.258		-		1.258	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering & Technical Documentation	SS/T&M	MITRE : San Antonio, TX	-	-		-		-		-		-	Continuing	Continuing	-
Engineering & Technical Acquisition Support Service	C/CPFF	Abacus Technology Corp. : Chevy Chase, MD	-	-		0.071	Jan 2018	-		-		-	Continuing	Continuing	-
AF KMI Last Mile (Tier 3)	MIPR	U.S. Navy SPAWAR : San Diego, CA	-	-		0.357	May 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	-		0.428		-		-		-	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
KMI Last Mile	PO	46 TS : Eglin AFB, FL	-	0.000	Mar 2017	0.078	Mar 2018	-		-		-	Continuing	Continuing	-
NSA Test Support	MIPR	NSA : FT Meade, MD	-	-		-		-		-		-	Continuing	Continuing	-
KMI Last Mile TEST	MIPR	605 TES : Eglin AFB, FL	-	-		-		-		-		-	Continuing	Continuing	-
CERDEC/PD Net E	MIPR	US Army : Aberdeen Proving Ground, MD	-	-		-		-		-		-	Continuing	Continuing	-
Joint Interoperability Test Command	MIPR	JITC : Ft. Huachuca, AZ	-	-		-		-		-		-	Continuing	Continuing	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force							Date: February 2018													
Appropriation/Budget Activity 3600 / 7							R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>							Project (Number/Name) 675231 / <i>AF Key Management Enterprise (AF KME)</i>						

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

KME																																	
SPAWAR Support	[Redacted]																																
AF KMI Tier 3 Last Mile	[Redacted]																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675231 / <i>AF Key Management Enterprise (AF KME)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>KME</i>				
SPAWAR Support	1	2017	4	2019
AF KMI Tier 3 Last Mile	1	2017	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303141F / <i>Global Combat Support System</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.050	0.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.155
675046: <i>Systems Engineering & Integration</i>	-	0.050	0.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.155
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.052	0.105	0.000	0.000	0.000
Current President's Budget	0.050	0.105	0.000	0.000	0.000
Total Adjustments	-0.002	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	-0.002	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

Change Summary Explanation

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

C. Accomplishments/Planned Programs (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>
Title: Develop Enterprise Protection Risk Management (EPRM)	0.050	0.105	-

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303141F / <i>Global Combat Support System</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>Description: Enterprise Protection Risk Management (EPRM) is an automated and standardized risk management application designed to support the Defense Security Enterprise in mitigating security risks to Air Force assets. EPRM addresses cyber, physical, information, industrial security, as well as program protection planning. EPRM prioritizes Courses of Action (COAs) for relative value to protect multiple assets from multiple threat tactics, techniques, and procedures. EPRM received certification and accreditation and hosting was established at DISA.</p> <p>FY 2018 Plans: - Will continue with integration efforts and support of mission assurance systems and testing of the Extract Transform and Load process</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: EPRM will no longer require RDT&E funding past FY 2018</p>			
Accomplishments/Planned Programs Subtotals	0.050	0.105	-

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

Remarks

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

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0303141F / <i>Global Combat Support System</i>				Project (Number/Name) 675046 / <i>Systems Engineering & Integration</i>							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Develop Enterprise Protection Risk Management (EPRM)	C/CPFF	Alion Science and Technology : Alexandria, VA	-	0.050	Feb 2018	0.105	Apr 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	0.050		0.105		-		-		-	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.050		0.105		-		-		-	Continuing	Continuing	N/A
Remarks None.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303141F / <i>Global Combat Support System</i>	Project (Number/Name) 675046 / <i>Systems Engineering & Integration</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

No project title.	
Application Integration Efforts	
Extract Transform and Load Protocol Testing	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303141F / <i>Global Combat Support System</i>	Project (Number/Name) 675046 / <i>Systems Engineering & Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
Application Integration Efforts	1	2017	4	2018
Extract Transform and Load Protocol Testing	1	2017	1	2018

Note

Global Combat Support Systems - Air Force is a program in sustainment. After FY12, the Air Force will use Operations and Maintenance funding to maintain support to this key shared infrastructure.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303142F / <i>Global Force Management - Data Initiative</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	1.851	2.147	2.170	0.000	2.170	2.210	2.248	2.295	2.338	Continuing	Continuing
676027: <i>Global Force Mgt Initiative</i>	-	1.851	2.147	2.170	0.000	2.170	2.210	2.248	2.295	2.338	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303142F / <i>Global Force Management - Data Initiative</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	2.099	2.147	2.186	0.000	2.186
Current President's Budget	1.851	2.147	2.170	0.000	2.170
Total Adjustments	-0.248	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	-0.248	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.016	0.000	-0.016

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Global Force Management - Data Initiative	1.851	2.147	2.170
Description: The GFM-DI is a combination of net-centric services designed to provide access to information on the operational availability of USAF forces and equipment. GFM-DI is part of a Joint GFM, (each service has a GFM-DI), directed by OSD and the JCS.			
FY 2018 Plans:			
<ul style="list-style-type: none"> - Complete development and deployment of the re-hosted Air Force Organizational Server - Automate the interface with MPES - Add the capability to link Air Force readiness posture data for personnel and platforms to authorizations - Add the ability to match the DODID to the DCPDS or MilPDS position number - Add automated interface between GFM-DI and MilPDS - Add automated interface between GFM-DI and DCPDS - Add automated interface between GFM-DI and DMDC 			
FY 2019 Plans:			
<ul style="list-style-type: none"> - Reengineer the Air Force Organizational Server (AFOS) database to improve maintainability and overall performance enhancements - Implement General Officer Steering Council directed updates to the GFM Data Model for improved unit name visibility - Add an automated AFOS system performance monitoring and reporting capability - Add enhanced administration and metric collection tools to the AFOS 			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303142F / <i>Global Force Management - Data Initiative</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
- Funding increased from FY18 to FY19 by \$0.023M -- Accounts for inflation of services and contract costs			
Accomplishments/Planned Programs Subtotals	1.851	2.147	2.170

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

N/A

Remarks

E. Acquisition Strategy

The program will utilize an evolutionary acquisition strategy resulting in the migration to a Joint Information Environment (JIE)-compliant platform, replacement of system Commercial-Off-the-Shelf (COTS) components with newer, more capable elements, and additional software releases to implement additional requirements.

The anticipated contract structure will be Firm-Fixed Price contract.

The Air Force Organizational Server (AFOS) PMO will utilize a mix of Service Level Agreements (SLA) and Interface Requirement Agreements with AFOS stakeholders and support agencies as part of its management strategy. SLAs will be developed with the Lead Developmental Test Organization and the Capabilities Integration Environment at Maxwell AFB-Gunter Annex. The AFOS PMO also maintains Memorandum of Agreements (MOAs) with several AFOS input and output systems, including Manpower Programming & Execution Systems, Air Force Directory Services, Air Force Equipment Management System, and Force Structure Data Management.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303142F / <i>Global Force Management - Data Initiative</i>	Project (Number/Name) 676027 / <i>Global Force Mgt Initiative</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GFM-DI AFOS / Development Contract	C/FFP	Various : Various	-	1.063	Mar 2017	1.387	Mar 2018	1.680	Mar 2019	-		1.680	Continuing	Continuing	-
Subtotal			-	1.063		1.387		1.680		-		1.680	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CIE Support - NIPR/SIPR Dev Environment	C/FFP	AFLCMC/HNIZ : Montgomery, AL	-	-		0.030	Sep 2017	0.031	Sep 2018	-		0.031	Continuing	Continuing	-
ETASS - A&AS	C/CPFF	Oasis : Bedford, MA	-	0.314	Apr 2017	0.255	Apr 2018	0.255	Apr 2019	-		0.255	Continuing	Continuing	-
Enclave System Admin Services	MIPR	DISA: DECC-OKC : Montgomery, AL	-	0.366	Aug 2017	0.295	Aug 2018	0.122	Aug 2019	-		0.122	Continuing	Continuing	-
Subtotal			-	0.680		0.580		0.408		-		0.408	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Lead Developmental Test Organization Independent Test & Evalaution	C/FFP	AFLCMC/HNIZ : MONTGOMERY, AL	-	0.053	Mar 2017	0.130	Mar 2018	0.055	Apr 2019	-		0.055	Continuing	Continuing	-
Architecture Support	C/FFP	DISA : MONTGOMERY, AL	-	0.027	Mar 2017	0.020	Mar 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	0.080		0.150		0.055		-		0.055	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303142F / <i>Global Force Management - Data Initiative</i>	Project (Number/Name) 676027 / <i>Global Force Mgt Initiative</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GFM-DI Inc 2																												
- Develop RFP	█																											
- MS B Decision		█	█																									
- Contract Award		█	█																									
- JIE Integration and Migration		█	█	█	█																							
- COCOM Manual Update					█	█	█	█																				
- Readiness/Authorization Linkage					█	█	█	█																				
- Functional/Data Validation									█	█	█	█																
- Joint Staff J8 Validation													█	█	█	█												
- Refactor Database													█	█	█	█												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303142F / <i>Global Force Management - Data Initiative</i>	Project (Number/Name) 676027 / <i>Global Force Mgt Initiative</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
GFM-DI Inc 2				
- Develop RFP	1	2017	1	2017
- MS B Decision	2	2017	3	2017
- Contract Award	2	2017	3	2017
- JIE Integration and Migration	2	2017	2	2018
- COCOM Manual Update	2	2018	2	2019
- Readiness/Authorization Linkage	2	2018	2	2019
- Functional/Data Validation	2	2019	2	2020
- Joint Staff J8 Validation	2	2020	2	2021
- Refactor Database	2	2020	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0304260F / <i>Airborne SIGINT Enterprise</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	95.284	121.948	106.873	0.000	106.873	127.439	125.782	122.233	124.458	Continuing	Continuing
675180: <i>RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)</i>	-	39.756	59.706	50.577	0.000	50.577	40.696	42.195	43.071	43.856	Continuing	Continuing
675182: <i>MQ-1/MQ-9 (Airborne SIGINT Development - Predator)*</i>	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.001	Continuing	Continuing
675183: <i>Common Development (Airborne SIGINT Development - Common Development)</i>	-	43.301	19.485	51.384	0.000	51.384	56.085	55.568	56.722	57.755	Continuing	Continuing
675185: <i>Non-Traditional SIGINT (NTS)</i>	-	8.875	18.063	0.000	0.000	0.000	23.289	20.521	14.785	15.054	Continuing	Continuing
675186: <i>Special Programs (Airborne SIGINT Development - Special Platforms)</i>	-	3.352	24.694	4.912	0.000	4.912	7.369	7.498	7.653	7.792	Continuing	Continuing

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2019

A. Mission Description and Budget Item Justification

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0304260F / <i>Airborne SIGINT Enterprise</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

The FY 19 funding request for Project 675185, Non-Traditional SIGINT, was reduced by \$18.063 million to account for the availability of prior year execution balances.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	90.762	121.948	122.883	0.000	122.883
Current President's Budget	95.284	121.948	106.873	0.000	106.873
Total Adjustments	4.522	0.000	-16.010	0.000	-16.010
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	4.522	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-16.010	0.000	-16.010

Change Summary Explanation

The FY 19 funding request for Project 675185, Non-Traditional SIGINT, was reduced to account for the availability of prior year execution balances.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise				Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675180: RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)	-	39.756	59.706	50.577	0.000	50.577	40.696	42.195	43.071	43.856	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

	FY 2017	FY 2018	FY 2019
Title: RC-135 SIGINT Development	39.756	59.706	50.577
Description: Non-Recurring Engineering for the RC-135 signals intelligence Systems. See Classified Budget Exhibits (PE 0305207F)			
FY 2018 Plans: - Continue SIGINT development efforts for the RC-135 fleet to include new signal sets and upgrades to current capabilities.			
FY 2019 Plans: - Will continue SIGINT development efforts for the RC-135 fleet to include new signal sets and upgrades to current capabilities. See PE 0305207F for classified details. Classified requirements POC is HAF AF/A200 (704) 614-7317.			
FY 2018 to FY 2019 Increase/Decrease Statement: The funding decreased from FY18 to FY19 was caused by a requirement decrease for new signal sets and reduced number of upgrades to the RC-135 fleet for SIGINT development.			
Accomplishments/Planned Programs Subtotals	39.756	59.706	50.577

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item DARPO1: RC-135	259.172	280.734	234.706	-	234.706	239.037	243.443	248.318	252.788	Continuing	Continuing

Remarks

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

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RC-135 SIGINT Development	SS/ Various	L3COM : Greenville, TX	-	39.756	Jan 2017	59.706	Jan 2018	50.577	Jan 2019	-		50.577	Continuing	Continuing	-
Subtotal			-	39.756		59.706		50.577		-		50.577	Continuing	Continuing	N/A

Remarks
Above contract method/type will be CPFF and FFP

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	39.756	59.706	50.577	-	50.577	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Development of RC-135 mission sensors																												
Development of RIVET JOINT mission sensors (see 0305207F for classified details)																												
Development of COMBAT SENT mission sensors (see 0305207F for classified details)																												
Development of COBRA BALL mission sensors (see 0305207F for classified details)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Development of RC-135 mission sensors				
Development of RIVET JOINT mission sensors (see 0305207F for classified details)	1	2017	4	2023
Development of COMBAT SENT mission sensors (see 0305207F for classified details)	1	2017	4	2023
Development of COBRA BALL mission sensors (see 0305207F for classified details)	1	2017	4	2023

Note

Requirements documentation is classified. Classified requirements POC is HAF AF/A200 (704) 614-7317

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise				Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675183: Common Development (Airborne SIGINT Development - Common Development)	-	43.301	19.485	51.384	0.000	51.384	56.085	55.568	56.722	57.755	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

Development supports ASIP system upgrades and potential follow-on sensors. The ASIP sensor is designed to be a common SIGINT system, allowing for maximum coverage of the electromagnetic spectrum through the use of an integrated high and low band system. Follow-on objectives include but are not limited to use of open architecture concepts and rapid integration of new signals of interests.

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

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

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

	FY 2017	FY 2018	FY 2019
Title: Airborne Signals Intelligence Payload	43.301	19.485	51.384
Description: Develop and test a common SIGINT system for multiple SIGINT platforms including ASIP incremental upgrades using an open system architecture to the maximum extent possible.			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p><i>FY 2018 Plans:</i></p> <ul style="list-style-type: none"> - Continue new signals capabilities and enhancements for the ASIP Family of Systems (FoS). - Continue integration activities and incorporate upgrades as appropriate. Details are classified. - Evaluate options for expected follow-on open architecture systems. <p><i>FY 2019 Plans:</i></p> <ul style="list-style-type: none"> - Will continue new signals capabilities and enhancements for the ASIP FoS. - Will continue integration activities and incorporate upgrades as appropriate. Details are classified. - Will continue to develop replacement components affected by DMSMS. - Will continue to evaluate options for expected follow-on open architecture systems. - Will begin new sensor development activities. <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> In FY2019, the increase in funding reflects a return to a normalize FY16 funding level, plus additional funds to support the expected follow-on open architecture systems.</p>			
Accomplishments/Planned Programs Subtotals	43.301	19.485	51.384

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item HAWK00: RQ-4 Mods	32.045	43.968	23.715	-	23.715	4.851	126.340	117.382	106.166	167.265	621.732

Remarks
Not all funds are associated with SIGINT. The Airborne Signals Intelligence Payload production is included in FY18/FY19.

D. Acquisition Strategy
SIGINT capabilities will be developed and integrated onto various platforms using an incremental acquisition approach. In response to requirements as validated by the SCWG, an incremental acquisition strategy plan will be executed, contracting with appropriate vendor(s) to deliver capability while encouraging competition where possible. In response to SCWG-validated requirements, a competitive acquisition approach is expected for a follow-on system.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise				Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development)							

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ASIP Global Hawk Increment 1	SS/CPFF	Northrop Grumman : San Jose, CA	-	5.826	Dec 2016	1.656	Dec 2017	-		-		-	Continuing	Continuing	-
ASIP Increment 2 - Build A	SS/CPIF	Northrop Grumman : San Jose, CA	-	22.887	Dec 2016	7.746	Nov 2017	13.908	Dec 2018	-		13.908	Continuing	Continuing	-
Follow-on System Development (Post Inc 2 Build A)	Various	Various : Various	-	0.565	Dec 2016	-		18.338	Jan 2019	-		18.338	Continuing	Continuing	-
Follow-on SIGINT Sensors	TBD	Various : Various	-	-		-		9.000	Feb 2019	-		9.000	Continuing	Continuing	-
Various SIGINT Efforts	Various	AECOM : Annapolis Junction, MD	-	4.000	Nov 2016	4.000	Nov 2017	4.000	Nov 2018	-		4.000	Continuing	Continuing	-
Subtotal			-	33.278		13.402		45.246		-		45.246	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Various integration efforts and flight test	Various	Various : Various	-	6.631	Jan 2017	3.539	Dec 2017	3.188	Dec 2018	-		3.188	Continuing	Continuing	-
Subtotal			-	6.631		3.539		3.188		-		3.188	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation Support	Various	Various : Various	-	0.100	Feb 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.100		-		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development)
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA	Various	Various : Dayton, OH	-	3.292	Nov 2016	2.544	Nov 2017	2.950	Nov 2018	-		2.950	Continuing	Continuing	-
Subtotal			-	3.292		2.544		2.950		-		2.950	Continuing	Continuing	N/A
Project Cost Totals			-	43.301		19.485		51.384		-		51.384	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development)

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>SIGINT Common Development</i>																												
ASIP Upgrades Development, Increment 1 - U-2 Field Release 3.2	■																											
ASIP Global Hawk Increment 1 Upgrades	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
ASIP Upgrades Increment 2 - Build A	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Follow-on System Development (Post Inc 2 Build A)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Follow-on SIGINT Sensors																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>SIGINT Common Development</i>				
ASIP Upgrades Development, Increment 1 - U-2 Field Release 3.2	1	2017	1	2017
ASIP Global Hawk Increment 1 Upgrades	1	2017	4	2018
ASIP Upgrades Increment 2 - Build A	1	2017	2	2019
Follow-on System Development (Post Inc 2 Build A)	1	2017	4	2023
Follow-on SIGINT Sensors	2	2019	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise				Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675185: Non-Traditional SIGINT (NTS)	-	8.875	18.063	0.000	0.000	0.000	23.289	20.521	14.785	15.054	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

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

	FY 2017	FY 2018	FY 2019
Title: Non-Traditional SIGINT Tech Development	8.875	18.063	0.000
Description: Develops projects in the SIGINT and MASINT areas for transition to the RC-135 fleet, other intelligence, surveillance, and reconnaissance platforms and Ops Recce.			
FY 2018 Plans: - Initiate, continue, and complete various SIGINT projects to include enhanced ELINT exploitation, EW Data, COMINT, Audio exploitation, Ops Recce, signals of interest prosecution, and NTISR.			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
N/A			
FY 2018 to FY 2019 Increase/Decrease Statement: The decrease in FY 2019 funding is a reduction due to prior year balances.			
Accomplishments/Planned Programs Subtotals	8.875	18.063	0.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item DARP01: RC-135	259.172	280.734	234.706	-	234.706	239.037	243.443	248.318	252.788	Continuing	Continuing
• APAF 05 Line Item HAWK00: RQ-4 Mods	32.045	43.968	51.311	-	51.311	4.890	109.905	113.472	107.042	Continuing	Continuing

Remarks
Not all funds are associated with SIGINT.

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

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS)
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Non Traditional SIGINT Tech Development	Various	Multiple : Various	-	8.049	Dec 2016	13.563	Dec 2017	0.000		-		0.000	Continuing	Continuing	-
Ops Recce	Various	Multiple : Various	-	-		3.000	Dec 2017	0.000		-		0.000	Continuing	Continuing	-
Subtotal			-	8.049		16.563		0.000		-		0.000	Continuing	Continuing	N/A

Remarks

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

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA -- Compass Bright	Various	Various : Various, OH	-	0.826	Oct 2016	1.500	Oct 2017	0.000		-		0.000	Continuing	Continuing	-
Subtotal			-	0.826		1.500		0.000		-		0.000	Continuing	Continuing	N/A

Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
-	8.875	18.063	0.000	-	0.000	Continuing	Continuing	N/A

Remarks

The FY 19 funding for Project 675185, Non-Traditional SIGINT, was reduced to account for the availability of prior year execution balances.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS)
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Non-Traditional SIGINT (NTS)	
SIGINT Technologies	
- ELINT Programs	
- COMINT Programs	
- Special Signals Programs	
- Audio Programs	
- Analytics Programs	
Ops Recce Efforts	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Non-Traditional SIGINT (NTS)				
SIGINT Technologies	1	2017	4	2018
- ELINT Programs	1	2017	4	2018
- COMINT Programs	1	2017	4	2018
- Special Signals Programs	1	2017	4	2018
- Audio Programs	1	2017	4	2018
- Analytics Programs	1	2017	2	2018
Ops Recce Efforts	1	2017	4	2018

Note

On an annual basis, the SCWG reviews developmental technologies against warfighter capabilities and requirements based on strategic roadmaps. Projects advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement for the coming fiscal year. As a result, the USAF will move funds between projects periodically to develop the highest priority projects in response to urgent and emerging warfighter needs.

BPAC 675185 schedule subject to change due to \$0.00 FY19 funds available.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise				Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675186: <i>Special Programs (Airborne SIGINT Development - Special Platforms)</i>	-	3.352	24.694	4.912	0.000	4.912	7.369	7.498	7.653	7.792	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

	FY 2017	FY 2018	FY 2019
Title: SIGINT Development	3.352	24.694	4.912
Description: Develop, update, and test SIGINT capabilities for QRC and normalized special programs SIGINT projects.			
FY 2018 Plans: -Continue to modernize SIGINT systems used by the MQ-1B/9A RPA.			
FY 2019 Plans: -Will continue to modernize SIGINT systems used by the MQ-1B/9A RPA.			
FY 2018 to FY 2019 Increase/Decrease Statement: The funding decreases of FY19 reflects decreasing quick reaction capability upgrade requirements, consistent with pre-FY18 levels.			
Accomplishments/Planned Programs Subtotals			4.912

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / <i>Airborne SIGINT Enterprise</i>	Project (Number/Name) 675186 / <i>Special Programs (Airborne SIGINT Development - Special Platforms)</i>

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms)
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Upgrades to SIGINT systems used by the MQ-1/9 Rremotely piloted aircraft	Various	Various : Various	-	2.702	Jan 2017	23.914	Jan 2018	4.000	Jan 2018	-		4.000	Continuing	Continuing	-
Subtotal			-	2.702		23.914		4.000		-		4.000	Continuing	Continuing	N/A

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

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Flight Test	Various	Various : Various	-	0.650	Oct 2016	0.780	May 2017	0.912	May 2018	-		0.912	Continuing	Continuing	-
Subtotal			-	0.650		0.780		0.912		-		0.912	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	3.352	24.694	4.912	-	4.912	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms)

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	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>SIGINT Development</i>																												
MQ-1/9 Sensor 1 Modernization																												
MQ-1/9 Sensor 2 Modernization																												
MQ-1/9 Sensor Upgrades																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise	Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SIGINT Development				
MQ-1/9 Sensor 1 Modernization	1	2017	4	2023
MQ-1/9 Sensor 2 Modernization	1	2017	4	2023
MQ-1/9 Sensor Upgrades	1	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0304310F / <i>Commercial Economic Analysis</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	3.544	3.472	0.000	3.472	3.750	4.049	4.384	4.464	Continuing	Continuing
675896: <i>Commercial Economic Analysis</i>	-	0.000	3.544	3.472	0.000	3.472	3.750	4.049	4.384	4.464	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	3.544	3.498	0.000	3.498
Current President's Budget	0.000	3.544	3.472	0.000	3.472
Total Adjustments	0.000	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	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.026	0.000	-0.026

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0304310F / <i>Commercial Economic Analysis</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Commercial Economic Analysis Description: Develop solutions to help protect the Defense Industrial Base from adversary information attacks and protect the U.S. technological advantage. Research, develop, test and evaluate Commercial Economic Analysis capabilities, systems, tools, products and services through a disciplined, yet agile, process that ensures commercial economic modeling pilots, risk management construct, decision support tools, and continuous monitoring capabilities are available for Air Force sectors and segments of the Defense Industrial Base. FY 2018 Plans: Utilize existing contracts for four modular components that will expand classified commercial economic analyses and establish an initial operational capability in FY18. The four components include: CEA Enterprise Architecture and Design; Ontological Discovery/Vector Analysis of Classified Information for Risk Management Construct; Machine Learning for Continuous Assessment; and Assessment, Analysis, and Fusion Tool Integration. FY 2019 Base Plans: Utilize existing contracts for continuation of modular components. Classified details can be found in OSD Comptroller's classified Defense-Wide Justification Book Volume 6. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Minor decreases.	0.000	3.544	3.472	0.000	3.472
Accomplishments/Planned Programs Subtotals	0.000	3.544	3.472	0.000	3.472

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

N/A

Remarks

E. Acquisition Strategy

Competitively awarded a contract in July 2017. This contract has options that can be exercised upon receipt of FY2018 and FY2019 appropriations to develop the prototype system upon which the data will run. Will also use a previously competed, existing contract for the other software modules.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

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

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

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)							
3600 / 7				PE 0304310F / Commercial Economic Analysis					675896 / Commercial Economic Analysis							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Management Contract	C/TBD	TBD : TBD	-	0.000		1.000	Jun 2018	1.000	Feb 2019	-		1.000	Continuing	Continuing	5.000	
Subtotal			-	0.000		1.000		1.000		-		1.000	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Model Pilot	SS/TBD	Not specified. : NV	-	-		1.000	Jul 2018	1.000	Feb 2019	-		1.000	Continuing	Continuing	-	
Subtotal			-	-		1.000		1.000		-		1.000	Continuing	Continuing	N/A	
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Continuous Monitoring	C/TBD	Not specified. : NV	-	-		0.544	Aug 2018	0.472	Feb 2019	-		0.472	Continuing	Continuing	-	
Subtotal			-	-		0.544		0.472		-		0.472	Continuing	Continuing	N/A	
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
SETA Contract	C/TBD	Not specified. : NV	-	-		1.000	Jul 2018	1.000	Feb 2019	-		1.000	Continuing	Continuing	-	
Subtotal			-	-		1.000		1.000		-		1.000	Continuing	Continuing	N/A	
Project Cost Totals			-	0.000		3.544		3.472		-		3.472	Continuing	Continuing	N/A	
Remarks																

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0304310F / <i>Commercial Economic Analysis</i>	Project (Number/Name) 675896 / <i>Commercial Economic Analysis</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CEA				
Advanced Model Pilot 10	3	2018	4	2018
Advanced Model Pilot 11	3	2018	4	2018
Follow-on CEA Tool	3	2018	4	2022
Risk Management Construct	3	2018	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	8.608	0.000	8.608	7.813	13.188	13.497	13.743	Continuing	Continuing
675218: <i>Applications Development</i>	-	0.000	0.000	7.596	0.000	7.596	6.780	7.873	8.036	8.182	Continuing	Continuing
675220: <i>Unit Level</i>	-	0.000	0.000	1.012	0.000	1.012	1.033	5.315	5.461	5.561	Continuing	Continuing

Note
In FY 2019, 0207410F, Air & Space Operations Center (AOC), Project Number 675218, Applications Development and Project Number 675220, Unit Level, were transferred to PE 0305015F, C2 Air Operations Suite - C2 Information Services (C2AOS-C2IS), Project Number 675218, Applications Development and Project Number 675220, Unit Level, in order to improve transparency of development programs.

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

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

Unit Level: Unit Command and Control (UC2) funds are used to develop and integrate UC2 as an evolving sequence of increasing software capabilities that support the execution of the air battle plan and the air tasking order message received from the AOC. UC2 operations software systems meet needs identified in the TBMCS Operational Requirements Document (ORD) (2001), the UC2 Baseline System Requirements Document (SRD) by providing both the scheduling and mission preparation activities at the wing, group and squadron level, and the capabilities to report and track the success of each mission and influence decisions on future air battle planning. UC2 is fielded to the Wing Operations Center (WOC), the Maintenance Operations Center (MOC), the Emergency Operations Center (EOC), Crisis Action Team (CAT), and many other work-centers.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver Applications Development and Unit Level capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	8.608	0.000	8.608
Total Adjustments	0.000	0.000	8.608	0.000	8.608
• 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	8.608	0.000	8.608

Change Summary Explanation

In FY 2019, 0207410F, Air & Space Operations Center (AOC), Project Number 675218, Applications Development and Project Number 675220, Unit Level, were transferred to PE 0305015F, C2 Air Operations Suite - C2 Information Services (C2AOS-C2IS), Project Number 675218, Applications Development and Project Number 675220, Unit Level, in order to improve transparency of development programs.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services				Project (Number/Name) 675218 / Applications Development			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675218: <i>Applications Development</i>	-	0.000	0.000	7.596	0.000	7.596	6.780	7.873	8.036	8.182	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2019, 0207410F, Air & Space Operations Center (AOC), Project Number 675218, Applications Development, was transferred to PE 0305015F, C2 Air Operations Suite - C2 Information Services (C2AOS-C2IS), Project Number 675218, Applications Development, in order to improve transparency of development program.

A. Mission Description and Budget Item Justification

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

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

In FY 2019, Applications Development (C2AOS-C2IS) core development activities will be complete and focus will be on testing, addressing discrepancies discovered during testing, cyber security, and the start of modernization planning for 5th/4th generation fighter platforms.

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

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675218 / Applications Development

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: C2AOS-C2IS Development</p> <p>Description: C2AOS-C2IS Development effort develops modular net-centric C2 applications for air battle planning, execution and management functions and creates web-enabled information services to expose air operations data in Theater Battle Management Core System (TBMCS) applications and systems using standardized schemas including Capability Packages (CP) 1, 2, & 3</p> <ul style="list-style-type: none"> - CP 1: Air Tasking Order Management System (ATOMS), Request Information Services for Command and Control (RISC2) and Network Enabled Weapons (NEW) - CP 2: C2 of Integrated Air Missile Defense (IAMD) Planner and Airspace Management Application - Airspace Information Service (ASMA-ASIS) - CP 3: Air Execution Information System (AXIS) <p>FY 2018 Plans: See PE 0207410F, Air & Space Operations Center (AOC), Project Number 675218, Applications Development.</p> <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Conduct combined C2AOS-C2IS and AOC Developmental Test (DT) - Continue integration activities, bug fixes, Baseline Change Requests (BCR), and maintain cyber security posture - Start C2AOS-C2IS and AOC combined Operational Test (OT) <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to transfer from PE 0207410F, Air & Space Operations Center (AOC), Project Number 675218, Applications Development.</p>	0.000	0.000	6.317	0.000	6.317
<p>Title: C2AOS-C2IS Modificatons</p> <p>Description: The C2AOS-C2IS Modifications effort updates the fielded C2AOS-C2IS baseline to remain interoperable, certified, supportable, and compliant through the development, integration, testing, fielding, of new capabilities and upgrades. C2AOS-C2IS Modifications fine tunes capabilities for C2 of 5th and 4th Generation Fighter Platforms, maintains cyber security posture via cyber updates, and updates user interfaces as needed.</p> <p>FY 2018 Plans:</p>	0.000	0.000	0.600	0.000	0.600

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675218 / Applications Development

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
See PE 0207410F, Air & Space Operations Center (AOC), Project Number 675218, Applications Development. FY 2019 Base Plans: - Release Request for Proposal (RFP) for C2AOS-C2IS Modification contract - Review received proposals FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to transfer from PE 0207410F, Air & Space Operations Center (AOC), Project Number 675218, Applications Development.					
Title: Test and Evaluation Description: Test and Evaluation FY 2018 Plans: See PE 0207410F, Air & Space Operations Center (AOC), Project Number 675218, Applications Development. FY 2019 Base Plans: - Conduct C2AOS-C2IS and AOC combined DT - Conduct C2AOS-C2IS and AOC combined OT FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to transfer from PE 0207410F, Air & Space Operations Center (AOC), Project Number 675218, Applications Development.	0.000	0.000	0.679	0.000	0.679
Accomplishments/Planned Programs Subtotals	0.000	0.000	7.596	0.000	7.596

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

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675218 / Applications Development

D. Acquisition Strategy

Projects will be awarded following full and open competition and will use an evolutionary acquisition strategy based on incremental development leveraging the C2 Applications and Information Services Development Indefinite Delivery/Indefinite Quantity contract. The Air Force Life Cycle Management Center, Operations C2 Division manages the integration of C2AOS-C2IS efforts into the AOC WS.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675218 / Applications Development
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C2AOS-C2IS Test and Integration 1	C/T&M	Leidos, Inc. : Reston, VA	-	-		-		1.473	Jan 2019	-		1.473	Continuing	Continuing	-
C2AOS-C2IS Test and Integration 2	C/T&M	Lockheed Martin : Colorado Springs, CO	-	-		-		2.717	Dec 2018	-		2.717	Continuing	Continuing	-
Subtotal			-	-		-		4.190		-		4.190	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support (Joint)	MIPR	JITC : Fort Huachuca, AZ	-	-		-		0.035	Oct 2018	-		0.035	Continuing	Continuing	-
Lead Development Test and Evaluation Organization	PO	96th Test Wing : Eglin AFB, FL	-	-		-		0.644	Jan 2019	-		0.644	Continuing	Continuing	-
Subtotal			-	-		-		0.679		-		0.679	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	SS/ Various	MITRE : Bedford, MA	-	-		-		1.620	Oct 2018	-		1.620	Continuing	Continuing	-
Program Management Administration	C/Various	Various : Hanscom AFB, MA	-	-		-		0.235	Oct 2018	-		0.235	Continuing	Continuing	-
Program Management Administration Modification	C/Various	Various : Hanscom AFB, MA	-	-		-		0.600	Jan 2019	-		0.600	Continuing	Continuing	-
Cyber Support	MIPR	Various : Hanscom AFB, MA	-	-		-		0.272	Jan 2019	-		0.272	Continuing	Continuing	-
Subtotal			-	-		-		2.727		-		2.727	Continuing	Continuing	N/A

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675218 / Applications Development

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Applications Development				
C2AOS-C2IS Test and Integration 1 (TI1) - Leidos	1	2019	2	2020
C2AOS-C2IS Test and Integration 2 (TI2) - Lockheed Martin	1	2019	2	2020
C2AOS-C2IS Modifications	1	2019	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675220 / Unit Level
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675220: Unit Level	-	0.000	0.000	1.012	0.000	1.012	1.033	5.315	5.461	5.561	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2019, 0207410F, Air & Space Operations Center (AOC), Project Number 675220, Unit Level, was transferred to PE 0305015F, C2 Air Operations Suite - C2 Information Services (C2AOS-C2IS), Project Number 675220, Unit Level, in order to improve transparency of development programs.

A. Mission Description and Budget Item Justification

Project funds are used to develop and integrate Unit Command and Control (UC2) as an evolving sequence of increasing software capabilities that support the execution of the air battle plan and the air tasking order message received from the AOC. UC2 operations software systems meet needs identified in the TBMCS Operational Requirements Document (ORD) (2001), the UC2 Baseline System Requirements Document (SRD) by providing both the scheduling and mission preparation activities at the wing, group and squadron level, and the capabilities to report and track the success of each mission and influence decisions on future air battle planning. UC2 is fielded to the Wing Operations Center (WOC), the Maintenance Operations Center (MOC), the Emergency Operations Center (EOC), Crisis Action Team (CAT), and many other work-centers.

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

In FY 2019, Unit Level core development activities will be to add functions that improve user experience. Additional FY 2019 activities will include resolving deficiencies discovered during developmental tests (DT), maintaining information assurance (IA) posture, and ensuring integration and testing of UC2 interfaces with other applications.

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

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Software Development	0.000	0.000	0.912	0.000	0.912
Description: UC2 capabilities development/integration.					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675220 / Unit Level
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>FY 2018 Plans: See PE 0207410F, Air & Space Operations Center (AOC), Project Number 675220, Unit Level.</p> <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Field 1.3 - Develop 1.3.1 - Make improvements to user interface <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to transfer from PE 0207410F, Air & Space Operations Center (AOC), Project Number 675220, Unit Level.</p>					
<p>Title: Testing and Test Support</p> <p>Description: UC2 testing and test support activities.</p> <p>FY 2018 Plans: See PE 0207410F, Air & Space Operations Center (AOC), Project Number 675220, Unit Level.</p> <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Test 1.3.1 - Support virtual warfighter assessment <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to transfer from PE 0207410F, Air & Space Operations Center (AOC), Project Number 675220, Unit Level.</p>	0.000	0.000	0.100	0.000	0.100
Accomplishments/Planned Programs Subtotals	0.000	0.000	1.012	0.000	1.012

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675220 / Unit Level

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>			<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• OPAF 03 834520: Theater Battle Mgt C2 System	3.293	3.384	3.420	-	3.420	3.481	3.544	3.608	3.671	Continuing	Continuing

Remarks

D. Acquisition Strategy

Projects will be awarded following full and open competition and will use an evolutionary acquisition strategy based on incremental development while incorporating agile development and testing principals. The contracting strategy is Cost Plus Fixed Fee. The acquisition and contracting strategies were approved by Program Executive Officer, Battle Management, on 20 March, 2014.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675220 / Unit Level
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Unit Command & Control (UC2)	C/CPFF	Leidos Inc. : Reston, VA	-	-		-		0.592	Jan 2019	-		0.592	Continuing	Continuing	-
Subtotal			-	-		-		0.592		-		0.592	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support	PO	46TS : Eglin, FL	-	-		-		0.100	Dec 2018	-		0.100	Continuing	Continuing	-
Subtotal			-	-		-		0.100		-		0.100	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	C/CPAF	MITRE : Bedford, MA	-	-		-		0.200	Dec 2018	-		0.200	Continuing	Continuing	-
Program Management Administration	C/Various	Various : Hanscom AFB, MA	-	-		-		0.100	Dec 2018	-		0.100	Continuing	Continuing	-
Cyber Support	MIPR	Various : Hanscom AFB, MA	-	-		-		0.020	Dec 2018	-		0.020	Continuing	Continuing	-
Subtotal			-	-		-		0.320		-		0.320	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		-	-	0.000	1.012	1.012	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675220 / Unit Level

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Unit Command and Control (UC2)																												
UC2 Rel 1.3 Fielding																												
UC2 Rel 1.3.1 Development & Testing																												
UC2 Rel 1.3.1 Fielding																												
UC2 Rel 2.0 Development & Testing																												
UC2 Rel 2.0 Fielding																												
UC2 Rel 2.1 Development & Testing																												
UC2 Rel 2.1 Fielding																												
UC2 Rel 2.2 Development & Testing																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305015F / C2 Air Operations Suite - C2 Info Services	Project (Number/Name) 675220 / Unit Level

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Unit Command and Control (UC2)				
UC2 Rel 1.3 Fielding	1	2019	4	2020
UC2 Rel 1.3.1 Development & Testing	1	2019	1	2021
UC2 Rel 1.3.1 Fielding	1	2021	4	2021
UC2 Rel 2.0 Development & Testing	1	2021	4	2021
UC2 Rel 2.0 Fielding	4	2021	2	2022
UC2 Rel 2.1 Development & Testing	1	2022	4	2022
UC2 Rel 2.1 Fielding	4	2022	3	2023
UC2 Rel 2.2 Development & Testing	3	2022	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305020F / <i>CCMD Intelligence Information Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	1.507	1.542	1.586	0.000	1.586	1.619	1.652	1.691	1.722	Continuing	Continuing
674901: <i>Ccmd Intelligence Information Technology</i>	-	0.000	0.000	1.586	0.000	1.586	1.619	1.652	1.691	1.709	Continuing	Continuing
675898: <i>International Intelligence Technology and Arc</i>	-	1.507	1.542	0.000	0.000	0.000	0.000	0.000	0.000	0.013	Continuing	Continuing

Note

This program, BA 7, PE 0305020F, project 674901, Combatant Command Intelligence Information Technology (CCMD Intel IT), is a new start.

A. Mission Description and Budget Item Justification

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305020F / <i>CCMD Intelligence Information Technology</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	1.542	1.598	0.000	1.598
Current President's Budget	1.507	1.542	1.586	0.000	1.586
Total Adjustments	1.507	0.000	-0.012	0.000	-0.012
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	1.507	0.000	-0.012	0.000	-0.012

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305020F / CCMD Intelligence Information Technology				Project (Number/Name) 674901 / Ccmd Intelligence Information Technology			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
674901: Ccmd Intelligence Information Technology	-	0.000	0.000	1.586	0.000	1.586	1.619	1.652	1.691	1.709	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0305020F, project 674901, Combatant Command Intelligence Information Technology (CCMD Intel IT), is a new start.

A. Mission Description and Budget Item Justification

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

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

	FY 2017	FY 2018	FY 2019
Title: Combatant Command Intelligence Information Technology (CCMD Intel IT)	0.000	0.000	1.586
Description: Development, modification, and integration of new functionality to support improved end-to-end service delivery against one or more of six validated requirements areas within the CCIIT Enterprise operational mission set.			
FY 2018 Plans: N/A			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305020F / <i>CCMD Intelligence Information Technology</i>	Project (Number/Name) 674901 / <i>Ccmd Intelligence Information Technology</i>
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B. Accomplishments/Planned Programs (\$ in Millions)

<p>The RDT&E funds are being used to develop a prototype software interface designed to integrate existing Intelligence Process tools (Collection Management, Asset Management, Assessments, etc.) into a single interface providing Command Intelligence and Operational Staffs ability to monitor and influence the intelligence process across service providers.</p>	FY 2017	FY 2018	FY 2019
<p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funding was transferred from the incorrect BPAC of 675898 to the correct BPAC 674901. This is not a new start effort.</p>			
Accomplishments/Planned Programs Subtotals	0.000	0.000	1.586

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

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• O&M N/A: <i>CCMD Intelligence Information Technology</i>	12.178	12.815	12.736	-	12.736	12.703	12.679	12.669	12.897	Continuing	Continuing

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0305020F / CCMD Intelligence Information Technology				Project (Number/Name) 674901 / Ccmd Intelligence Information Technology							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development Package	C/CPAF	Other Contracting : Fairfax, VA	-	-		-		1.586		-		1.586	Continuing	Continuing	-
Subtotal			-	-		-		1.586		-		1.586	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		0.000		1.586		-		1.586	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305020F / CCMD Intelligence Information Technology	Project (Number/Name) 674901 / Ccmd Intelligence Information Technology

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Capability Drop 1	
Develop the prototype, conduct acceptance testing, & develop lessons learned	████████████████████
Capability Drop 2	
Integration with existing workflows and IOC of IMM capability	██

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305020F / <i>CCMD Intelligence Information Technology</i>	Project (Number/Name) 674901 / <i>Ccmd Intelligence Information Technology</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Capability Drop 1				
Develop the prototype, conduct acceptance testing, & develop lessons learned	2	2018	1	2019
Capability Drop 2				
Integration with existing workflows and IOC of IMM capability	2	2018	1	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0305020F / CCMD Intelligence Information Technology				Project (Number/Name) 675898 / International Intelligence Technology and Arc				
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675898: <i>International Intelligence Technology and Arc</i>	-	1.507	1.542	0.000	0.000	0.000	0.000	0.000	0.000	0.013	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

	FY 2017	FY 2018	FY 2019
Title: Combatant Command Intelligence Information Technology (CCMD Intel IT)	1.507	1.542	-
Description: Development, modification, and integration of new functionality to support improved end-to-end service delivery against one or more of six validated requirements areas within the CCIIT Enterprise operational mission set.			
FY 2018 Plans: Produce an integrated Enterprise Architecture baseline for the first three end-to-end Services and associated workflows. Advance agile development and release of the workflow visualization solution for Integrated Mission Management. Complete the second and initiate the third Materiel Solutions Analysis Study Team, Requirements Definition Package, and initiate development/acquisition activities.			
FY 2018 to FY 2019 Increase/Decrease Statement: Funding was transferred to the correct BPAC of 674901.			
Accomplishments/Planned Programs Subtotals	1.507	1.542	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305020F / CCMD Intelligence Information Technology	Project (Number/Name) 675898 / International Intelligence Technology and Arc

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>			<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• OPAF 03 0305600F: <i>Int'l Intel Tech Architecture</i>	18.358	22.335	10.067	-	10.067	10.320	10.603	10.884	11.167	Continuing	Continuing

Remarks

N/A

D. Acquisition Strategy

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

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305020F / <i>CCMD Intelligence Information Technology</i>	Project (Number/Name) 675898 / <i>International Intelligence Technology and Arc</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Int'l Intel Tech Architecture

Classified details can be found in OSD Comptroller's classified Defense-Wide Justification Book Volume 6.



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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305020F / <i>CCMD Intelligence Information Technology</i>	Project (Number/Name) 675898 / <i>International Intelligence Technology and Arc</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Int'l Intel Tech Architecture</i>				
Classified details can be found in OSD Comptroller's classified Defense-Wide Justification Book Volume 6.	1	2018	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	4.219	4.453	4.492	0.000	4.492	4.575	4.654	4.750	4.837	Continuing	Continuing
674689: <i>Global Access Architecture</i>	-	4.219	4.453	4.492	0.000	4.492	4.575	4.654	4.750	4.837	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i>
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This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	4.354	4.453	4.526	0.000	4.526
Current President's Budget	4.219	4.453	4.492	0.000	4.492
Total Adjustments	-0.135	0.000	-0.034	0.000	-0.034
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-0.135	0.000	-0.034	0.000	-0.034

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: CNS/ATM COE Contract Support and Administration of DoD Avionics Equipment Catalog	0.757	0.783	0.796	0.000	0.796
Description: Multiple contract vehicles with multiple avionics vendors that enable centralized procurement of CNS/ATM avionics equipment/components. Supports numerous DoD, US Federal Agency, and Foreign Military Sales program offices. Provide preferred customer pricing and extended warranty.					
FY 2018 Plans: Continue administration of current contracts. Evaluate proposals and award new contracts through February 2019. Ensure availability of avionics components required for Federal Aviation Administration (FAA) mandated ADS-B requirements.					
FY 2019 Base Plans: Continue administration of the catalog and monitor industry for new CNS/ATM Products which could be added to catalog.					
FY 2019 OCO Plans: n/a					
FY 2018 to FY 2019 Increase/Decrease Statement:					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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Funding decreased due to inflation adjustments					
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<p>Title: CNS/ATM COE Digital Aeronautical Flight Information File (DAFIF) Management</p> <p>Description: Perform periodic audits of the processes and procedures utilized by organizations involved in the development and distribution of critical safety of flight electronic databases used by aircrews to fly instrument flight rules procedures worldwide. Ensures the validity of multiple sources of information critical to implementation of international performance based navigation (PBN) standards.</p> <p>FY 2018 Plans: Continue assisting DoD agencies and the NGA to validate the accuracy of DAFIF data and investigate potential automation tools/capabilities to increase database accuracy. Provide technical and auditing support for the new data chain prototype.</p> <p>FY 2019 Base Plans: Work with DoD agencies and the FAA to develop performance based procedures required to operate without restriction in the NAS and in international civil aviation environments. Continue to publish procedures and databases with the required degree of accuracy/performance necessary to operate manned and remotely piloted aircraft in NAS.</p> <p>FY 2019 OCO Plans: n/a</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to inflation adjustments</p>	1.887	1.880	1.878	0.000	1.878
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<p>Title: CNS/ATM COE Generic Performance Matrix (GPM) Development</p> <p>Description: Participate in technical forums to understand and influence civil aviation standards to incorporate DoD interests. Create new and/or revise the 20 existing GPMs used by AF platform program offices to ensure aircraft comply with civil aviation requirements. Tailor GPMs for program offices to apply standards to unique aircraft avionics architectures. Assist 50+ aircraft program offices with the development of CNS/ATM related test and evaluation plans, the analysis of test/performance data, and the certification of aircraft CNS/ATM performance.</p> <p>FY 2018 Plans:</p>	1.575	1.790	1.818	0.000	1.818
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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Continue development of performance matrices to ensure AF manned and remotely piloted aircraft are capable and certified to operate in accordance with emerging International Civil Aviation Organization (ICAO) performance based CNS/ATM requirements.</p> <p>FY 2019 Base Plans: Continue development of performance matrices to ensure AF manned and remotely piloted aircraft are capable and certified to operate in accordance with emerging ICAO performance based CNS/ATM requirements.</p> <p>FY 2019 OCO Plans: n/a</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to inflation adjustments</p>					
Accomplishments/Planned Programs Subtotals	4.219	4.453	4.492	0.000	4.492

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

N/A

Remarks

E. Acquisition Strategy

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

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i>	Project (Number/Name) 674689 / <i>Global Access Architecture</i>
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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CNS/ATM Center of Excellence: Technical support for CNS/ATM requirement assessments, GPM development, DAFIF navigation data chain audits/certification, and CNS/ATM ID/IQ contract management.	C/T&M	MITRE : Bedford, MA	-	2.351	Oct 2016	2.613	Oct 2017	2.604	Oct 2018	0.000		2.604	Continuing	Continuing	-
CNS/ATM Center of Excellence: Technical support for operational requirement assessments, GPM development, DAFIF navigation data chain audits/certification, and CNS/ATM ID/IQ contract management.	C/CPFF	Oasis Systems : Lexington, MA	-	1.092	Jan 2017	1.061	Dec 2017	1.072	Dec 2018	0.000		1.072	Continuing	Continuing	-
Subtotal			-	3.443		3.674		3.676		0.000		3.676	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program office support - PMA (Contract Services)	C/T&M	Odyssey Consulting : Bedford, MA	-	0.524	Aug 2017	0.528	Aug 2018	0.539	Aug 2019	0.000		0.539	Continuing	Continuing	-
Program office support - PMA (Contract Svcs)	C/T&M	Tecolote/Quantech : Bedford, MA	-	0.070	Oct 2016	0.070	Oct 2017	0.055	Oct 2018	0.000		0.055	Continuing	Continuing	-
Program office support - PMA (Other Govt Costs)	Various	Various : Bedford, MA	-	0.182	Oct 2016	0.181	Oct 2017	0.222	Oct 2018	-		0.222	Continuing	Continuing	-
Subtotal			-	0.776		0.779		0.816		0.000		0.816	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force								Date: February 2018			
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i>				Project (Number/Name) 674689 / <i>Global Access Architecture</i>			
	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	4.219	4.453	4.492	0.000	4.492	Continuing	Continuing	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i>	Project (Number/Name) 674689 / <i>Global Access Architecture</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

No project title.	
Generic Performance Matrix Development	
DAFIF Management	
CNS/ATM iGATM I Contract Administration	
CNS/ATM iGATM II Contract Proposal Evaluations	
CNS/ATM iGATM II Contract Administration	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i>	Project (Number/Name) 674689 / <i>Global Access Architecture</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
Generic Performance Matrix Development	1	2017	4	2023
DAFIF Management	1	2017	4	2023
CNS/ATM iGATM I Contract Administration	1	2017	1	2017
CNS/ATM iGATM II Contract Proposal Evaluations	1	2017	2	2019
CNS/ATM iGATM II Contract Administration	1	2017	2	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305110F / <i>Satellite Control Network (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	14.099	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
673276: <i>Satellite Control Network</i>	-	14.099	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

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	15.624	0.000	0.000	0.000	0.000
Current President's Budget	14.099	0.000	0.000	0.000	0.000
Total Adjustments	-1.525	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-1.000	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	-0.525	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	24.193	26.654	26.942	3.000	29.942	27.497	27.975	28.550	29.072	Continuing	Continuing
672738: <i>Weather Service</i>	-	24.193	26.654	26.942	3.000	29.942	27.497	27.975	28.550	29.072	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This budget activity funds operational development necessary to acquire, sustain, and enhance segments of Air Force Weather Services (AFWS). Activities also include research and analysis to support current program planning. Management Service costs include Federally Funded Research and Development Centers (FFRDC) and Advisory and Assistance Service (A&AS). AFWS provides timely, accurate, consistent and relevant space and atmospheric (a.k.a. terrestrial) weather information for global battlespace situational awareness. AFWS supports worldwide operations of Air Force and Army warfighters, Special Operation Forces, and other government agencies with weather observing and forecasting capabilities at in-garrison and deployed locations, as well as centralized, reach-back capabilities. Additionally, these funds integrate DoD, government agency, and commercial and international partners environmental data with AFWS information system equipment for processing, storing, exploiting and disseminating weather information for analysis, forecasting, and mission integration at the strategic, operational, and tactical levels. Weather system technological upgrades provide critical support to modern air and space combat operations. These systems enhance the lethality, effectiveness, and survivability of AF weapon systems and precision munitions by accurately predicting environmental impacts to optimize mission execution and planning, targeting, weaponeering, and battle damage assessment, as well as both AF and government agency space systems operations and effectiveness.

AFWS aligns activities under four capability areas: Weather Data Collection, Weather Data Analysis and Dissemination, Weather Forecasting, and Product Tailoring/Warfighter Applications. This alignment ensures an integrated and systems-oriented approach to program management decisions. Of these four capability areas, two (Weather Data Analysis and Dissemination and Weather Forecasting) are addressed by APPN 3600, BA 07, PE 0305111F, Project 672738 - Weather Service.

1. Weather Data Analysis and Dissemination provides centralized Weather Web Service capability, increased availability of weather impacts and products, improved global, regional, and theater-level forecasts, specific mission-tailored weather data on demand, and finally increased weapon system interoperability which shortens the Combatant Commander kill chain through machine to machine interfaces. This is accomplished through large-scale data processing, product generation, a presentation system utilizing Open Geo-spatial Consortium (OGC) services architecture and providing the capability to ingest, process, store, access, and disseminate meteorological oceanographic (METOC) data. The Weather Data Analysis and Dissemination capability area includes activities for Weather Data Analysis and its follow-on increment, Weather Data Analysis Increment 5 (WDA and WDA-Inc 5).

2. Weather Forecasting provides advanced scientific numerical weather prediction capabilities for automated, high resolution forecast products for mission execution, rehearsal, and planning. Weather Forecasting includes activities for Numerical Weather Modeling (NWM); Weather Services - Live, Virtual, Constructive (WS-LVC), and Space Weather Analysis and Forecast System (SWAFS). SWAFS is a suite of programs consisting of Global Assimilation of Ionosphere Measurement-Full Physics (GAIM-FP), and (in FY2019) Space Weather Analysis and Forecast System-Radiation Exposure (SWAFS-RadEx). SWAFS provides decision makers with 1) Satellite operations, 2) Predictions of HF & UHF/SHF (SATCOM) communications outages, 3) GPS inaccuracies in navigation & targeting, 4) Tracking objects like satellites,

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i>
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debris, projectiles in space and forecasts for radar outages and early warning radar false launch indications, 5) National, strategic, operational & tactical intelligence collection, 6) Radiation forecasts for high altitude/space flight operations.

The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	19.974	26.654	27.144	0.000	27.144
Current President's Budget	24.193	26.654	26.942	3.000	29.942
Total Adjustments	4.219	0.000	-0.202	3.000	2.798
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	5.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.050	0.000			
• SBIR/STTR Transfer	-0.731	0.000			
• Other Adjustments	0.000	0.000	-0.202	3.000	2.798

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

Project: 672738: *Weather Service*

Congressional Add: *Commercial Weather Data Pilot Program*

Congressional Add Subtotals for Project: 672738

Congressional Add Totals for all Projects

	FY 2017	FY 2018
	5.000	0.000
	5.000	0.000
	5.000	0.000

Change Summary Explanation

The FY17 Appropriation Bill placed the five million dollar Congressional add into PE 0604422F, Weather System Follow-On, but a technical adjustment was completed to place the money into PE 0305111F, Weather Services, in accordance with the FY17 NDAA.

FY17 Combat Survivor/Evader Locator BTR Reprogramming -\$0.050M.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Weather Data Analysis (WDA)</p> <p>Description: WDA-Inc 4 provides a net-centric infrastructure that assimilates worldwide sources of atmospheric and space weather data and produces decision-quality information for warfighters.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Develops and implements Increment 4 (Inc 4), Build D, Release 17B/C/D, as well as Release 18A/B. to ingest, process, store, access, and disseminate meteorological/oceanographic data via upgrades to the web services architecture. - Expand Open Geospatial Consortium services and upgrades large-scale data processing to accommodate new environmental satellite and numerical weather modeling data. - Optimized AFW-WEBS to provide authoritative weather products and services to support warfighter operations. <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Implement and develop Increment (Inc) 4, Build D, Release 18D and Release 19A/B/C/D to enhance the capability to ingest, process, store, access, and disseminate meteorological/oceanographic data via upgrades to the web services architecture. - Continue to expand the Open Geospatial Consortium services and upgrade for the large-scale data processing to accommodate new environmental satellite and numerical weather modeling data as well as begin efforts to implement an Air Force Weather Weapon System Single Services Baseline. - AFW-WEBS builds will be on the same schedule with combined development and testing schedules. - Evolve AFW-WEBS into the single web interface optimized for accessing authoritative AF meteorological information and services in geospatially-enabled formats for direct integration into warfighter systems and decision cycles. <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to funds realigned to WDA INC 5</p>	9.573	10.239	9.613	-	9.613
<p>Title: Weather Data Analysis Increment 5 (WDA-Inc 5)</p> <p>Description: WDA-Inc 5 Description: WDA-Inc 5 is the mechanism for the WDA Program to migrate to cloud-based computing through the implementation of Modular Open System Architecture (MOSA) guideline-compliant open architecture. Per MOSA guidelines, WDA-Inc 5 will be modular, flexible, responsive, expandable, and cost effective, facilitating easy "plug-and-play" of Government off-the-shelf (GOTS) and commercial off-the-shelf (COTS) hardware and software products in a virtual environment. WDA-Inc 5 will also adhere to the Air Force Weather roadmap infrastructure architecture through the continued consolidation of servers and functions,</p>	0.000	0.000	1.000	-	1.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>elimination of duplication, and standardizing interfaces. Finally, the program will provide both classified and unclassified production environments that communicate directly with C2 customers through (MOSA) guideline-compliant open architecture. All of this will be achieved using latest state-of-the-art technology.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Server consolidation to expedite cloud transition and - Transition to Open System Architecture - Expand Secret/SCI enclave bandwidth/capability - Ingest of new commercial/government space-based environmental data <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to WDA funding transitioning to WDA-Inc 5.</p>					
<p>Title: Numerical Weather Modeling (NWM)</p> <p>Description: NWM provides advanced scientific numerical weather prediction capabilities for automated, high resolution forecast products for mission planning, rehearsal, and execution.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Develop and implement Cloud Depiction Forecast System Version 2.0 (CDFS II) hardware and software, exploiting new satellite data sources. - Continue to develop cloud characterization and aerosol products. - Develop an explicit numerical weather prediction (NWP) cloud capability. - Develop and implement a High Performance Computing development and test enclave in support of DFY19 Prod 11 operations. <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Develop software to exploit dynamic aerosols. - Continue software development for exploitation of new satellite data sources while continuing to advance NWM-based cloud forecasting capability. - Continue development of explicit NWP (modeled) cloud capability. <p>FY 2019 OCO Plans:</p>	6.930	12.371	11.998	3.000	14.998

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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Will develop a Global Synthetic Weather Radar capability in order to mitigate gaps in the US CENTRAL COMMAND and other AORs.					
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FY 2018 to FY 2019 Increase/Decrease Statement:
 Funding increased due to award of OCO funds for Global Synthetic Weather Radar capability.

Title: Space Weather Analysis and Forecast System-Radiation Exposure (SWAFS-RadEx)	0.000	0.000	3.585	-	3.585
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Description: Space Weather Analysis and Forecast System - Radiation Exposure (SWAFS-RadEx) provides radiation forecasts for high altitude/space flight operations. SWAFS-RadEx will design, develop, and integrate an upgrade to the current Radiation Exposure Model (High-Flyer), in order to meet METOC ICD (18 Nov 2009, Annex A of Appendix D) stated requirements to sense, obtain, analyze, and predict particle environments responsible for radiation threats to aircrews.

FY 2018 Plans:
 N/A

FY 2019 Base Plans:

- Develop and integrate new SWAFS-RadEx models into the SWAFS baseline.
- Expand upon the latest atmospheric radiation modeling, and extend capabilities (to include a future forecasting/mission planning aspect) to support DoD warning thresholds and associated timeliness criteria.
- Develop software to sense, obtain, analyze, and predict particle environments responsible for radiation threats to aircrews.
- Calculate a map of background cosmic radiation dosages between latitudes S80-N80 and altitudes 50-70 kft, expanding on the current High Flyer Model used by the U2s and in support of hypersonics

FY 2018 to FY 2019 Increase/Decrease Statement:
 FY2019 increase compared to FY2018 by \$3.585M. Justification for this increase is described in plans above.

Title: Weather Services-Live, Virtual Constructive (WS-LVC)	0.580	0.744	0.746	0.000	0.746
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Description: WS-LVC provides environmental representations to the DoD Modeling and Simulation community. This effort was formerly called Environmental Data Cube System Support (EDCSS) and included in Weather Forecasting.

FY 2018 Plans:
 - Transitions to a cloud computing environment in support of the Rapid Innovation Fund cloud proof of concept.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Develops next generation forward-deployed Distributor capability and investigates the use of Air Force Weather Open Geospatial Consortium (OGC) services for live weather feeds in support of Live and Constructive simulations. FY 2019 Base Plans: - Provide software enhancements to current meteorological capabilities in order to provide consistent weather behaviors/environmental impacts across large scale exercises. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to inflation					
Title: SWAFS GAIM-FP Description: Modification of Global Assimilation of Ionospheric Measurements GAIM Full Physics model (SWAFS GAIM-FP), to satisfy current requirements, including the development of other new models and science algorithms that do not currently exist and processing space weather data that is not currently available. Capabilities provided: Return to service; corrective, adaptive, and capability improvement maintenance for the operational software baseline SWAFS accepts space weather data and uses models and/or algorithms to create and disseminate specified space weather analysis and forecast products. Users: COCOMs, MAJCOMs, Space Defense Operations Center (SPADOC), NRO, Navy and Army. FY 2018 Plans: - Develop and integrate current Radiation Exposure model into the SWAFS baseline. - Finalize visualization of Full-Physics models for incorporation into the Weather Data Analysis System. FY 2019 Base Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decrease compared to FY 2018 by \$3.300M. Future funding will be covered under the SWAFS-Radiation Exposure element of the SWAFS system.	2.110	3.300	0.000	-	0.000
Accomplishments/Planned Programs Subtotals	19.193	26.654	26.942	3.000	29.942

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i>
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	FY 2017	FY 2018
Congressional Add: Commercial Weather Data Pilot Program	5.000	0.000
FY 2017 Accomplishments: N/A		
FY 2018 Plans: N/A		
Congressional Adds Subtotals	5.000	0.000

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

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPAF 03 Line Item 833070: <i>Weather Observation Forecast</i>	21.667	40.116	48.362	-	48.362	31.855	35.613	33.010	33.605	Continuing	Continuing
• OPAF 03 Line Item 838010: <i>Comm Elect Mods</i>	8.646	10.155	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• OPAF 05 Line Item 86190A: <i>Spares and Repair Parts</i>	0.719	0.941	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

E. Acquisition Strategy

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

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

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

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i>	Project (Number/Name) 672738 / <i>Weather Service</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
WDA 1, Develop centralized web service capability (WDA 4C)	C/CPIF	Northrop Grumman : Bellevue, NE	-	4.084	Dec 2016	5.351	Dec 2017	5.364	Jul 2019	-		5.364	Continuing	Continuing	-
WDA 1, Develop centralized web service capability (WDA 5C)	C/CPAF	Not specified. : TBD	-	-		-		0.800	Sep 2019	-		0.800	Continuing	Continuing	-
WDA 2, Development and integration of weather analysis software (AFW-WEBS)	C/CPFF	Raytheon : Long Beach, CA	-	3.991	Dec 2016	2.868	Dec 2017	2.899	Jul 2019	-		2.899	Continuing	Continuing	-
Commercial Weather Pilot Program	C/FFP	Various : Various	-	5.000	Jan 2018	-		-		-		-	Continuing	Continuing	-
NWM 1 - Perform software enhancements to the mesoscale production model	MIPR	NCAR : Boulder, CO	-	0.123	Feb 2017	0.129	Feb 2018	0.491	Feb 2019	-		0.491	Continuing	Continuing	-
NWM 2 - Improve land information system (LIS) application, providing earth surface boundary characterization for numerical modeling	MIPR	NASA : Greenbelt, MD	-	0.949	Feb 2017	0.703	Feb 2018	1.604	Feb 2019	-		1.604	Continuing	Continuing	-
NWM 3 - Develop model data assimilation application ensemble forecast procedures and convective scale resolution model capability.	C/CPIF	Northrop Grumman : Bellevue, NE	-	4.146	Jan 2017	10.169	Jan 2018	9.547	Jun 2019	-		9.547	Continuing	Continuing	-
NWM 4 - Deliver a Synthetic Weather Radar Capability mitigating gaps in the Central Command and other AORs.	MIPR	MIT Lincoln Labs : TBD, MA	-	-		-		0.000		3.000	Apr 2019	3.000	Continuing	Continuing	-
WS-LVC	C/CPIF	NWACT : Orlando, FL	-	0.176	Apr 2017	0.627	Apr 2018	0.512	Apr 2019	-		0.512	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i>	Project (Number/Name) 672738 / <i>Weather Service</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NEXRAD	MIPR	NOAA/NWS : Silver Spring, MD	-	-		-		-		-		-	Continuing	Continuing	-
SWAFS development integration and sustainment of the GAIM-full physics version	C/CPIF	Northrop Grumman : Bellevue, NE	-	1.989	Oct 2016	3.000	Apr 2018	-		-		-	Continuing	Continuing	-
SWAFS-2- perform verification and validation report on the GAIM-full physics model	C/CPAF	Northrop Grumman : Bellevue, NE	-	0.000		0.159	Jan 2018	-		-		-	Continuing	Continuing	-
SWAFS-RadEx	C/CPIF	Northrop Grumman : Bellevue, NE	-	-		-		2.429	May 2019	-		2.429	Continuing	Continuing	-
SWAFS-RadEx verification and validation report	TBD	AFRL : Wright Patterson AFB, OH	-	-		-		0.800	May 2019	-		0.800	Continuing	Continuing	-
Subtotal			-	20.458		23.006		24.446		3.000		27.446	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
46th TS/JITC AFLCMC	WR	46 TS : Offutt AFB, NE	-	1.292	Nov 2016	0.834	Nov 2017	0.463	Nov 2018	-		0.463	Continuing	Continuing	-
Subtotal			-	1.292		0.834		0.463		-		0.463	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration AFLCMC	C/CPFF	AFLCMC : Hanscom AFB, MA	-	1.858	Oct 2016	2.098	Oct 2017	0.929	Oct 2018	-		0.929	Continuing	Continuing	-
FFRDC SMC	RO	Aerospace Corp : El Segundo, CA	-	0.585	Oct 2016	0.716	Oct 2017	1.104	Oct 2018	-		1.104	Continuing	Continuing	-
Subtotal			-	2.443		2.814		2.033		-		2.033	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i>	Project (Number/Name) 672738 / <i>Weather Service</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>Weather Service</i>																												
Weather Data Analysis Inc 4 Build C Delivery																												
Weather Data Analysis Inc 4 Build D Delivery																												
Weather Data Analysis Inc 5 Build A Delivery																												
Numerical Weather Modeling																												
SWAFS-RadEx																												
Live, Virtual, and Constructive 1.1 Delivery																												
Live, Virtual, and Constructive 1.2 Delivery																												
Live, Virtual, and Constructive 1.3 Delivery																												
Live, Virtual, and Constructive 1.4 Delivery																												
Live, Virtual, and Constructive 1.5 Delivery																												
SWAFS - Full GAIM Physics and Software Delivery Upgrade (Post MS B - JUN 2017)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Weather Service</i>				
Weather Data Analysis Inc 4 Build C Delivery	2	2017	4	2017
Weather Data Analysis Inc 4 Build D Delivery	4	2017	2	2020
Weather Data Analysis Inc 5 Build A Delivery	3	2019	4	2023
Numerical Weather Modeling	1	2017	4	2023
SWAFS-RadEx	1	2019	3	2023
Live, Virtual, and Constructive 1.1 Delivery	1	2017	3	2017
Live, Virtual, and Constructive 1.2 Delivery	2	2017	1	2018
Live, Virtual, and Constructive 1.3 Delivery	4	2017	3	2018
Live, Virtual, and Constructive 1.4 Delivery	1	2018	4	2018
Live, Virtual, and Constructive 1.5 Delivery	4	2018	3	2019
SWAFS - Full GAIM Physics and Software Delivery Upgrade (Post MS B - JUN 2017)	4	2017	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	17.732	6.306	6.271	0.000	6.271	6.452	6.565	6.701	6.822	Continuing	Continuing
673587: <i>Air Traffic Control Systems</i>	-	17.732	6.306	6.271	0.000	6.271	6.452	6.565	6.701	6.822	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

NextGen ATS. This is the United States initiative for the transformation of the National Airspace System (NAS) over the next 20-30 years to enhance safety, security, efficiency, affordability and capacity, meeting the requirements of all users of the NAS. This interagency effort is designed to enable the transition from a ground infrastructure dominated Air Traffic Management capability to a capability that leverages advances in aircraft Performance Based Navigation (PBN), non-radar based surveillance services, and transition from solid-state analog voice communications to networked digital voice and data exchange. Per Deputy Secretary of Defense Direction (28 Dec 07 Memo), the Air Force is the Department of Defense (DoD) lead Service for NextGen ATS implementation and architecture development. NextGen ATS will be built on key elements from existing programs and technologies and on new systems under development. As these technologies and architectures mature, ground system upgrades will be coordinated and fielded concurrently with aircraft avionics capabilities that are acquired and integrated into Air Force aircraft (manned and unmanned). These efforts will involve aircraft avionics as well as fixed based and deployable air traffic control and landing systems. FY19 efforts will continue to use the Lead Service Office (LSO) process to continue enabling Unmanned Aircraft System (UAS) access to the National Airspace (NAS), develop a NextGen ATS DoD Strategic Roadmap, Consolidated Avionics Repository, add new capabilities to Notice to Airmen (NOTAMs) software, and outline DoD and Air Force equities and requirements via in-depth analysis of FAA NextGen ATS programs and timelines. Portfolio analysis will be captured in DoD NextGen ATS charters to guide Services through a broad and complex NextGen ATS environment. To minimize integration costs, the LSO will work with other organizations such as the Aerospace Management Systems Division, across the Air Force and the DoD, to adopt a common framework with practical guidelines to evaluate the validity of NextGen ATS initiatives with the Air Force's mission. These efforts support the development of operational strategies that realize the achievement of valid NextGen ATS initiatives in concert with acquisition strategies in integrated avionics advances for systems such as Mode 5 Identification Friend or Foe (IFF), Global Positioning System (GPS) Military (M)-Code, Automatic Dependent Surveillance-Broadcast (ADS-B), Data Communications (Data Comm), and PBN. In support of (UAS) operations, FY19 program office efforts will also continue to support requests for implementation of Ground Based Sense and Avoid (GBSAA) at new locations which will allow UAS integration into the National Airspace System (NAS) without the use of ground observers or chase aircraft. In FY19, the Air Force Flight Standards Agency (AFFSA) will continue NextGen ATS strategic planning efforts, conduct lead service operational test and evaluation as required, and also examine new civil air traffic control and landing system technologies that may have military utility to include an Early Operational Assessment (EOA) of Remote Virtual ATC Tower System technology. In total, these efforts will focus on

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>
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enabling DoD aircraft to take advantage of NextGen ATS envisioned efficiencies, developing policies/procedures to reduce costs while ensuring airspace access, seamlessly integrating UASs into the NAS and international airspaces, improving the display of aircraft position to air traffic controllers, determining future requirements for digital communications with manned and unmanned aircraft, and enhancing flight safety.

Deployable Radar Approach Control (D-RAPCON). D-RAPCON will replace the 40 year old Air National Guard (ANG) AN/MPN-14K and Active Duty (AD) AN/TPN-19 Airport Surveillance Radar and Operations Shelter subsystems with state-of-the-art digital systems. Due to diminishing manufacturing sources, modification and overhaul of the existing systems has proven to be ineffective. On average, due to systemic equipment failures, no more than four of the existing 14 systems are deployable at any given time and none are fully mission capable. The current AN/TPN-19 (4 systems) and AN/MPN-14K (10 systems) operational availability rates are 25% and 60% respectively versus a requirement of D-RAPCON of 98%. D-RAPCON will provide aircraft surveillance/sequencing, air traffic control communications, automation capabilities for terminal area air traffic control operations, and Mode 5 Identification Friend or Foe and secure communication capabilities (a deferred key system attribute). D-RAPCON will also be deployed with a fixed base or deployable Instrument Landing System, a fixed or mobile control tower, and a fixed or mobile Tactical Air Navigation system to provide a complete air traffic control capability. D-RAPCON will support the full range of tactical military, worldwide humanitarian, and domestic disaster relief operations. The primary surveillance radar coverage (non-cooperative targets) extends out 60 nautical miles (nm) and the secondary surveillance radar coverage (cooperative targets) will increase from 120 nm to 200 nm. The D-RAPCON Capability Development Document was approved by the Air Force Requirements Oversight Council on 8 Feb 11. Related OPAF funds are in PE 0305114F Weapon System Code 833010.

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

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	9.770	6.306	6.318	0.000	6.318
Current President's Budget	17.732	6.306	6.271	0.000	6.271
Total Adjustments	7.962	0.000	-0.047	0.000	-0.047
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	7.962	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.047	0.000	-0.047

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

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

FY17 Congressional add (\$7.962M) is for Remote Virtual Air Traffic Control (ATC) Tower early operational assessment (EOA). The EOA will be conducted by the Air Force Flight Standards Agency (AFFSA).

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

Title: NextGen ATS

Description: Includes efforts to implement NextGen ATS efficiencies and capabilities. Focus is on Automatic Dependent Surveillance Broadcast (ADS-B) integration risk reduction, seamless integration of Unmanned Aircraft Systems (UASs) into civil airspace, Lead Service Office(LSO)/HBA Joint Program Office (JPO) technical support/architecture development, development of NextGen ATS aircraft performance based navigation avionics roadmaps, a Consolidated Avionics Repository, surveillance radar/ADS-B integration/automation system upgrades, D-RAPCON Mode 5/Secure Communications integration analysis, Notice to Airmen software upgrades, and conduct of an Early Operational Assessment of Remote Virtual Air Traffic Control Tower technology.

FY 2018 Plans:

- Continue to execute analysis of NextGen ATS programs and capture results through charters and incorporate into NextGen ATS DoD Strategic Roadmap which will include the following tasks:
- Continue evaluation of solutions for Self-Contained Approaches.
- Continue evaluation of solutions for Alternative Positioning, Navigation, and Timing (APNT).
- Begin evaluation of Enhanced Flight Vision System solutions.
- Continue to advance electronic flight bag applications across all major commands.
- Continue to analyze FAA radar divestiture impacts and AF radar and FAA ADS-B coverage data for establishing a minimum operating network (MON).
- Continue to develop solutions/timeline to integrate Data Comm equipage into DoD fleet.
- Continue use of performance based navigation roadmap/charter and developed analytical methods to transition performance based navigation analysis to Air Mobility Command.
- Continue to support requests for implementation of UAS GBSAA capability at new locations.
- Continue to develop policy and strategy for UAS implementation in global civil and military airspace.
- Continue to support implementation of ADS-B Out through ATC accommodation procedures for DoD aircraft not equipped with ADS-B Out.
- Begin analysis on avionics security based on known threats.
- Continue development of the Consolidated Avionics Repository to track DoD Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) capabilities.

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: NextGen ATS</p> <p>Description: Includes efforts to implement NextGen ATS efficiencies and capabilities. Focus is on Automatic Dependent Surveillance Broadcast (ADS-B) integration risk reduction, seamless integration of Unmanned Aircraft Systems (UASs) into civil airspace, Lead Service Office(LSO)/HBA Joint Program Office (JPO) technical support/architecture development, development of NextGen ATS aircraft performance based navigation avionics roadmaps, a Consolidated Avionics Repository, surveillance radar/ADS-B integration/automation system upgrades, D-RAPCON Mode 5/Secure Communications integration analysis, Notice to Airmen software upgrades, and conduct of an Early Operational Assessment of Remote Virtual Air Traffic Control Tower technology.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> -Continue to execute analysis of NextGen ATS programs and capture results through charters and incorporate into NextGen ATS DoD Strategic Roadmap which will include the following tasks: -- Continue evaluation of solutions for Self-Contained Approaches. -- Continue evaluation of solutions for Alternative Positioning, Navigation, and Timing (APNT). -- Begin evaluation of Enhanced Flight Vision System solutions. -- Continue to advance electronic flight bag applications across all major commands. -- Continue to analyze FAA radar divestiture impacts and AF radar and FAA ADS-B coverage data for establishing a minimum operating network (MON). -- Continue to develop solutions/timeline to integrate Data Comm equipage into DoD fleet. -- Continue use of performance based navigation roadmap/charter and developed analytical methods to transition performance based navigation analysis to Air Mobility Command. -- Continue to support requests for implementation of UAS GBSAA capability at new locations. -- Continue to develop policy and strategy for UAS implementation in global civil and military airspace. -- Continue to support implementation of ADS-B Out through ATC accommodation procedures for DoD aircraft not equipped with ADS-B Out. -- Begin analysis on avionics security based on known threats. -- Continue development of the Consolidated Avionics Repository to track DoD Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) capabilities. 	12.982	6.306	6.271	-	6.271

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force				Date: February 2018	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0305114F <i>I Air Traffic Control, Approach, and Landing System (ATCALs)</i>			
C. Accomplishments/Planned Programs (\$ in Millions)					
<ul style="list-style-type: none"> - Begin D-RAPCON lead Service operational test and evaluation. - Begin development of Notice to Airmen (NOTAMs) software upgrades to enhance NOTAM creation and query applications. - Continue integration analysis of Mode 5 IFF/Secure Comm into D-RAPCON. - Using FY17 Congressional add funds, award a full and open competition contract to conduct and Early Operational Assessment of Remote Virtual Air Traffic Control Tower technology and potential to support AF flying/ATC missions in lieu of brick and mortar control towers. <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Will continue to execute analysis of NextGen ATS programs and capture results through charters and incorporate into NextGen ATS DoD Strategic Roadmap which will include the following tasks: <ul style="list-style-type: none"> -- Will continue to advance Instrument Approach Operations. -- Will continue to investigate areas of optimized Flight Operations. -- Will continue to support implementation of ADS-B Out through ATC accommodation procedures for DoD aircraft not equipped with ADS-B Out. -- Will continue analysis on avionics security based on known threats. -- Will continue development of solutions to integrate Data Comm capability into DoD fleet. -- Will continue to advance electronic flight bag applications. -- Will continue to coordinate with interagency partners to promote UAS integration into civil airspace. - Will complete D-RAPCON lead Service operational test and evaluation. - Will continue development of Notice to Airmen (NOTAMs) software upgrades to enhance NOTAM creation and query applications. - Will continue integration analysis of Mode 5 IFF/Secure Comm into D-RAPCON. - Will begin Early Operational Assessment of a Remote Virtual Air Traffic Control Tower capability to assess ability to meet AF flying/ATC missions in lieu of brick and mortar control towers. - Will conduct analysis of options to develop Procedures for Air Navigation Service - Operations (Pans-Ops) Terminal Instrument procedures (TERPS) capability. <p>FY 2018 to FY 2019 Increase/Decrease Statement: Decreased due to inflation</p>					
Title: D-RAPCON					
4.750	0.000	0.000	-	0.000	

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: Effort supports D-RAPCON engineering, manufacturing, and development and government developmental and operational testing of one Pre-Production Unit (PPU) leading to Milestone C and production decisions in FY19.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>					
Accomplishments/Planned Programs Subtotals	17.732	6.306	6.271	-	6.271

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 833010: <i>Air Traffic Control and Landing Systems</i>	18.466	65.079	53.703	33.400	87.103	46.363	36.831	56.568	19.077	Continuing	Continuing
• OPAF 05 Line Item 861900: <i>Spares and Repair Parts</i>	1.009	1.294	0.932	0.000	0.932	0.950	3.120	4.798	1.613	Continuing	Continuing

Remarks

E. Acquisition Strategy

ATCALs is a basket program element with multiple programs in various stages of acquisition which provide the air traffic control infrastructure to support peacetime and wartime missions. The current acquisition strategy is focused on replacing 1960/70s era deployable and fixed based equipment with mature off-the-shelf technology with remote maintenance capability while also looking to the future under the NextGen ATS initiative.

Current contracting efforts include D-RAPCON development, GBSAA/NextGen ATS planning and implementation, and conduct of an Early Operational Assessment (EOA) of Remote Virtual ATC Control Tower technology. The contracting strategy for D-RAPCON development is based on award of a competitive fixed price incentive firm contract emphasizing off-the-shelf technology and maximizing the use of non-developmental items. The contract includes engineering, manufacturing, and development and test with follow-on production options. GBSAA and NextGen ATS Enterprise Architecture Implementation Tasks are being executed via Military Inter-

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>	
<p>Departmental Purchase Requests, and Project Orders with various organizations (FAA, MITRE, Army, Air Force Research Laboratory, and Air Force Flight Standards Agency). The Remote Virtual ATC Control Tower EOA contract will be a full and open competition using Other Transaction Authority.</p> <p>The Air Force Program Executive Officer (PEO) for Battle Management (BM) is the PEO for ATCALs. PEO/BM is also the delegated milestone decision authority for ATCALs. The Air Force Life Cycle Management Center Aerospace Management Systems Division (AFLCMC/HBA) is aligned under the PEO/BM and includes program management, contracts, logistics, and financial management support.</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: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305114F / Air Traffic Control, Approach, and Landing System (ATCALs)	Project (Number/Name) 673587 / Air Traffic Control Systems
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NOTAM Software	C/FFP	TBD : TBD	-	-		0.418	Jun 2018	0.421	Nov 2018	-		0.421	Continuing	Continuing	-
D-RAPCON	C/FPIF	Raytheon : Marlborough, MA	-	1.710	Nov 2016	-		-		-		-	Continuing	Continuing	54.980
Remote Virtual ATC Control Tower EOA	C/FFP	TBD : TBD	-	4.500	Aug 2018	-		-		-		-	Continuing	Continuing	-
Subtotal			-	6.210		0.418		0.421		-		0.421	Continuing	Continuing	N/A

Remarks
D-RAPCON total cost and target value of contract differ as target value of contract includes prior years costs and the total cost only includes FY16-FY18. Total cost with prior years does not differ from the contract target value.

FINANCIAL MANAGEMENT: D-RAPCON is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike traditional R&D programs, however, the D-RAPCON "Acquisition Phase" 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 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NextGen ATS LSO/JPO Enterprise Architecture Implementation Support	MIPR	FAA : Washington, DC	-	2.592	Mar 2017	2.583	Mar 2018	2.755	Mar 2019	-		2.755	Continuing	Continuing	-
NextGen ATS AFFSA Strategic Planning	WR	MITRE : Hanscom AFB, MA	-	0.650	Jan 2017	0.350	Jan 2018	0.350	Jan 2019	-		0.350	Continuing	Continuing	-
NextGen ATS Support Cost	WR	Various : Various	-	0.128	Feb 2017	0.088	Feb 2018	0.073	Feb 2019	-		0.073	Continuing	Continuing	-
NextGen ATS GBSAA Support	MIPR	Various : Various	-	0.200	May 2017	0.200	May 2018	-		-		-	Continuing	Continuing	-
D-RAPCON Support Cost	MIPR	Various : Various	-	0.740	Oct 2016	-		-		-		-	Continuing	Continuing	-
Remote Virtual ATC Control Tower Infrastructure	MIPR	Various : Various	-	3.450	May 2018	-		-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305114F / Air Traffic Control, Approach, and Landing System (ATCALs)	Project (Number/Name) 673587 / Air Traffic Control Systems
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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	7.760		3.221		3.178		-		3.178	Continuing	Continuing	N/A

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

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NextGen ATS Surveillance Radar/Automation System Upgrades (Mode 5)	WR	Various : Various	-	1.250	Dec 2017	1.650	Nov 2017	1.650	Nov 2018	-		1.650	Continuing	Continuing	-
Remote Air Traffic Control Tower Capability EOA	WR	Various : Various	-	0.250	Apr 2017	0.767	Apr 2018	0.772	Apr 2019	-		0.772	Continuing	Continuing	-
D-RAPCON Operational Test & Evaluation (OT&E)	WR	Various : Various	-	-		0.250	Nov 2017	0.250	Nov 2018	-		0.250	Continuing	Continuing	-
Subtotal			-	1.500		2.667		2.672		-		2.672	Continuing	Continuing	N/A

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

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration (PMA) - D-RAPCON	WR	Various : Bedford, MA	-	2.262	Oct 2016	-		-		-		-	Continuing	Continuing	-
Subtotal			-	2.262		-		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305114F / Air Traffic Control, Approach, and Landing System (ATCALs)	Project (Number/Name) 673587 / Air Traffic Control Systems
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost				

Remarks
In FY18, PMA will be funded with Other Procurement Air Force (OPAF) funds.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	17.732	6.306	6.271	-	6.271	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305114F / Air Traffic Control, Approach, and Landing System (ATCALs)	Project (Number/Name) 673587 / Air Traffic Control Systems

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Air Traffic Control, Approach, and Landing System (ATCALs)	
NextGen ATS IMS and Strategic Roadmap Implementation	
NextGen ATS Advancement of Instrument Approach Operations	
NextGen ATS Optimizing Flight Operation	
NextGen ATS ADS-B Out Implementation/ Accommodation	
NextGen ATS Avionics Security Analysis	
NextGen ATS Aircraft Data Comm Integration Analysis and Solutions	
NextGen ATS Electronic Flight Bag Applications Development and Standardization	
NextGen ATS UAS Integration with Civil Airspace	
Notice to Airmen (NOTAMs) Software Upgrade Development	
NextGen ATS Surveillance Radar and Automation System Upgrade/D-RAPCON Mode-5 IFF/Secure Comm Integration	
Remote Virtual Air Traffic Control (ATC) Tower Proposal Prep	
Remote Virtual ATC Tower RFP Release (Mar 18)	
Remote Virtual ATC Tower Source Selection	

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305114F / Air Traffic Control, Approach, and Landing System (ATCALs)	Project (Number/Name) 673587 / Air Traffic Control Systems
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Remote Virtual ATC Tower Contract Award (Aug 18)								■																				
Remote Virtual ATC Tower EOA																												
NextGen ATS Pans-Ops solution analysis																												
D-RAPCON Operational Test and Evaluation																												
D-RAPCON Contractor Testing																												
D-RAPCON System Certifications																												
D-RAPCON Government Developmental Testing																												
D-RAPCON Deficiency Review/Mitigation																												
D-RAPCON Milestone C - (Dec 18)																												
D-RAPCON Production Representative Option - (Jan 18)																												
D-RAPCON Operational Testing (OT)																												
D-RAPCON OT Quick Look Report - (Feb 19)																												
D-RAPCON Production Decision - (Feb 19)																												
D-RAPCON Full Rate Production																												
D-RAPCON Initial Operational Capability - (Apr 21)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>	Project (Number/Name) 673587 / <i>Air Traffic Control Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>				
NextGen ATS IMS and Strategic Roadmap Implementation	1	2017	4	2023
NextGen ATS Advancement of Instrument Approach Operations	1	2017	4	2023
NextGen ATS Optimizing Flight Operation	1	2017	4	2023
NextGen ATS ADS-B Out Implementation/Accommodation	1	2018	1	2021
NextGen ATS Avionics Security Analysis	1	2018	4	2022
NextGen ATS Aircraft Data Comm Integration Analysis and Solutions	1	2017	4	2019
NextGen ATS Electronic Flight Bag Applications Development and Standardization	1	2017	4	2018
NextGen ATS UAS Integration with Civil Airspace	1	2017	4	2023
Notice to Airmen (NOTAMs) Software Upgrade Development	3	2018	4	2021
NextGen ATS Surveillance Radar and Automation System Upgrade/D-RAPCON Mode-5 IFF/Secure Comm Integration	2	2017	4	2019
Remote Virtual Air Traffic Control (ATC) Tower Proposal Prep	3	2017	4	2017
Remote Virtual ATC Tower RFP Release (Mar 18)	1	2018	1	2018
Remote Virtual ATC Tower Source Selection	2	2018	4	2018
Remote Virtual ATC Tower Contract Award (Aug 18)	4	2018	4	2018
Remote Virtual ATC Tower EOA	4	2018	2	2020
NextGen ATS Pans-Ops solution analysis	1	2019	4	2021
D-RAPCON Operational Test and Evaluation	1	2018	3	2019
D-RAPCON Contractor Testing	1	2017	1	2018
D-RAPCON System Certifications	1	2018	1	2019
D-RAPCON Government Developmental Testing	1	2018	4	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>	Project (Number/Name) 673587 / <i>Air Traffic Control Systems</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
D-RAPCON Deficiency Review/Mitigation	1	2019	1	2019
D-RAPCON Milestone C - (Dec 18)	1	2019	1	2019
D-RAPCON Production Representative Option - (Jan 18)	1	2019	1	2019
D-RAPCON Operational Testing (OT)	2	2019	2	2019
D-RAPCON OT Quick Look Report - (Feb 19)	2	2019	2	2019
D-RAPCON Production Decision - (Feb 19)	2	2019	2	2019
D-RAPCON Full Rate Production	2	2019	2	2023
D-RAPCON Initial Operational Capability - (Apr 21)	3	2021	3	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	2.981	21.295	8.383	0.000	8.383	7.448	5.491	1.554	1.584	Continuing	Continuing
675136: <i>Target Systems Development</i>	-	2.381	5.029	6.398	0.000	6.398	3.478	5.491	1.554	1.584	Continuing	Continuing
675336: <i>QF-16 AST Budget Authority</i>	-	0.000	0.000	1.985	0.000	1.985	3.970	0.000	0.000	0.000	Continuing	Continuing
675366: <i>QF-16</i>	-	0.600	16.266	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Full-scale Aerial Targets assure warfighters weapon systems perform effectively against real-world enemy fighters and cruise missiles. Aerial Targets support adherence to Public Law Title 10, Section 2366, which requires major systems and munitions programs to conduct live fire survivability and lethality testing before full-rate production. Targets are used to validate operational missile/weapon system effectiveness and fighter operational flight program (OFP) updates. Targets are required for developmental/operational testing for all air-to-air and surface-to-air missiles, and for the F-22A, F-35, F-18, F-16, F-15, and other aircraft. Funding supports simulator development and improvements on the QF-16 full scale aerial target, BQM-167A subscale aerial target, and updates of target control systems and specialized target payload subsystems for requirements such as: missile scoring, electronic attack and infrared (IR) countermeasures, radar and IR signature augmentation, and chaff and flare dispensing systems. Development is required to evolve aerial targets capabilities to meet current and future threats identified by OSD.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver "Aerial Targets BA 07: Operational Systems Development" weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

BA 07: This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	3.051	21.295	1.446	0.000	1.446
Current President's Budget	2.981	21.295	8.383	0.000	8.383
Total Adjustments	-0.070	0.000	6.937	0.000	6.937
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.070	0.000			
• Other Adjustments	0.000	0.000	6.937	0.000	6.937

Change Summary Explanation

FY19: Funding increased to continue threat realism enhancements associated with future Title 10 Live Fire Test & Evaluation requirements.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>				Project (Number/Name) 675136 / <i>Target Systems Development</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675136: <i>Target Systems Development</i>	-	2.381	5.029	6.398	0.000	6.398	3.478	5.491	1.554	1.584	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

This program element may include necessary civilian pay expenses required to manage, execute, and deliver "Aerial Targets 675136: Target Systems Development" weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F and 0605833F.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: BQM-167A Development	0.000	1.340	2.036	0.000	2.036
Description: Provide enhancements to AFSAT ability to emulate emerging threats in support of weapon testing.					
FY 2018 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675136 / <i>Target Systems Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Continue BQM-167A improvement efforts based on research and analysis results on potential affordable, subscale aerial target platform concepts, support user requirements generation for the current AFSAT platform and improve target endurance.</p> <p>FY 2019 Base Plans: Continue BQM-167A improvement efforts to include enhanced payload capability.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funds increased to continue threat realism enhancements associated with future Title 10 Live Fire Test & Evaluation (LFT&E) requirements.</p>					
<p>Title: Target Control System</p> <p>Description: Provide system modernization enhancements to Target Control System Gulf Range Drone Control System, (GRDCS) for command and control and tracking of Aerial Targets.</p> <p>FY 2018 Plans: Continue system modernization enhancements to include but not limited to GRDCS software updates to support QF-16 Full Operational Capability at Holloman AFB and future TCS capability assessment.</p> <p>FY 2019 Base Plans: Continue system modernization enhancements to include but not limited to GRDCS software updates to support implementing QF-16 and AFSAT enhancements and future TCS capability assessment.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funds decreased due to return to steady state operations, FY18 increase supported threat realism enhancements associated with future Title 10 LFT&E requirements.</p>	1.693	2.389	1.392	0.000	1.392
<p>Title: Digital Radio Frequency Memory (DRFM)</p> <p>Description: Develop, improve, and update specialized target payload subsystems both software and hardware for requirements to emulate evolving adversary EA, IR, and radar tactics and techniques.</p> <p>FY 2018 Plans:</p>	0.688	1.300	2.970	0.000	2.970

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675136 / <i>Target Systems Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Continue efforts to upgrade existing and develop new EA pod hardware and software used on QF-16 and subscales to emulate evolving adversary EA tactics and techniques.					
<i>FY 2019 Base Plans:</i> Continue efforts to upgrade existing and develop new EA pod hardware and software used on QF-16 and subscales to emulate evolving adversary EA tactics and techniques.					
<i>FY 2019 OCO Plans:</i> N/A					
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funds increased to continue threat realism enhancements associated with future Title 10 LFT&E requirements.					
Accomplishments/Planned Programs Subtotals	2.381	5.029	6.398	0.000	6.398

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 04 Line Item 10TRGT: <i>Target Drones</i>	114.656	109.841	139.053	-	139.053	130.837	133.454	136.127	138.600	Continuing	Continuing
• APAF 06 Line Item 10TRGT: <i>Initial Spares/Repair Parts</i>	0.595	0.596	0.579	-	0.579	0.589	0.601	0.613	0.624	Continuing	Continuing
• APAF 07 Line Item 10TRGT: <i>War Consumables</i>	4.460	4.560	4.599	-	4.599	4.012	4.764	4.859	4.947	Continuing	Continuing
• APAF 07 Line Item 10TRGT (3)...: <i>Other Production Charges</i>	20.476	15.780	19.806	-	19.806	12.050	12.055	12.333	12.333	Continuing	Continuing
• APAF 07 Line Item 000075: <i>Other Production Charges</i>	-	-	4.463	-	4.463	4.464	4.462	4.462	4.464	Continuing	Continuing

Remarks

D. Acquisition Strategy

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

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675136 / <i>Target Systems Development</i>

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-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675136 / <i>Target Systems Development</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Target Systems Development																												
BQM-167A: Alternate Launch Activity																												
BQM-167A: APC-4 Pod Enhancement																												
BQM-167A: Enhanced Payload Capabilities																												
TCS: Utah Test and Training Range (UTTR) Upgrade																												
TCS: Loss of Carrier (LOC) Waypoint																												
TCS: GRDCS Software Version 61																												
TCS: GRDCS Software Version 62																												
TCS: Future Capability Assessment																												
TCS: Modernization																												
EA Pods-Multi Channel Digital Radio Frequency Memory (DRFM) Software Spiral Upgrade																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Target Systems Development</i>				
BQM-167A: Alternate Launch Activity	3	2017	4	2021
BQM-167A: APC-4 Pod Enhancement	3	2018	4	2020
BQM-167A: Enhanced Payload Capabilities	3	2019	4	2021
TCS: Utah Test and Training Range (UTTR) Upgrade	1	2017	1	2017
TCS: Loss of Carrier (LOC) Waypoint	1	2017	2	2017
TCS: GRDCS Software Version 61	1	2017	4	2017
TCS: GRDCS Software Version 62	2	2017	4	2018
TCS: Future Capability Assessment	1	2017	4	2018
TCS: Modernization	1	2018	4	2022
EA Pods-Multi Channel Digital Radio Frequency Memory (DRFM) Software Spiral Upgrade	1	2017	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675336 / <i>QF-16 AST Budget Authority</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675336: <i>QF-16 AST Budget Authority</i>	-	0.000	0.000	1.985	0.000	1.985	3.970	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This BPAC is an administrative continuation of BPAC 675366: QF-16, and encompasses the same efforts with the addition of threat realism enhancements to support future Title 10 LT&E requirements.

A. Mission Description and Budget Item Justification

Full-scale Aerial Targets assure warfighters weapon systems perform effectively against real-world enemy fighters and cruise missiles. Aerial Targets support adherence to Public Law Title 10, Section 2366, which requires major systems and munitions programs to conduct live fire survivability and lethality testing before full-rate production. Targets are used to validate operational missile/weapon system effectiveness and fighter operational flight program (OFP) updates. Targets are required for developmental/operational testing for all air-to-air and surface-to-air missiles, and for the F-22A, F-35, F-18, F-16, F-15, and other aircraft. Funding supports simulator development and improvements on the QF-16 full scale aerial target, BQM-167A subscale aerial target, and updates of target control systems and specialized target payload subsystems for requirements such as: missile scoring, electronic attack and infrared (IR) countermeasures, radar and IR signature augmentation, and chaff and flare dispensing systems. Development is required to evolve aerial targets capabilities to meet current and future threats identified by OSD.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver "Aerial Targets BA 07: Operational Systems Development" weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: QF-16 Development Program	-	0.000	1.985	0.000	1.985
Description: Provide enhancements to emulate emerging threat in support of weapons testing.					
FY 2018 Plans: N/A					
FY 2019 Base Plans: Continue threat realism improvements to improve countermeasures and their control. Conduct studies and analysis on QF-16 Radar Cross Section. This effort is not a new start. FY18 efforts identified in BPAC 675366.					
FY 2019 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675336 / <i>QF-16 AST Budget Authority</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A					
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funds increased to continue threat realism enhancements associated with future Title 10 LFT&E requirements.					
Accomplishments/Planned Programs Subtotals	-	0.000	1.985	0.000	1.985

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 04 10TRGT: <i>Target Drones</i>	114.656	109.841	139.053	-	139.053	130.837	133.454	136.127	138.600	Continuing	Continuing
• APAF 06 10TRGT: <i>Initial Spares/Repair Parts</i>	0.595	0.596	0.579	-	0.579	0.589	0.601	0.613	0.624	Continuing	Continuing
• APAF 07 10TRGT: <i>War Consumables</i>	-	4.560	4.599	-	4.599	4.012	4.764	4.859	4.947	Continuing	Continuing
• APAF 07 10TRGT (3)...: <i>Other Production Charges</i>	20.476	15.780	19.806	-	19.806	12.050	12.055	12.333	12.557	Continuing	Continuing
• APAF 07 000075: <i>Other Production Charges</i>	-	-	4.463	-	4.463	4.464	4.462	4.462	4.464	Continuing	Continuing

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675336 / <i>QF-16 AST Budget Authority</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

QF-16 Development	
Threat Realism Improvements	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675336 / <i>QF-16 AST Budget Authority</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>QF-16 Development</i>				
Threat Realism Improvements	1	2019	1	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>				Project (Number/Name) 675366 / <i>QF-16</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675366: <i>QF-16</i>	-	0.600	16.266	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

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

This program element may include necessary civilian pay expenses required to manage, execute, and deliver "Aerial Targets 675366: QF-16" weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: QF-16 Development Program	0.600	16.266	0.000	0.000	0.000
Description: Provide enhancements to emulate emerging threat in support of weapons testing.					
FY 2018 Plans: Continue threat realism improvements to improve countermeasures and their control. Conduct studies and analysis on QF-16 Radar Cross Section (RCS).					
FY 2019 Base Plans: Continue threat realism improvements to improve countermeasures and their control. Continue studies and analysis on QF-16 RCS.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675366 / <i>QF-16</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funds decreased due to decreased requirements for threat realism enhancements, this BPAC is associated with efforts in BPAC 675336.					
Accomplishments/Planned Programs Subtotals	0.600	16.266	0.000	0.000	0.000

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 04 Line Item 10TRGT: <i>Target Drones</i>	114.656	109.841	139.053	-	139.053	130.837	133.454	136.127	138.600	Continuing	Continuing
• APAF 06 Line Item 10TRGT: <i>Initial Spares/Repair Parts</i>	0.595	0.596	0.579	-	0.579	0.589	0.601	0.613	0.624	Continuing	Continuing
• APAF 07 Line Item 10TRGT: <i>War Consumables</i>	4.460	4.560	4.599	-	4.599	4.012	4.764	4.859	4.947	Continuing	Continuing
• APAF 07 Line Item 10TRGT (3)...: <i>Other Production Charges</i>	20.476	15.780	19.806	-	19.806	12.050	12.055	12.333	12.557	Continuing	Continuing
• APAF 07 Line Item 00075: <i>Other Production Charges</i>	-	-	4.463	-	4.463	4.464	4.462	4.462	4.464	Continuing	Continuing

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i>	Project (Number/Name) 675366 / <i>QF-16</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>QF-16 Development</i>																												
Threat Realism Improvements																												
Electronic Flight Termination System / Loss of Carrier																												
Future F-16 Block Studies and Development																												
Radar Cross Section Model Development																												
Radar Cross Section Study/Analysis																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>QF-16 Development</i>				
Threat Realism Improvements	1	2019	1	2021
Electronic Flight Termination System / Loss of Carrier	1	2017	2	2018
Future F-16 Block Studies and Development	1	2017	3	2018
Radar Cross Section Model Development	1	2017	2	2017
Radar Cross Section Study/Analysis	1	2019	3	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	Continuing	Continuing
674819: <i>Common Data Link (CDL)*</i>	-	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2019

A. Mission Description and Budget Item Justification

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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

N/A

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

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305128F / <i>Security and Investigative Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.405	0.415	0.418	0.000	0.418	0.425	0.433	0.442	0.450	Continuing	Continuing
671931: <i>TECH SURVEIL COUNTER MEAS EQPT</i>	-	0.405	0.415	0.418	0.000	0.418	0.425	0.433	0.442	0.450	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305128F / <i>Security and Investigative Activities</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.405	0.415	0.421	0.000	0.421
Current President's Budget	0.405	0.415	0.418	0.000	0.418
Total Adjustments	0.000	0.000	-0.003	0.000	-0.003
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.003	0.000	-0.003

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
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<p>Title: TSCM</p> <p>Description: These funds will support development of a suite of specialized law enforcement and counterintelligence restricted tools needed to exploit cyberspace, digital media storage and mobile audio/visual/data communications for the collection of evidence against a wide variety of serious offenses. They will develop next generation Technical Surveillance Countermeasures (TSCM) to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation. The concerted efforts of criminal, terrorist and foreign intelligence elements to evade law enforcement and compromise protected systems, all while remaining undetected using the latest technical advances available, require persistent development of tools to defeat their efforts.</p> <p>FY 2018 Plans: These funds continue to support the development of a suite of specialized law enforcement and counterintelligence restricted tools needed to exploit cyberspace, digital media storage and mobile audio/visual/data communications for the collection of evidence against a wide variety of serious offenses and develop next generation Technical Surveillance Countermeasures (TSCM) to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation.</p> <p>-\$240,000 for research and development of GOTS software for the live capture of digital information from the Air Force Network.</p> <p>-\$20,000 to research software defined radio software which integrates community standard radio software for incorporation into existing TSCM suites.</p>	0.405	0.415	0.418
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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0305128F / <i>Security and Investigative Activities</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
-\$200,000 will go to the Naval Research Laboratory to support a joint project to detect and geo-locate foreign intelligence optical threats breaking ground on new capabilities for DoD. FY 2019 Plans: These funds continue to support the development of a suite of specialized law enforcement and counterintelligence restricted tools needed to exploit cyberspace, digital media storage and mobile audio/visual/data communications for the collection of evidence against a wide variety of serious offenses and develop next generation Technical Surveillance Countermeasures (TSCM) to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation. FY 2018 to FY 2019 Increase/Decrease Statement: Programmed growth due to standard inflation.				
Accomplishments/Planned Programs Subtotals		0.405	0.415	0.418
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy Market Research is accomplished jointly within the DoD, Counterintelligence, and Law Enforcement communities with the various government laboratories and major contractors to identify locations with the ability to develop investigative tools unique to our mission needs. These technologies, capabilities, and limitations of current and future investigative tools is sometimes highly sensitive or classified. Market Research also allows inter-agency coordination and deconfliction to occur, reducing or eliminating duplicitous development efforts. Annually, stakeholders meet to discuss initiatives, challenges and organizational goals to coordinate or consolidate requirements to increase efficiency. Once Market Research and any applicable coordination/deconfliction is completed, acquisition channels are analyzed and selected based on the ability to meet operational and technical security requirements.				
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305128F / <i>Security and Investigative Activities</i>	Project (Number/Name) 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TSCM R/D #4	MIPR	HQ AFOSI : Quantico, VA	-	0.405	Dec 2016	0.415	Dec 2017	0.418		-		0.418	Continuing	Continuing	-
Subtotal			-	0.405		0.415		0.418		-		0.418	Continuing	Continuing	N/A
Project Cost Totals			-	0.405		0.415		0.418		-		0.418	Continuing	Continuing	N/A

Remarks
 Funds support AFOSI RDTE at the intelligence community's Interagency Test and Evaluation Lab at a secure location to identify, research, develop, test, and evaluate classified and unclassified technical surveillance and countermeasures solutions to emerging operational requirements in support of AFOSI services to protect Air Force and DoD resources.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305128F / Security and Investigative Activities	Project (Number/Name) 671931 / TECH SURVEIL COUNTER MEAS EQPT

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Technical Surveillance Equipment Test & Evaluation																												
Continue Phase II TSCM LASER Project	██████████																											
Transition from Phase II TSCM LASER Project to Phase III					██████████																							
Complete Phase III (Final) TSCM LASER Project									██████████																			
Tech Service Ops Advanced Tool Development																	██████████											

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305128F / <i>Security and Investigative Activities</i>	Project (Number/Name) 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Technical Surveillance Equipment Test & Evaluation</i>				
Continue Phase II TSCM LASER Project	1	2017	4	2017
Transition from Phase II TSCM LASER Project to Phase III	1	2018	4	2018
Complete Phase III (Final) TSCM LASER Project	1	2019	4	2020
Tech Service Ops Advanced Tool Development	1	2021	4	2023

Note

BA7- This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305145F / <i>Arms Control Implementation</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	4.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
675063: <i>Digital Visual Imaging System (DVIS)</i>	-	4.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305145F / <i>Arms Control Implementation</i>
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B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	4.844	0.000	0.000	0.000	0.000
Current President's Budget	4.667	0.000	0.000	0.000	0.000
Total Adjustments	-0.177	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-0.177	0.000	0.000	0.000	0.000

C. Accomplishments/Planned Programs (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Title: OC-135 Open Skies Sensors	4.667	0.000	0.000	0.000	0.000
Description: Replace existing Open Skies aircraft wet film sensors with digital sensors.					
FY 2018 Plans: N/A					
FY 2019 Base Plans: N/A					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: N/A					
Accomplishments/Planned Programs Subtotals	4.667	0.000	0.000	0.000	0.000

D. Other Program Funding Summary (\$ in Millions)											<u>Cost To</u>
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item 1900: <i>Digital Visual Imaging System (DVIS)</i>	-	20.100	5.961	-	5.961	0.000	0.000	-	-	0.000	26.061

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305145F / <i>Arms Control Implementation</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks
PE 035145F

E. Acquisition Strategy

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

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0305145F / Arms Control Implementation				675063 / Digital Visual Imaging System (DVIS)								
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Open Skies Sensors Engineering, Development and Prototype Subtotal Product Development	C/CPFF	Various : Various	-	1.775	Feb 2016	-		-		-		-	Continuing	Continuing	22.388	
Subtotal			-	1.775		-		-		-		-	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Sub Total Support	Various	Various : Various	-	0.734	Aug 2017	-		-		-		-	Continuing	Continuing	3.545	
Subtotal			-	0.734		-		-		-		-	Continuing	Continuing	N/A	
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Open Skies Sensor development ground and flight testing for imagery collection	PO	Various : Various	-	2.108	Apr 2017	-		-		-		-	Continuing	Continuing	2.548	
Subtotal			-	2.108		-		-		-		-	Continuing	Continuing	N/A	
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Open Skies Sensors PMA SubTotal Management Services	Various	Various : Various	-	0.050	Sep 2017	-		-		-		-	Continuing	Continuing	0.152	
Subtotal			-	0.050		-		-		-		-	Continuing	Continuing	N/A	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force							Date: February 2018				
Appropriation/Budget Activity 3600 / 7			R-1 Program Element (Number/Name) PE 0305145F / Arms Control Implementation			Project (Number/Name) 675063 / Digital Visual Imaging System (DVIS)					
	Prior Years	FY 2017	FY 2018		FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	-	4.667	0.000		-	-	-	Continuing	Continuing	N/A	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305145F / Arms Control Implementation	Project (Number/Name) 675063 / Digital Visual Imaging System (DVIS)

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

No project title.																												
Critical Design Review	■																											
Test/Certification					■	■	■	■																				
Milestone C																												
Initial Operational Capability																												
Final Operational Capability																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305145F / <i>Arms Control Implementation</i>	Project (Number/Name) 675063 / <i>Digital Visual Imaging System (DVIS)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
Critical Design Review	1	2017	1	2017
Test/Certification	4	2017	3	2018
Milestone C	4	2018	4	2018
Initial Operational Capability	3	2018	3	2018
Final Operational Capability	4	2019	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305146F / <i>Defense Joint Counterintelligence Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.339	3.867	3.845	0.000	3.845	3.852	3.858	3.868	3.938	Continuing	Continuing
671931: <i>TECH SURVEIL COUNTER MEAS EQPT</i>	-	0.339	3.867	3.845	0.000	3.845	3.852	3.858	3.868	3.938	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.339	3.867	3.873	0.000	3.873
Current President's Budget	0.339	3.867	3.845	0.000	3.845
Total Adjustments	0.000	0.000	-0.028	0.000	-0.028
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.028	0.000	-0.028

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

	FY 2017	FY 2018	FY 2019
Title: Technical Surveillance Countermeasures (TSCM)	0.339	0.367	0.371

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305146F / <i>Defense Joint Counterintelligence Activities</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>Description: TSCM will develop future technologies capable of thwarting advanced, hostile force technical capabilities. They will be developed to provide secure environments to austere mission planning locations, theater commander centers, and will collect information for counterthreat operations in support of DoD and AF requirements.</p> <p>FY 2018 Plans: These funds support the advancement of BLUE LANCER, a suite of specialized law enforcement and counterintelligence restricted tools needed to exploit digital media storage and mobile audio/visual/data communications for the collection of evidence against a wide variety of serious offenses. Remaining funds used to develop next generation Technical Surveillance Countermeasures (TSCM) to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation.</p> <p>FY 2019 Plans: Continue advancement of BLUE LANCER for the collection/exploitation of evidence against a wide variety of serious offenses. Funds will also be used to develop next generation Technical Surveillance Countermeasures (TSCM) tools to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Decreased for small mark.</p>			
<p>Title: Counterintelligence Pilot</p> <p>Description: N/A</p> <p>FY 2018 Plans: These funds support the continued development of COPPER CASTLE, a suite of specialized counterintelligence cyber tools needed to exploit cyber threats targeting sensitive protected information. Remaining funds used to develop next generation cyber counterintelligence tools to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation.</p> <p>FY 2019 Plans: Continue R&D for new iterations of COPPER CASTLE; addressing advancements in Cyber counterintelligence domain, as leveraged by foreign intelligence entities targeting sensitive protected information for exploitation.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increased for anticipated inflation.</p>	-	3.500	3.474
Accomplishments/Planned Programs Subtotals	0.339	3.867	3.845

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305146F / <i>Defense Joint Counterintelligence Activities</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• O&M 35146F: <i>Defense Joint Counterintelligence Program</i>	37,644.000	46,411.000	47,603.000	-	47,603.000	48,728.000	50,060.000	51,466.000	52,494.000	Continuing	Continuing

Remarks

E. Acquisition Strategy

Defense Joint Counterintelligence Program TSCM funds will be obligated on competitively awarded contracts. Cyber counterintelligence funding will be obligated on an existing Air Force contract with MIT/Lincoln Labs.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force													Date: February 2018		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)					
3600 / 7					PE 0305146F / Defense Joint Counterintelligence Activities					671931 / TECH SURVEIL COUNTER MEAS EQPT					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Naval Research Lab	MIPR	Navy/Air Force : Williamsburg, VA	-	0.339	Dec 2017	0.367	Dec 2018	0.371	Dec 2019	0.000		0.371	Continuing	Continuing	-
MIT/Lincoln Labs	RO	Air Force : Lexington, MA	-	0.000		3.500	Mar 2018	3.474	Mar 2019	0.000		3.474	Continuing	Continuing	-
Subtotal			-	0.339		3.867		3.845		0.000		3.845	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.339		3.867		3.845		0.000		3.845	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305146F / <i>Defense Joint Counterintelligence Activities</i>	Project (Number/Name) 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Copper Castle																												
Counterintelligence Equipment and Software																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305146F / <i>Defense Joint Counterintelligence Activities</i>	Project (Number/Name) 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Copper Castle				
Counterintelligence Equipment and Software	1	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305173F / <i>Space and Missile Test and Evaluation Center</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	4.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A014: <i>R&D Space & Missile Operations</i>	-	4.250	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

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

B. Program Change Summary (\$ in Millions)

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	3.989	0.000	0.000	0.000	0.000
Current President's Budget	4.250	0.000	0.000	0.000	0.000
Total Adjustments	0.261	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	0.379	0.000			
• SBIR/STTR Transfer	-0.118	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305174F / <i>Space Innovation, Integration and Rapid Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	6.233	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A011: <i>Space Analysis and Application Development</i>	-	6.233	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

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

B. Program Change Summary (\$ in Millions)

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	3.070	0.000	0.000	0.000	0.000
Current President's Budget	6.233	0.000	0.000	0.000	0.000
Total Adjustments	3.163	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-1.500	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.052	0.000			
• Other Adjustments	4.715	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	8.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.833
674779: <i>Integrated Broadcast Service (IBS)</i>	-	8.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.833
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	8.833	0.000	0.000	0.000	0.000
Current President's Budget	8.833	0.000	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305182F / <i>Spacelift Range System (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	21.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
674137: <i>Launch and Test Range System (LTRS) Modernization</i>	-	21.082	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

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	11.867	0.000	0.000	0.000	0.000
Current President's Budget	21.082	0.000	0.000	0.000	0.000
Total Adjustments	9.215	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	10.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.785	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	37.217	34.486	48.518	22.100	70.618	38.939	18.694	18.347	19.849	Continuing	Continuing
674820: <i>Sensor Development</i>	-	37.217	34.486	48.518	22.100	70.618	38.939	18.694	18.347	19.849	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

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

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

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

In the 2018 and 2019 PB, the Air Force decided to retain the U-2, funding investment and manpower in base, and the majority of operations and sustainment in OCO. The Air Force will continue to address reliability, maintainability, sustainability, and safety issues and support U-2 integration of payloads and capabilities by taking

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>
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prudent acquisition actions to meet operational and safety of flight requirements. These acquisition efforts will include trade studies, analyses, preliminary systems engineering, system and subsystem level testing in accordance with DoD and military standards, and specification development in support of both current program planning and execution as well as studies supporting analysis and investment in future U-2 program planning.

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

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	37.217	34.486	48.882	0.000	48.882
Current President's Budget	37.217	34.486	48.518	22.100	70.618
Total Adjustments	0.000	0.000	-0.364	22.100	21.736
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.364	22.100	21.736

Change Summary Explanation

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

FY17 increase to address DMSMS issues in the program.

FY18 and FY19 increase due to the retention of the U-2. Addresses prudent acquisition efforts to address safety-of-flight and DMSMS issues.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: U-2 Aircraft Update Block 20.1	9.902	23.488	40.498	-	40.498

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force				Date: February 2018	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>			
C. Accomplishments/Planned Programs (\$ in Millions)					
Description: Aircraft sustainment and/or enhancement development includes activities such as, but not limited to, trade studies, analysis, preliminary system engineering, system and subsystem testing or demonstrations, sensor specification development, avionics system upgrades, emergency egress system sustainability and suitability effort, airframe Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation, mission planning system migration, navigation system and stellar tracker initiatives, Open Mission Systems and Unmanned Aerospace Systems Command and Control Standard Initiative (OMS/UCI) standards compliance, GPS technical refresh, helmet and Full Pressure Suit technical refresh, and tactical data-link (L-16, IBS, IFDL, MADL, etc.) design and integration.					
FY 2018 Plans: FY18 will support sensor sustainment and/or enhancements, avionics, navigation system and stellar tracker initiatives, OMS/UCI standards compliance, mission planning, airframe sustainment, ground support equipment, helmet and Full Pressure Suit Technical refresh, Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation, and mitigating sustainability and suitability issues with the current emergency egress system on the U-2 platform.					
FY 2019 Base Plans: Aircraft sustainment and/or enhancement development includes activities such as, but not limited to, trade studies, analysis, preliminary system engineering, system and subsystem testing or demonstrations, sensor specification development, avionics system upgrades, emergency egress system sustainability and suitability effort, airframe Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation, mission planning system migration, navigation system and stellar tracker initiatives, advanced and agile systems, Open Mission Systems and Unmanned Aerospace Systems Command and Control Standard Initiative (OMS/UCI) standards compliance, GPS technical refresh, helmet and Full Pressure Suit technical refresh, and tactical data-link (L-16, IBS, IFDL, MADL, etc.) design and integration.					
FY 2018 to FY 2019 Increase/Decrease Statement: Increase in funding required to address the Egress System Sustainability and Suitability effort, Loads and Environment Spectra Survey (L/ESS) compliance, and the Flight Data Recorder.					
Title: U-2 Payload Update Block 20.1					
Description: Aircraft payload development supports sustainment and/or enhancement development includes activities such as, but not limited to, trade studies, analysis, preliminary system engineering, system and subsystem testing or demonstrations, sensor specification development, Advanced Synthetic Aperture Radar					
	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
	27.315	10.998	8.020	22.100	30.120

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>System (ASARS) development and test, SIGINT and multi-spectral sensor technical refresh integration and test, defensive systems, sensor range improvements, strategic and tactical data link (L-16, IBS, IFDL, MADL, etc.) design and integration.</p> <p><i>FY 2018 Plans:</i> FY18 will support payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, datalinks, avionics technical refresh, SIGINT and multi-spectral sensor technical refresh, Optical Bar Camera technical refresh, sensor range improvements, and associated ground support equipment.</p> <p><i>FY 2019 Base Plans:</i> FY19 will continue to support payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, datalinks, avionics technical refresh, SIGINT and multi-spectral sensor technical refresh, advanced and agile payloads, Optical Bar Camera technical refresh, sensor range improvements, and associated ground support equipment.</p> <p><i>FY 2019 OCO Plans:</i> Counters emergent threats in the low band spectrum for detection, display and defeat by the AN/ALQ-221 Low Band (LB) subsystem in order to allow U-2 flight ops in moderately contested environments. Requirements will be met with two system modifications: an Advanced Threat Systems modification and a Continuous Power wave Amplifier (CWPA) modification.</p> <p>This is the development work for follow on FY19 procurement of 15 kits + spares. Additional information is available via classified means.</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY19 will continue to support payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, datalinks, avionics technical refresh, SIGINT and multi-spectral sensor technical refresh, advanced and agile payloads, Optical Bar Camera technical refresh, sensor range improvements, and associated ground support equipment.</p>					
Accomplishments/Planned Programs Subtotals	37.217	34.486	48.518	22.100	70.618

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force Date: February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>
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D. Other Program Funding Summary (\$ in Millions)

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>	Project (Number/Name) 674820 / <i>Sensor Development</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ASARS Phase 1 Enhancements Design	SS/CPFF	Raytheon/Lockheed Martin : El Segundo, CA	-	-		-		-		-		-	Continuing	Continuing	-
ASARS Phase 2 Integration & Demonstration	SS/CPIF	Raytheon/Lockheed Martin Aeronautics : El Segundo, CA	-	14.714	Mar 2016	-		0.520	Mar 2019	-		0.520	Continuing	Continuing	-
Flight Test Support	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	1.986	Dec 2017	-		-		-		-	Continuing	Continuing	-
Ground Support Equipment	SS/CPFF	L3 Communications : Salt Lake City, UT	-	9.901	Nov 2016	10.998	Nov 2017	-		-		-	Continuing	Continuing	-
Navigation System	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	9.902	Dec 2016	4.734	Dec 2017	-		-		-	Continuing	Continuing	-
Emergency Egress System Sustainability and Suitability Effort	TBD	TBD : TBD, CA	-	-		10.111	Jul 2018	22.029	Apr 2019	-		22.029	Continuing	Continuing	-
Avionics Technical Refresh	TBD	TBD : TBD	-	-		-		11.234	Apr 2019	-		11.234	Continuing	Continuing	-
Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation	TBD	TBD : TBD, CA	-	-		8.643	Jan 2018	-		-		-	Continuing	Continuing	-
Multi-Spectral Sensor Technical Refresh	TBD	TBD : TBD	-	-		-		7.500	Dec 2018	-		7.500	Continuing	Continuing	-
Mission Planning Software Technical Refresh	TBD	TBD : TBD	-	-		-		7.235	Apr 2019	-		7.235	Continuing	Continuing	-
Electronic Warfare Suite (EWS) Advanced Threat	SS/TBD	TBD : TBD	-	-		-		0.000		22.100	Dec 2018	22.100	Continuing	Continuing	22.100
Subtotal			-	36.503		34.486		48.518		22.100		70.618	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>	Project (Number/Name) 674820 / <i>Sensor Development</i>
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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total					
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	
Program Office Support	C/FFP	Not specified. : GA	-	0.714		-		-		-		-		-	-	-	-
Subtotal			-	0.714		-		-		-		-		-	-	-	-
Project Cost Totals			-	37.217		34.486		48.518		22.100		70.618		Continuing	Continuing	N/A	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i>	Project (Number/Name) 674820 / <i>Sensor Development</i>
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FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

No project title.	
Advanced Synthetic Aperture Radars System (ASARS)	
Ground Support Equipment	
Navigation System	
Emergency Egress System Sustainability and Suitability Effort	
Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
Advanced Synthetic Aperture Radars System (ASARS)	1	2017	4	2023
Ground Support Equipment	1	2017	2	2020
Navigation System	1	2017	4	2020
Emergency Egress System Sustainability and Suitability Effort	3	2018	4	2021
Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation	1	2018	3	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	50.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	50.000
67A026: <i>MAGIC</i>	-	50.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	50.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Medium Altitude Global ISR and Communications (MAGIC) project was an Air Force led technology and concept development to demonstrate the ability for a Remotely Piloted Aircraft (RPA) to stay airborne in the medium altitude structure for a multiple day duration mission with a minimum of 1,000 pounds payload capacity of intelligence, surveillance and reconnaissance sensor systems. The MAGIC concept was initiated by OSD/DDR&E in FY 2010 in response to the Combatant Commanders ranking this type of initiative as the highest priority for a Joint Concept and Technology Demonstration (JCTD). In FY 2011, the Air Force accepted this initiative as the sponsor and MAGIC was subsequently removed from consideration as a JCTD and transitioned into the Air Force as a developmental project.

The MAGIC project was intended to provide the USAF with data regarding sensor and aircraft performance parameters at a multiple day duration at medium altitude flight. The objectives laid out in the JCTD competition and selection of Aurora Flight Sciences (AFS)'s Orion RPA for the long endurance demonstration was managed by the 645th Aeronautical Systems Group (AESG).

In FY 2010, OSD/DDR&E (now ASD/R&E) provided \$5M of initial funding to AFRL to initiate the MAGIC project. In FY 2011, ASD/R&E provided an additional \$5M to keep the MAGIC project development moving forward. The Air Force provided \$10M of FY 2011. Congressional Adds of \$19M in FY 2012, \$50M in FY 2013, \$20M in FY 2015, \$5M in FY 2016, and \$50M in FY 2017 provided the Endurance UAV program manager with the funding for the continuation of the Orion RPA development and initiation of the three phase flight testing series.

Orion RPA flight test series and demonstrations were accomplished at Naval Air Weapons Station (NAWS) China Lake, CA between August 2013 and March 2015. The objectives to test/demonstrate basic air vehicle performance, expansion of the flight characteristic envelope, a multiple day sortie and integration of a nominal sensor payload were successfully accomplished on the prototype (Block 0) Orion RPA in a controlled environment non-representative of an operational setting. Subsequent development efforts concentrated on the validation of the Orion RPA system requirements and concept design/specifications for a follow-on air vehicle (Block 1) capable of operational deployment in the event that the Air Force chooses the Orion RPA as a quick reaction capable system for a theater of operation or a program of record. Currently, there is no validated requirement for the Orion RPA.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	50.000	0.000	0.000	0.000	0.000
Total Adjustments	50.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	50.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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

Project: 67A026: *MAGIC*

Congressional Add: *MAGIC*

Congressional Add Subtotals for Project: 67A026

Congressional Add Totals for all Projects

	FY 2017	FY 2018
	50.000	0.000
Congressional Add Subtotals for Project: 67A026	50.000	0.000
Congressional Add Totals for all Projects	50.000	0.000

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

	FY 2017	FY 2018
Congressional Add: <i>MAGIC</i>	50.000	0.000
FY 2017 Accomplishments: Initiated efforts to develop a deployable Block 1 Orion air vehicle including: <ul style="list-style-type: none"> • Design and manufacture of Block 1 airframe structural certification test articles • Preliminary Design Review of the Block 1 air vehicle • Critical Design Review of the Block 1 airframe 		
FY 2018 Plans: <i>N/A</i>		
Congressional Adds Subtotals	50.000	0.000

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

N/A

Remarks

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force Date: February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>
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E. Acquisition Strategy
There is currently no validated requirement for the Orion RPA. The concept for the Air Force to develop a long endurance, persistent ISR capability for the Combatant Commanders was an outgrowth of a JCTD started in FY 2010. Previous development efforts included: completion of studies analysis, development of a prototype air vehicle (Block 0), bench testing of engines and other aircraft components, ground continuity testing of select avionics, flight controls, and engine components, slow and high speed ground taxiing and a full flight series testing of the Orion RPA capabilities to include a multiple day, long duration flight demonstration. Starting with a portion of the FY 2015 funds, congressional adds have continued hardware and software engineering and development efforts towards operational airworthiness standards and mission requirements for a deployable air vehicle (Block 1).

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>	Project (Number/Name) 67A026 / <i>MAGIC</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	C/CPAF	Not specified. : Manassas, VA	-	-		-		-		-		-	Continuing	Continuing	-
MAGIC Block 1 Initial Design and Development	SS/CPFF	Aurora : Manassas, VA	-	0.959	Jun 2017	-		-		-		-	Continuing	Continuing	95.666
MAGIC Block 1 Product Design and Development	SS/CPFF	Aurora : Manassas, VA	-	45.000	Oct 2017	-		-		-		-	Continuing	Continuing	48.400
Subtotal			-	45.959		-		-		-		-	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA	Allot	645 AESG : Dayton, OH	-	4.041	May 2018	-		-		-		-	Continuing	Continuing	-
Subtotal			-	4.041		-		-		-		-	Continuing	Continuing	N/A

Project Cost Totals	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
	-	50.000	0.000	-	-	-	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>	Project (Number/Name) 67A026 / <i>MAGIC</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

MAGIC	
Block 1 Initial Design and Development	
Block 1 Airframe Structural Certification Test Article Design/Build	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>	Project (Number/Name) 67A026 / <i>MAGIC</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
MAGIC				
Block 1 Initial Design and Development	1	2017	2	2018
Block 1 Airframe Structural Certification Test Article Design/Build	1	2018	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	13.465	4.450	175.334	0.000	175.334	184.401	136.743	66.459	67.979	Continuing	Continuing
674818: <i>Imaging and Targeting Support</i>	-	0.000	0.000	20.295	0.000	20.295	29.729	51.402	51.092	51.411	Continuing	Continuing
674820: <i>Sensor Development</i>	-	0.000	0.000	43.681	0.000	43.681	48.734	9.191	0.000	0.000	0.000	101.606
675092: <i>JTC/SIL MUSE</i>	-	3.841	3.429	3.454	0.000	3.454	3.521	3.580	3.653	3.720	Continuing	Continuing
675291: <i>Gorgon Stare</i>	-	9.624	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.624
676025: <i>Data Compression</i>	-	0.000	0.000	4.879	0.000	4.879	6.935	9.545	11.714	12.848	Continuing	Continuing
676031: <i>Dismount Detection RADAR</i>	-	0.000	1.021	103.025	0.000	103.025	95.482	63.025	0.000	0.000	Continuing	Continuing

Note

This program, BA 7, PE 0305206F, project 674820, Advanced Synthetic Aperture Radar System (ASARS) 2B, is a new start.

In FY 2019, Program 0305208F, Distributed Common Ground/Surface Systems, Project 674826, Automated Target Recognition (ATR) effort was transferred to Program 0305206F, Airborne Reconnaissance Systems (ARS), Project 674818 Imaging and Targeting Support, in order to align funding with like ATR development efforts.

In FY 2019 funding transferred from Program 0604257F Advanced Technology And Sensors (Project 646025 Data Compression and Project 644818 Imaging and Targeting Support) to Program 0305206F Airborne Reconnaissance Systems, to continue maturing existing projects (Advanced Synthetic Aperture Radar System (ASARS), Reduction of Data Using Compression Enhancement (RDUCE), Detection Removal and Characterization Operation (DRACO), Sensor Open System Architecture (SOSA) and Airborne Sensors for ISR (ASI) within that program.

In FY 2019 funding was added to Project 676031 to support Dismount Radar efforts.

A. Mission Description and Budget Item Justification

The purpose of Airborne Reconnaissance System (ARS) Program 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). It provides for modeling/simulation, training and systems engineering. This program also coordinates the development of common collection, processing, and dissemination solutions for near real time Intelligence, Surveillance, and Reconnaissance (ISR). A portion of the funding in Project 674818 will be distributed in priority order, as supported by Airborne Sensors for ISR (ASI) efforts and set by the Geospatial Intelligence (GEOINT) Capabilities Working Group (GCWG), for the goal of building a comprehensive GEOINT capability for the USAF. On an annual basis, developmental technologies are reviewed against warfighter capabilities within the Challenging Targets Initial Capabilities Document and requirements based on strategic roadmaps and the results of the ASI efforts. Efforts advancing the technological maturity of promising sensors and

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i>
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processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement in the coming year. ASARS 2B efforts include, but are not limited to, development, design, fabrication, integration, demonstration, test and transition of high altitude, deep look ISR radar. Activities also include studies and analysis to support both current program planning and execution and future program planning. Additionally, funding covers GCWG Secretariat to manage GCWG planning, processes, and establish an Air Force GEOINT architecture.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	3.841	4.450	4.516	0.000	4.516
Current President's Budget	13.465	4.450	175.334	0.000	175.334
Total Adjustments	9.624	0.000	170.818	0.000	170.818
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	9.624	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	170.818	0.000	170.818

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

Project: 675291: *Gorgon Stare*

Congressional Add: *Wide-Area Motion Imagery*

Congressional Add Subtotals for Project: 675291

Congressional Add Totals for all Projects

	FY 2017	FY 2018
	9.624	0.000
Congressional Add Subtotals for Project: 675291	9.624	0.000
Congressional Add Totals for all Projects	9.624	0.000

Change Summary Explanation

- In FY 2019, the \$170.8 million increase accounts for the transfer of funds from other programs for the ATR, ASARS/High-Alt Synthetic Aperture Radar (SAR), DRACO, RDUCE and SOSA efforts, as well as the addition of funding for Dismount Radar (Project 676031).

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems				Project (Number/Name) 674818 / Imaging and Targeting Support			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
674818: <i>Imaging and Targeting Support</i>	-	0.000	0.000	20.295	0.000	20.295	29.729	51.402	51.092	51.411	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2019, Program 0305208F, Distributed Common Ground/Surface Systems, Project 674826, Automated Target Recognition (ATR) effort was transferred to Program 0305206F, Airborne Reconnaissance Systems (ARS), Project 674818 Imaging and Targeting Support, in order to align funding with like ATR development efforts.

A. Mission Description and Budget Item Justification

The purpose of the Imaging and Targeting Support (I&TS) / Agile ISR 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 SAR, 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 ISR and associated planning and direction; collection; processing and exploitation; analysis and production; and dissemination capabilities. These efforts are intended to reduce both target search and kill chain timelines as well as supporting traditional intelligence activities. This project will also increase interoperability by developing common standards and interfaces.

The funds in this project are distributed in priority order, as supported by the Challenging Targets Initial Capabilities Document and set by the GCWG, for the goal of building a comprehensive GEOINT capability for the USAF. On an annual basis, developmental technologies are reviewed against warfighter capabilities and requirements based on strategic roadmaps and the results of the ASI AoA as prefaced in the Challenging Targets Initial Capabilities Document. Efforts advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement in the coming year. ASARS 2B efforts include but are not limited to development, design, fabrication, integration, demonstration, test, and transition of high altitude, deep look ISR radar.

Inclusive in I&TS is the Distributed Common Ground/Surface Systems Automated Target Recognition (ATR) effort to further mature a robust capability to detect all classes of targets through camouflage.

Activities also include studies and analysis to support both current program planning and execution and future program planning. This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 674818 / Imaging and Targeting Support			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Agile ISR</p> <p>Description: Mold current and future ISR into a platform agnostic, non-proprietary, autonomous Multi-INT fusion and cross cuing solution that is designed based on mission requirements. Sensors will have to penetrate up to highly contested domains and survive to operate. This project will also increase interoperability by developing common standards and interfaces for mission and sensor systems. Through the AoA execution, the solution set will improve requirements and the development path for High Altitude SAR (ASARS), Next Generation Sensors, DRACO, SOSA, as well as other GCWG approved projects.</p> <p>FY 2018 Plans: - FY 2018 activities are reported under PE 0604257F, Project 644818, Imaging and Targeting Support.</p> <p>FY 2019 Base Plans: -Will complete AoA, demonstrate a Tech Maturation and Risk Reduction (TMRR) contract, and begin M&S work to mold current and future ISR into a platform agnostic, non-proprietary, autonomous Multi-INT fusion and cross cuing solution that is designed based on mission requirements. This includes but not limited to Next Generation Sensors, Detection Removal and Characterization Operation (DRACO), Sensor Open System Architecture (SOSA), and other GCWG approved projects. -Will utilize ASI AoA and its prioritized list of current and future sensor combinations multiple CDD development will begin. -Will increase interoperability by developing common standards and interfaces.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: - In FY 2019 funding increase was due to effort transferred from Program 0604257F, Project 644818, Imaging and Targeting Support.</p>	0.000	0.000	6.372	-	6.372
<p>Title: ASARS 2B</p> <p>Description: Designed/fabricated/integrated/demonstrate/test/transition deep look high altitude synthetic aperture radar. Includes total government and contractor costs for this project.</p> <p>FY 2018 Plans: - FY 2018 activities are reported under Program 0604257F, Project 644818, Imaging and Targeting Support.</p> <p>FY 2019 Base Plans:</p>	-	0.000	13.923	-	13.923

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 674818 / Imaging and Targeting Support
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Will continue to develop/design/fabricate/integrate/demonstrate/test/rapidly transition deep look high altitude ISR radar capabilities					
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> - In FY 2019 funding increase was due to effort transferred from Program 0604257F, Project 644818, Imaging and Targeting Support.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	20.295	-	20.295

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE 07 PE 0305202F: <i>Dragon U-2 (JMIP)</i>	37.217	14.714	0.520	-	0.520	0.550	1.840	3.920	0.000	0.000	58.761
• RDTE 04 PE 0604257F: <i>Advanced Technology and Sensors</i>	34.818	68.719	43.818	-	43.818	69.455	55.222	56.234	58.553	Continuing	Continuing

Remarks
A portion of the funding within the U-2 RDT&E line will be used to advance ASARS design, development, test and demonstration.

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

ASARS / High Altitude SAR technology maturation is conducted by Air Force Life Cycle Management Center/Intelligence, Surveillance, and Reconnaissance and Special Operations Forces (AFLCMC/WIN), in conjunction and cooperation with AFLCMC/HBG (Robins AFB) for 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: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 674818 / Imaging and Targeting Support
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DRACO	SS/CPFF	Lockheed Martin : King of Prussia, PA	-	-		-		2.883	Nov 2018	-		2.883	Continuing	Continuing	2.883
ASARS 2B	TBD	TBD : TBD	-	-		-		11.050	Aug 2019	-		11.050	Continuing	Continuing	14.800
Other Tech Efforts (prioritized by GCWG)	Various	Various : Various	-	-		-		1.081	Dec 2018	-		1.081	Continuing	Continuing	-
Subtotal			-	-		-		15.014		-		15.014	Continuing	Continuing	N/A

Remarks
ASARS 2B and DRACO, FY 2017 and FY 2018 contract efforts reported under PE 0604257F, project 644818.

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA: Other Govt Cost	SS/T&M	Various : Dayton, OH	-	-		-		5.281	Nov 2018	-		5.281	Continuing	Continuing	-
Subtotal			-	-		-		5.281		-		5.281	Continuing	Continuing	N/A

Project Cost Totals	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
	-	-	0.000	20.295	-	20.295	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 674818 / Imaging and Targeting Support

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Imaging and Targeting Support	
Advance Airborne PCPAD Development	
- DRACO	
Other Technology Efforts (Prioritized by GCWG)	
ASARS 2B	
ASARS 2B NRE, test, required activities for Operationalization	
- NRE Contract Award (April 2019)	
- PDR (Oct 2019)	
- CDR (May 2020)	
- Testing (Combined Developmental/Operational)	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 674818 / Imaging and Targeting Support

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Imaging and Targeting Support				
Advance Airborne PCPAD Development	1	2019	4	2023
- DRACO	2	2019	4	2023
Other Technology Efforts (Prioritized by GCWG)	1	2019	4	2023
ASARS 2B				
ASARS 2B NRE, test, required activities for Operationalization	3	2019	4	2023
- NRE Contract Award (April 2019)	3	2019	3	2019
- PDR (Oct 2019)	1	2020	1	2020
- CDR (May 2020)	3	2020	3	2020
- Testing (Combined Developmental/Operational)	3	2021	2	2022

Note

In FY 2017 and FY 2018, PE 0305206F, Advanced Reconnaissance Systems, Project 674818, Imaging and Targeting Support efforts were reported under PE 0604257F, Advanced Technology and Sensors, Project 644818, Imaging and Targeting Support.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 674820 / Sensor Development
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
674820: <i>Sensor Development</i>	-	0.000	0.000	43.681	0.000	43.681	48.734	9.191	0.000	0.000	0.000	101.606
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0305206F, project 674820, Advanced Synthetic Aperture Radar System (ASARS) 2B, is a new start.

In FY2019 funding was added to Project 674820 to support ASARS2B efforts.

A. Mission Description and Budget Item Justification

The purpose of this effort is to complete ASARS-2B technology demonstration non-recurring engineering, and test activities in preparation for follow-on production/fielding. These efforts will consist of non-recurring engineering, fabrication, integration, as well as testing of the ASARS-2B radar system based upon high altitude ISR radar system requirements in the U-2 Operational Requirements Document and approved AF Form 1067s.

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

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Advanced Synthetic Aperture Radar System (ASARS) 2B	0.000	0.000	43.681	-	43.681
Description: Designed/fabricated/integrated/demonstrate/test/transition deep look high altitude synthetic aperture radar. Includes total government and contractor costs for this project.					
FY 2018 Plans: FY 2018 development activities are reported under Program 0604257F, Project 644818, Imaging and Targeting Support.					
FY 2019 Base Plans: Will continue to develop/design/fabricate/integrate/demonstrate/test/rapidly transition deep look high altitude ISR radar capabilities					
FY 2018 to FY 2019 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 674820 / Sensor Development
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Additional funding to support ASARS-2B efforts added by the AF in this new project 674820 Sensor Development.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	43.681	-	43.681

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE 07 0305202F: <i>Dragon U-2 (JMIP)</i>	37.217	14.714	0.520	-	0.520	0.550	1.840	3.920	0.000	Continuing	Continuing

Remarks
A portion of the funding within the U-2 RDT&E line and Airborne Reconnaissance systems RDT&E line will be used to advance ASARS design, development, test and demonstration.

D. Acquisition Strategy
ASARS / High Altitude SAR technology maturation is conducted by Air Force Life Cycle Management Center/Intelligence, Surveillance, and Reconnaissance and Special Operations Forces (AFLCMC/WIN), in conjunction and cooperation with AFLCMC/HBG (Robins AFB) for 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: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 674820 / Sensor Development
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ASARS 2B	TBD	TBD : TBD	-	-		-		43.681	Apr 2019	-		43.681	Continuing	Continuing	-
Subtotal			-	-		-		43.681		-		43.681	Continuing	Continuing	N/A
Project Cost Totals			-	-		0.000		43.681		-		43.681	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 674820 / Sensor Development

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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																												
ASARS 2B NRE, test, required activities for Operationalization																												
-- NRE Contract Award (April 2019)																												
-- PDR (Oct 2019)																												
-- CDR (May 2020)																												
-- Testing (Combined Developmental/Operational)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i>	Project (Number/Name) 674820 / <i>Sensor Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ASARS 2B				
ASARS 2B NRE, test, required activities for Operationalization	3	2019	4	2023
-- NRE Contract Award (April 2019)	3	2019	3	2019
-- PDR (Oct 2019)	1	2020	1	2020
-- CDR (May 2020)	3	2020	3	2020
-- Testing (Combined Developmental/Operational)	3	2021	2	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 675092 / JTC/SIL MUSE
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675092: JTC/SIL MUSE	-	3.841	3.429	3.454	0.000	3.454	3.521	3.580	3.653	3.720	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Multiple Unified Simulation Environment (MUSE) is the DoD simulation/training system of choice for many Unmanned Aircraft Systems (UAS), RPA, and ISR systems. MUSE is also known as the Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) in its Air Force Application. The MUSE/AFSERS is a software suite that simulates ISE & strike systems, tailored air vehicle & data links, and visualization systems used for payload product outputs-including Full Motion Video (FMV), Still Frame Imagery, or GMTI data. Air vehicles, sensors, datalinks, takeoff and landing systems, and to some degree, surrogate UAS and RPA ground stations, when actual ground stations are unavailable. FMV, still frame imagery, or GMTI data are provided. Outputs are compliant with applicable DoD standards and are continually tested against actual ground ISR processors to ensure interoperability with over 40 systems within DoD.

The Services and combatant commanders have a requirement for the capability to train with a system that provides a real-time simulation environment containing multiple intelligence systems that can be integrated with larger force-on-force simulations. The MUSE/AFSERS creates a realistic operational environment which supports the ability to assess military utility, architecture and concept of employment development, and Tactics, Techniques, and Procedures refinement, conduct emerging concepts experimentation, and optimize C4ISR within warfighting exercises and experiments. It is the preferred simulation system used by the combatant commanders and Joint Services to support command and battle staff C4ISR training.

The MUSE/AFSERS also creates a realistic operational environment that supports: an embedded training capability for multiple Program Managers; tools to minimize acquisition and life cycle cost and schedule impacts; ability to conduct emerging concepts experimentation, future systems exploration, systems integration, and technology insertion; applications for Joint and Service-specific warfighting exercises; and C4ISR optimization.

MUSE/AFSERS is currently in use within all Services and most unified commands simulating MQ-1, MQ-9, RQ-4, MQ-1C, M/RQ-5, RQ-7, national and commercial satellite collectors, P-3, E-8, and the U-2. During warfighting exercises, the AFSERS provides imagery simulations with associated C4ISR systems to support the execution of critical imagery processes. The MUSE/AFSERS is also used as a mission rehearsal tool for current, on-going military combat operations.

The Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is the center of excellence that supports the UAS and RPA programs within the services by providing the system engineering, test and integration, interoperability, rapid technology insertion and training to address MUSE/AFSERS requirements. For those assets normally not available for training, the JTC/SIL provides surrogate systems and interfaces. The JTC/SIL contributes to the distributed training environments, virtually linking participants from various locations worldwide, and are routinely supported within the MUSE architecture.

Activities also include studies and analysis supporting current and future program planning and project execution.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 675092 / JTC/SIL MUSE

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) Development</p> <p>Description: DoD's simulation/training system of choice for Intelligence Surveillance and Reconnaissance systems, sensors, and platforms. Includes AFSERS, Common Ground Station Interface, and infrastructure support.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue integration of NVIG into the Modeling & Simulation domain as it pertains to unmanned aircraft systems simulation. Terrain, and model development for NVIG and Virtual Reality Scene Generator to increase fidelity. - Continue support of theater level exercises: Ulchi Freedom Guardian, Key Resolve and Pacific Sentry-mods from exercises. - Continue to support improvement of mapping capability that facilitates 64 Bit, RMF accredited execution. - Continue redesign Windows Entity Server and NetLink to improve network routing, thus lessening bandwidth consumption. - Continue incorporate Common Image Generator Interface to provide an Image Generator (IG) agnostic solution to allow other IGs to be supported. - Continue to implement tactical protocols into the simulation domain to enhance interoperability. - Continue to refine the implementation of Hands on Throttle and Stick joystick. - Continue to analyze the redesign of VIPRS editor to fit current architecture. - Continue to address DoD standards and compliance to keep current with real world systems. - Continue to address ongoing modifications, test and integration for use in federation environment - Continue to address ongoing requirements from AFSERS User Working group based on available funding and time frame. <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Will continue integration of NVIG into the Modeling & Simulation domain as it pertains to unmanned aircraft systems simulation. Terrain, and model development for NVIG and Virtual Reality Scene Generator to increase fidelity. - Will continue support of theater level exercises: Ulchi Freedom Guardian, Key Resolve and Pacific Sentry-mods from exercises. - Will continue to support improvement of mapping capability that facilitates 64 Bit, RMF accredited execution. - Will continue redesign Windows Entity Server and NetLink to improve network routing, thus lessening bandwidth consumption. 	3.841	3.429	3.454	-	3.454

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 675092 / JTC/SIL MUSE

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<ul style="list-style-type: none"> - Will continue incorporate Common Image Generator Interface to provide an Image Generator (IG) agnostic solution to allow other IGs to be supported. - Will continue to implement tactical protocols into the simulation domain to enhance interoperability. - Will continue to refine the implementation of Hands on Throttle and Stick joystick. - Will continue to analyze the redesign of VIPRS editor to fit current architecture. - Will continue to address DoD standards and compliance to keep current with real world systems. - Will continue to address ongoing modifications, test and integration for use in federation environment - Will continue to address ongoing requirements from AFSEERS User Working group based on available funding and time frame. 					
FY 2018 to FY 2019 Increase/Decrease Statement: Increase of \$0.025M is due to inflation.					
Accomplishments/Planned Programs Subtotals	3.841	3.429	3.454	-	3.454

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE 07 PE 0305204A: <i>Tactical Unmanned Aerial Vehicles</i>	3.942	4.712	4.748	-	4.748	4.954	5.101	5.231	1.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

This is an enterprise services effort, jointly funded and centrally managed by the US Army. AFLCMC/WIN MIPRs funds in support of Unmanned Aircraft Systems modeling and simulation efforts.

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 675092 / JTC/SIL MUSE

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

JTC/SIL MUSE	
AFSERS Development	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 675092 / JTC/SIL MUSE

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
JTC/SIL MUSE				
AFSERS Development	1	2017	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 675291 / Gorgon Stare
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675291: <i>Gorgon Stare</i>	-	9.624	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.624
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Gorgon Stare system is a podded airborne sensor suite that provides city-sized wide area airborne surveillance and is integrated on specially-modified MQ-9 Reaper RPA. The Air Force Requirements Oversight Council (AFROC) approved Air Combat Command's recommendation to transition Gorgon Stare from a Quick Reaction Capability (QRC) to an Air Force Enduring Capability in November 2014. Gorgon Stare's requirements are documented in the Gorgon Stare Wide Area Airborne Sensor Capabilities Production Document (draft). The acquisition strategy for this Air Force podded sensor suite solution is sustainment of the currently fielded capabilities with any upgrades implemented via validated -1067s or Urgent Operational Needs.

Development efforts conducted with FY 2015 Congressionally-added funds included efforts focused primarily on the development of a Beyond Line of Sight (BLOS) capability in support of an Urgent Operational Need. Development efforts conducted with FY 2016 Congressionally-added RDT&E funds included further development and system integration lab testing of Near Vertical Direction Finding (NVDF) with Gorgon Stare Increment 2 Wide Area Motion Imagery (WAMI) sensors. Funds spent on NVDF will provide a ramp for future airborne integration efforts as required. Development efforts conducted with FY 2017 Congressionally-added funds further development efforts associated with BLOS, to include first article testing for phase 1 delivery to the field, expected late FY 2018.

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

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

	FY 2017	FY 2018
Congressional Add: Wide-Area Motion Imagery	9.624	0.000
FY 2017 Accomplishments: - Initiated integration of Processing, Exploitation, and Dissemination (PED) algorithms for analysts - Continued fielding of limited BLOS capability		
FY 2018 Plans: - First Article fielding of a limited BLOS capability and furthering integration of PED algorithms for analysts.		
Congressional Adds Subtotals	9.624	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i>	Project (Number/Name) 675291 / <i>Gorgon Stare</i>
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item PRDTB3: <i>Airborne Reconnaissance Systems</i>	22.905	0.000	0.000	16.000	16.000	0.000	0.000	0.000	0.000	0.000	38.905
• APAF 06 Line Item PRDTB3: <i>Airborne Reconnaissance Systems</i>	0.000	0.216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.216

Remarks

D. Acquisition Strategy

The wide area airborne surveillance requirement is being delivered via the Gorgon Stare podded wide area motion imagery sensor suite integrated on dedicated, specially-modified MQ-9 Reaper RPA. Gorgon Stare transitioned from a QRC to an Air Force Enduring Capability under AFROC authority in November 2014. The program is executed by the 645th Aeronautical Systems Group, Intelligence, Surveillance, and Reconnaissance and Special Operations Forces Directorate as a post-MS C program. The sensor suite will be sustained in its current configuration. Any future capability upgrades will be fielded as a result of validated -1067s or Urgent Operational Needs.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems					Project (Number/Name) 675291 / Gorgon Stare					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Gorgon Stare Beyond Line of Sight -Further Development	SS/CPFF	Sierra Nevada Corporation : Sparks, NV	-	4.117	Sep 2017	-		-		-		-	Continuing	Continuing	4.117
Gorgon Stare Area of Interest (AOI) Tagging	SS/CPFF	Sierra Nevada Corporation : Sparks, NV	-	5.507	Dec 2017	-		-		-		-	Continuing	Continuing	6.818
Subtotal			-	9.624		-		-		-		-	Continuing	Continuing	N/A
			Prior Years	FY 2017	FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			-	9.624	0.000	-	-	-	-	-	Continuing	Continuing	N/A		
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 675291 / Gorgon Stare

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Gorgon Stare	
Near Vertical Direction Finding / Wide Area Motion Imagery Integration	████████████████████
Area of Interest (AOI) Tagging	████████████████████
Beyond Line of Sight Non-Recurring Engineering and First Article	████████████████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i>	Project (Number/Name) 675291 / <i>Gorgon Stare</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Gorgon Stare				
Near Vertical Direction Finding / Wide Area Motion Imagery Integration	1	2017	2	2018
Area of Interest (AOI) Tagging	1	2018	1	2019
Beyond Line of Sight Non-Recurring Engineering and First Article	1	2018	1	2019

Note

Gorgon Stare will continue operations as required using sustainment funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 676025 / Data Compression
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
676025: Data Compression	-	0.000	0.000	4.879	0.000	4.879	6.935	9.545	11.714	12.848	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
In FY 2019, Data Compression effort and funding was transferred from PE 0604257F, Advanced Technology and Sensors, Project 646025, to PE 0305206F, Airborne Reconnaissance Systems, Project 676025.

A. Mission Description and Budget Item Justification

The Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne Intelligence, Surveillance, and Reconnaissance ISR sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial satellite communications (SATCOM) or military SATCOM. The effort is developing, testing and will implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and Distributed Common Ground System. Outputs will meet standard certification for use within the Department of Defense Geospatial Intelligence and Measurement and Signatures Intelligence architectures.

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Data Compression	0.000	0.000	4.879	-	4.879
Description: The Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne Intelligence, Surveillance and Reconnaissance (ISR) sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial Satellite Communications (SATCOM) or military SATCOM. The effort will develop, test and implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and the Defense Common Ground System. Outputs will meet standard certification for use within the Department of Defense Geospatial Intelligence and Measurement and Signatures Intelligence architectures.					
FY 2018 Plans: - FY 2018 activities are reported under Program 0604257F, Project 646025, Data Compression.					
FY 2019 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 676025 / Data Compression

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Will continue to develop and test our existing data compression capabilities including SAR, Phase History SAR and HSI/MSI.</p> <ul style="list-style-type: none"> - Will develop compression capabilities for other phenomenologies, including, but not limited to, SIGINT, LIDAR, and EO/IR. - Will support integration of compression capabilities into operational sensors including, but not limited to, the U2/ASARS, Global Hawk MP-RTIP/EISS, and Reaper/LynxSAR. - Will continue to develop and test compression and decompression algorithms for Persistent SAR and Smart Data Discrimination. - Will continue to develop documentation for DoD and international standards acceptance of our compression capabilities. - Will continue to provide engineering services for algorithm familiarization, assessment, and improvement. - Will continue to participate in SOSA (and other open standards) planning and integration. <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funding increased due to Data Compression effort being transferred from PE 0604257F.</p>					
Accomplishments/Planned Programs Subtotals	0.000	0.000	4.879	-	4.879

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

N/A

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i>	Project (Number/Name) 676025 / <i>Data Compression</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Data Compression				
RDUCE efforts	1	2019	4	2021

Note

In FY 2015, RDUCE efforts were reported under PE 0305208F, Distributed Common Ground/Surface Systems, Project 676025, Data Compression. For FY 2017, RDUCE efforts will be reported under PE 0604257F, Advanced Technology and Sensors, Project 646025, Data Compression.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems				Project (Number/Name) 676031 / Dismount Detection RADAR			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
676031: Dismount Detection RADAR	-	0.000	1.021	103.025	0.000	103.025	95.482	63.025	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Detection Radar (DR) project designs, develops, integrates, tests, fields, and sustains Moving Target Indicator (MTI) capability for improved dismount and moving target detection, identification, tracking, and classification. This sensor will be employed on airborne platforms, such as the MQ-9 Reaper.

Activities also include studies, analysis, and technology development, maturation, and demonstration to support current and future program planning and execution.

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: DR	0.000	1.021	103.025	-	103.025
Description: Design, develop, integrate, test, field, and sustain a persistent MTI capability in theater for employment on airborne platforms and various technical studies/analysis to support future advanced radar development.					
FY 2018 Plans: Initiate risk reduction on sensor for integration on airborne platforms to provide Moving Target Indication (MTI) capability, to include up to maturing architecture & design; developing subsystem prototypes; improving manufacturing readiness.					
FY 2019 Base Plans: Will award contract to begin design, development, integration, and testing of MTI capability on medium altitude airborne platforms.					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to ramp up from initial risk reduction activities in FY 2018 to contract award in FY 2019.					
Accomplishments/Planned Programs Subtotals	0.000	1.021	103.025	-	103.025

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 676031 / Dismount Detection RADAR

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

Remarks


D. Acquisition Strategy
The acquisition strategy for DR includes risk reduction studies and activities in FY 2018 to prepare for contract award in 1QFY19. This contract will design, develop, integrate, test, field, and sustain a more persistent MTI capability to be integrated on airborne platforms.

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 676031 / Dismount Detection RADAR

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

DR	
Imaging and Targeting Support - Other Technology Efforts (Prioritized by GCWG)	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i>	Project (Number/Name) 676031 / <i>Dismount Detection RADAR</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
DR				
Imaging and Targeting Support - Other Technology Efforts (Prioritized by GCWG)	1	2018	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	20.975	14.269	14.223	0.000	14.223	14.487	14.738	15.044	15.319	Continuing	Continuing
674754: <i>RC-135 Systems</i>	-	20.975	14.269	14.223	0.000	14.223	14.487	14.738	15.044	15.319	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The RC-135 operational systems development and enhancement activities support the design studies, engineering analysis, non-recurring engineering, and other efforts associated with the integration and modification of the RC-135 programs and their specialized mission systems, both air and ground. Associated ground systems include RIVET JOINT Mission Trainers (RJMT, a.k.a. mission crew simulators), Ground Data Processing Systems (GDPS), Distributed Mission Shelters (DMS), Mission Crew Training Systems (MCTS), Airborne Capabilities Extension System (ACES), and the Operational Flight Trainers (OFT, a.k.a. flight deck simulators). Extensive utilization of Commercial-Off-The-Shelf (COTS) based solutions allows rapid fielding of needed capabilities through upgrades and supports Diminishing Manufacturing Sources (DMS)/Vanishing Vendor Items (VVI) logistics mitigation efforts. The results of these efforts provide for preliminary assessments of technical feasibility, operability, or military utility as well as specific engineering implementations for integration into the various systems baseline configurations.

These activities are managed by the Air Force through the 645th Aeronautical Systems Group (645 AESG). The 645 AESG (a.k.a. BIG SAFARI Systems Program Office or SPO) manages engineering, ground and support systems modifications, integration, flight testing, product assurance, acceptance testing, logistics, and training activities.

Aircraft, sensor systems, and associated ground support system engineering planned for FY 2019 budget includes developmental planning, execution and support for the RC-135V/W RIVET JOINT Baselines 12 and 13 (BL-12 and BL-13), the RC-135U COMBAT SENT Baselines 5 and 6 (BL-5 and BL-6), and the RC-135S COBRA BALL BL-5 and BL-6 configurations. The world-wide challenge of keeping pace against technologically agile targets used by both nation and non-nation-state adversaries and the rapid evolution of COTS technologies demands a responsive and adaptive acquisition strategy for fielding incremental spiral upgrades and baseline capabilities that are logistically supportable at all locations. The 645 AESG uses an incremental baseline strategy to mitigate risk, find affordable solutions and field needed capabilities on the aircraft and associated ground support and training systems. Obsolescence and DMS/VVI logistical concerns are addressed with each baseline upgrade strategy and assessed annually as part of the fleet sustainment responsibilities.

RIVET JOINT BL-12 upgrades consist of, but are not limited to, increased digital signal exploitation, increased digital signal recorder bandwidth, enhanced spatial processing/exploitation, enhanced weather radar, digitally enhanced electronic flight instrument system (EFIS), continued Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) compliant cockpit avionics enhancements, Air Force Distributed Common Ground System (AF-DCGS) interoperability, operator work station 3-D map projection, enhanced operator reporting management tools, modernized communications security (COMSEC) protocols, and a new steerable beam antenna. RIVET JOINT BL-13 upgrades consist of, but are not limited to, providing a continuous recording capability, Super Wideband Compressive Receiver (SWCR) and Nyquist Folding Receiver (NYFR), CNS/ATM avionics upgrades such as new autopilot, automated data system-broadcast (ADS-B) and Mode 5 identify friendly or foe (IFF) systems, and family of beyond-line-of-sight terminals (FAB-T) advanced extremely high frequency (AEHF) communications suite.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i>	
<p>COMBAT SENT BL-5 upgrades consist of, but are not limited to, active ranging and theater networked geo-location (TNG) capability, cooling duct and lighting improvements, RJ Baseline 11 (BL-11) communications intelligence (COMINT), upgraded computer architecture, wideband global satellite (WGS) communications enhanced integration, development of an airborne tracking system, communications upgrade to include Multifunctional Information Distribution System Joint Tactical Radio System (MIDS-J), and continued CNS/ATM compliant cockpit avionics enhancements. COMBAT SENT BL-6 developmental enhancements consist of, but are not limited to, steerable beams for the COMINT sub-system, improved SWCR capability and specific emitter identification (SEI) electronic intelligence (ELINT) sub-system, Primary Sensor Measurement System (PRISMS) merge with manual precision collections, millimeter wave and low band capabilities with PRISMS, digitizing antennas, direction finding of High Frequency signals and expanded streaming audio services and 360 degree aircraft tracking system. BL-6 RDT&E is funded via PE 0305206G.</p> <p>COBRA BALL BL-5 upgrades consist of, but are not limited to, RJ BL-11 COMINT, WGS communications enhanced integration, communications upgrades to include MIDS-J and an intercom system (FORCE), and continued CNS/ATM compliant cockpit avionics enhancements. COBRA BALL BL-6 developmental enhancements consist of, but are not limited to, high gain S-Band antenna, large format Sapphire windows, RJ BL-13 COMINT capability, foreign instrumentation signals intelligence (FISINT) analog to digital receiver, and Brave version of the digital cockpit avionics systems to continue CNS/ATM compliance initiatives. BL-6 RDT&E is funded via PE 0301314F.</p> <p>Ground Systems Baseline upgrades add the capabilities found in the corresponding RIVET JOINT Baseline upgrades (i.e., RIVET JOINT BL-11 corresponds to Ground System BL-11, RIVET JOINT BL-12 corresponds to Ground System BL-12, RIVET JOINT BL-13 corresponds to Ground System BL-13) to the Ground Systems to ensure crews receive training on the appropriate mission system configurations.</p> <p>Activities also include studies and analysis to support both current program planning and execution and future program planning.</p> <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver RC-135 capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.</p> <p>This program is in Budget Activity 7, Operational Systems Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production fielding in the current or subsequent fiscal year.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0305207F I Manned Reconnaissance Systems
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	20.975	14.269	14.330	0.000	14.330
Current President's Budget	20.975	14.269	14.223	0.000	14.223
Total Adjustments	0.000	0.000	-0.107	0.000	-0.107
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.107	0.000	-0.107

Change Summary Explanation

FY2019 adjusted for inflation

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Manned Reconnaissance Systems	20.975	14.269	14.223
Description: Non-recurring engineering (NRE) for Baseline system developments and enhancements to improve mission capabilities of the RIVET JOINT BL-12 and BL-13, COMBAT SENT BL-5 and BL-6, COBRA BALL BL-5 and BL-6, and Ground Systems BL-11 and BL-12			
FY 2018 Plans:			
• Continuing Engineering Analysis			
• Continuing NRE and other efforts associated with the integration and modification of the RC-135 primary mission equipment			
• Continuing Specialized Mission Systems development for the collection of both air and ground signals.			
FY 2019 Plans:			
Will initiate contracts to:			
• Continue Engineering Analysis			
• Continue NRE and other efforts associated with the integration and modification of the RC-135 primary mission equipment			
• Continue Specialized Mission Systems development for the collection of both air and ground signals.			
FY 2018 to FY 2019 Increase/Decrease Statement:			
FY19 decreased due to inflation adjustment			
Accomplishments/Planned Programs Subtotals	20.975	14.269	14.223

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item DARP01: <i>RC-135</i>	217.238	201.559	394.532	-	394.532	197.673	192.940	196.842	200.419	Continuing	Continuing
• APAF 06 Line Item DARP01: <i>Initial Spares/Repair Parts</i>	47.734	49.475	49.520	-	49.520	50.448	51.352	52.380	53.332	Continuing	Continuing
• APAF 07 Line Item DARP01: <i>Aircraft Support</i> <i>Equipment & Facilities</i>	0.000	29.700	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• OPAF 04 Line Item 846070: <i>DARP RC-135</i>	25.287	25.985	26.262	-	26.262	26.716	27.204	27.685	28.178	Continuing	Continuing
• RDTE 07 PE 0304260F: <i>Airborne SIGINT Enterprise</i>	39.756	59.706	50.577	-	50.577	40.696	42.195	43.071	43.856	Continuing	Continuing

Remarks

E. Acquisition Strategy

The RC-135 RIVET JOINT, COBRA BALL, and COMBAT SENT configured aircraft are maintained and kept technologically relevant through a baseline or incremental upgrade acquisition strategy. Technology upgrades and Quick Reaction Capability (QRC) developments are acquired through the 645 AESG in accordance with the BIG SAFARI Program Management Directive (PMD) and Class Justification and Approval (J&A) document for acquisition of supplies and services using an "other than full and open competition" criteria. The supplies and services procured by 645 AESG satisfy National Security requirements (FAR 6.302-6) through the use of their standing J&A or address Unusual and Compelling Urgency requirements (FAR 6.302-2) through an individually prepared J&A supported by the BIG SAFARI Life Cycle Management Plan (LCMP) across the full spectrum of system life cycle management from developmental engineering to system retirement ("cradle to grave") support. Due to the ever changing threat and rapidly evolving electromagnetic combat environment encountered during our prolonged commitment to Overseas Contingency Operations (OCO), the acquisition program manager has the authority to redirect funding as necessary to meet current stated and emerging Combatant Command (CCMD) and/or Intelligence Community (IC) requirements to better meet the war fighting objectives.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i>	Project (Number/Name) 674754 / <i>RC-135 Systems</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Operational Systems Development	SS/ Various	L-3 Technologies : Greenville, TX	-	20.975	Dec 2016	14.269	Dec 2017	14.223	Dec 2018	-		14.223	Continuing	Continuing	-
Subtotal			-	20.975		14.269		14.223		-		14.223	Continuing	Continuing	N/A

Remarks
 All activity is based around the Programmed Depot Maintenance (PDM) airframe and missions systems schedule which includes multiple contracts and organizations with overlapping and continuous periods of performance. Due to the rapidly changing threat environment encountered during our prolonged commitment to Overseas Contingency Operations (OCO), the acquisition program manager has the authority to redirect funding as necessary to meet current stated and emerging Combatant Command (CCMD) and/or Intelligence Community (IC) requirements.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	20.975	14.269	14.223	-	14.223	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i>	Project (Number/Name) 674754 / <i>RC-135 Systems</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Ground Systems Baseline 14 Development, Integration, Test and Fielding																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i>	Project (Number/Name) 674754 / <i>RC-135 Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Baseline Spiral Development				
RIVET JOINT Baseline 11 Integration, Test and Fielding	1	2017	3	2017
RIVET JOINT Baseline 12 Integration, Test and Fielding	2	2017	2	2020
RIVET JOINT Baseline 13 Development	2	2017	4	2018
RIVET JOINT Baseline 13 Integration, Test and Fielding	1	2019	1	2023
RIVET JOINT Baseline 14 Development	1	2020	4	2023
RIVET JOINT Baseline 14 Integration, Test and Fielding	4	2021	4	2023
COMBAT SENT Baseline 5 Integration, Test and Fielding	1	2017	2	2018
COMBAT SENT Baseline 6 Development	2	2018	2	2022
COMBAT SENT Baseline 6 Integration, Test and Fielding	2	2020	4	2023
COBRA BALL Baseline 5 Integration, Test and Fielding	1	2017	4	2019
COBRA BALL Baseline 6 Development	1	2018	1	2020
COBRA BALL Baseline 6 Integration, Test and Fielding	1	2020	4	2023
Ground Systems Baseline 11 Integration, Test and Fielding	1	2017	1	2018
Ground Systems Baseline 12 Integration, Test and Fielding	1	2018	1	2021
Ground Systems Baseline 13 Development, Integration, Test and Fielding	1	2021	4	2022
Ground Systems Baseline 14 Development, Integration, Test and Fielding	3	2023	4	2023

Note

Ground systems include the RIVET JOINT Mission Trainers (RJMT), Mission Crew Training Systems (MCTS), Ground Data Processing System (GDPS), Modular Processing System (MPS), Airborne Capabilities Extension Systems (ACES) and Operational Flight Trainers (OFT). Baseline upgrades are determined by the aircraft programmed depot maintenance schedule. Hardware, firmware or software enhancements to the ground systems are set up to match the aircraft baseline upgrades. Typically, baseline configuration changes and enhancements are incorporated first into the RJMTs and OFTs, and then integrated into GDPS, MCTS, MPS, and ACES.

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
3600 / 7	PE 0305207F / <i>Manned Reconnaissance Systems</i>	674754 / <i>RC-135 Systems</i>

Delivery of the enhancements to the RJMTs and OFTs are planned to arrive concurrently, if not slightly prior, to the delivery of the first aircraft with an upgraded cockpit or mission system in a given baseline configuration to allow for aircrew and ground personnel training and qualification.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	18.898	27.501	24.554	29.500	54.054	25.009	25.443	25.972	26.447	Continuing	Continuing
674826: <i>Common Imagery Ground / Surface Systems</i>	-	18.898	27.501	24.554	3.500	28.054	25.009	25.443	25.972	26.447	Continuing	Continuing
675246: <i>MQ-9 Development and Fielding</i>	-	0.000	0.000	0.000	26.000	26.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note
 This program, BA 7, PE 0305208F, project 674826, Sensor Integration, is a new start.
 This program, BA 7, PE 0305208F, project 675246, Video Data Link, is a new start.

A. Mission Description and Budget Item Justification

Air Force Distributed Common Ground System (AF DCGS) is the Combat Air Force (CAF) weapon system architecture for planning and direction, collection, processing and exploitation, analysis and production, and dissemination (PCPAD) of data from Intelligence, Surveillance, and Reconnaissance (ISR) missions. Since AF DCGS is also a major component of the DoD DCGS, the system is designed to complement and interoperate with the DoD, Army, Navy and Marine Corps DCGS. The AF DCGS mission is to provide Joint Task Force (JTF) Commanders, Air Component Commanders, Unified Commands, and other directed organizations with global, time-sensitive ISR PCPAD across the spectrum of military operations. AF DCGS is a multi-INT network linked weapon system (AN/GSQ-272) capable of exploiting intelligence data from manned platforms, remotely piloted aircraft (RPA), non-traditional ISR platforms, national and commercial satellites, and other collection systems. AF DCGS is designed to support joint operational requirements by providing a common PCPAD means to provide time-sensitive intelligence to field commanders and in support of the Air Operations Center (AOC) mission requirements. Currently, the AF DCGS worldwide architecture is composed of two worldwide core sites, three regional core sites, two remote Air Force Forces (AF FOR) sites, four National Mission Partner (NMP) sites, three support sites, and multiple National Guard Bureau (NGB) sites. Currently, AF DCGS is supporting ongoing operations from forward deployed and in-garrison CONUS and OCONUS based locations. The system employs a concept of data distribution, information sharing and collaborative work centers. AF DCGS provides the national leadership and the warfighter with integrated and interoperable national and airborne reconnaissance by providing quality and fused Signals Intelligence (SIGINT), Measurement and Signature Intelligence (MASINT), and Geospatial Intelligence (GEOINT) tailored to the warfighter for all levels of conflict.

AF DCGS is transforming by integrating the necessary technologies and tools to provide increased capabilities and meet emerging and urgent operational needs. These efforts will also integrate commercial-off-the-shelf and government-off-the-shelf upgrades to provide current technologies and achieve necessary application services. The next series of upgrades will meet the operational need to integrate new and/or improved sensor capabilities, as well as enhance interoperability by migrating to an Open Architecture (OA) to improve data sharing ability per DoD direction.

Program management consists of eight ACAT III efforts: GEOINT (GB 4.1), GEOINT Transformation, Systems Release (SR 3.0), SIGINT Transformation, Sensor Integration, Multi-INT, Network Infrastructure Transformation, and DCGS Reference Imagery Transition (DRT):

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>
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1. *GB 4.1: The GEOINT Baseline 4.1 (GB4.1) effort completes the Bulk Release process and provides a common baseline across the weapon system. It also integrates Airborne Cuing and Exploitation System, Hyper Spectral ACES-HY (MQ-1) and Global Hawk (GH) Block 40 capability into AF DCGS.
2. GEOINT Transformation: The GEOINT Transformation effort rapidly integrates new capabilities and migrates GEOINT-specific applications & capabilities into the open architecture framework.
3. *SR 3.0: The Systems Release (3.0) effort completes SIGINT Bulk Release process and provides a common baseline across the weapon system. Provides the ability to PCPAD the Airborne Signals Intelligence Payload (ASIP) family of systems and integrates the Common Intelligence Collections System (CICS) capability.
4. SIGINT Transformation: Rapidly integrate new capabilities, leverage mission partner methods and tools, exchange data, and migrate the SIGINT-specific applications/capabilities into the open architecture framework.
5. *Sensor Integration: The Sensor Integration effort rapidly integrates AF, Joint, & Coalition Sensor data into DCGS Enterprise to ingest data, perform sensor planning, and Command & Control.
6. Multi-INT: Provides and supports Open Architecture (OA)-based Enterprise Services, moves to commodity hardware, a virtual desktop environment, and facilitates enterprise-wide collaborative tools.
7. Network Infrastructure Transformation: The Infrastructure Transformation effort modernizes the AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward a cloud architecture.
8. *DRT: The Air Force DCGS Reference Imagery Transition (DRT) effort provides data ingest, transfer, and storage capabilities for NGA reference imagery data.

NOTES:

*For FY19, this effort does not have any associated RDT&E funding. The Other Procurement Air Force (OPAF) funding is exhibited in the Procurement Documentation (WSC846080, DCGS-AF).

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	30.448	27.501	23.170	0.000	23.170
Current President's Budget	18.898	27.501	24.554	29.500	54.054
Total Adjustments	-11.550	0.000	1.384	29.500	30.884
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-11.550	0.000	1.384	29.500	30.884

Change Summary Explanation

In FY 2017, \$11.550M Request for Additional Appropriations was denied in the FY 2017 Appropriations Act.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force Date: February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>
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In FY 2019 Base, the AF transferred \$2.403M from the Project SUTER effort in PE 0305221F, Network-Centric Collaborative Targeting to PE 0305208F. The AF also transferred \$1.019M for the Automatic Target Recognition effort from PE 0305208F to PE 0305206F, Airborne Reconnaissance Systems. These transfers result in the \$1.384M aggregate reported on the "Other Adjustment" line.

In FY 2019 OCO, \$3.5M add reflects the AF request for OCO funding for the Full Motion Video (FMV) Geo-Coordination (Geo-Coord) Accuracy effort.

Due to a database error, the additional \$26M in FY 2019 OCO for "MQ-9 Development and Fielding" (Project 675246) was erroneously placed in PE 0305208F but belongs in PE 0305829F, "Video Data Link". The error will be fixed during the next President's Budget cycle. This effort is a new start and will provide situational awareness (SA) to the operator on the ground using real time Full Motion Video (FMV) from secure line of sight links to airborne ISR and other platforms. The FY19 OCO is for further system development of the Mounted and Airborne Video Data Link (MAVDL). Focus areas will be Mobile Ad-Hoc Networking, updated cryptographic hardware, and improved waveforms for LPI/LPD (Low Probability of Intercept/Low Probability of Detection) operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>				Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
674826: <i>Common Imagery Ground / Surface Systems</i>	-	18.898	27.501	24.554	3.500	28.054	25.009	25.443	25.972	26.447	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0305208F, project 674826, Sensor Integration, is a new start.

In FY 2019, PE 0305221F, Network-Centric Collaborative Targeting, Project 675275, SUTER efforts were transferred to PE 0305208F, Distributed Common Ground/Surface Systems, Project 674826, Common Imagery Ground/Surface Systems, in order to facilitate the development and integration of SUTER as a mission application on Open Architecture (OA) DCGS.

In FY 2019, PE 0305208F, Distributed Common Ground/Surface Systems, Project 674826, Automated Target Recognition (ATR) effort was transferred to PE 0305206F, Airborne Reconnaissance Systems, Project 674818, Imaging and Targeting Support, in order to align funding with like ATR development efforts.

A. Mission Description and Budget Item Justification

Air Force Distributed Common Ground System (AF DCGS) is the Combat Air Force (CAF) weapon system architecture for planning and direction, collection, processing and exploitation, analysis and production, and dissemination (PCPAD) of data from Intelligence, Surveillance, and Reconnaissance (ISR) missions. Since AF DCGS is also a major component of the DoD DCGS, the system is designed to complement and interoperate with the DoD, Army, Navy and Marine Corps DCGS. The AF DCGS mission is to provide Joint Task Force (JTF) Commanders, Air Component Commanders, Unified Commands, and other directed organizations with global, time-sensitive ISR PCPAD across the spectrum of military operations. AF DCGS is a multi-INT network linked weapon system (AN/GSQ-272) capable of exploiting intelligence data from manned platforms, remotely piloted aircraft (RPA), non-traditional ISR platforms, national and commercial satellites, and other collection systems. AF DCGS is designed to support joint operational requirements by providing a common PCPAD means to provide time-sensitive intelligence to field commanders and in support of the Air Operations Center (AOC) mission requirements. Currently, the AF DCGS worldwide architecture is composed of two worldwide core sites, three regional core sites, two remote Air Force Forces (AF FOR) sites, four National Mission Partner (NMP) sites, three support sites, and multiple National Guard Bureau (NGB) sites. Currently, AF DCGS is supporting ongoing operations from forward deployed and in-garrison CONUS and OCONUS based locations. The system employs a concept of data distribution, information sharing and collaborative work centers. AF DCGS provides the national leadership and the warfighter with integrated and interoperable national and airborne reconnaissance by providing quality and fused Signals Intelligence (SIGINT), Measurement and Signature Intelligence (MASINT), and Geospatial Intelligence (GEOINT) tailored to the warfighter for all levels of conflict.

AF DCGS is transforming by integrating the necessary technologies and tools to provide increased capabilities, meet emerging/urgent operational needs, and enable Multi-Domain Awareness. This transformation maximizes the use of commercial-off-the-shelf and government-off-the-shelf upgrades. The next series of upgrades is migrating the Weapon System to an Open Architecture (OA) environment to meet the operational need to rapidly integrate new/improved sensor capabilities, integrate big data and machine learning, as well as enhance interoperability and improve data sharing per DoD direction.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>
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Project SUTER effort being moved from PE 0305221F to PE 0305208F in FY19. SUTER develops concepts, Tactics/Techniques/Procedures (TTPs) and technologies for synchronizing the capabilities of ISR and non-kinetic capabilities in a coordinated fashion with traditional kinetic weapons to prosecute targets connected together or dependent upon some form of communications network.

Program management consists of eight ACAT III efforts: GEOINT (GB 4.1), GEOINT Transformation, Systems Release (SR 3.0), SIGINT Transformation, Sensor Integration, Multi-INT, Network Infrastructure Transformation, and DCGS Reference Imagery Transition (DRT):

1. *GB 4.1: The GEOINT Baseline 4.1 (GB4.1) effort completes the Bulk Release process and provides a common baseline across the weapon system. It also integrates Airborne Cuing and Exploitation System, Hyper Spectral ACES-HY (MQ-1) and Global Hawk (GH) Block 40 capability into AF DCGS.
2. GEOINT Transformation: The GEOINT Transformation effort rapidly integrates new capabilities and migrates GEOINT-specific applications & capabilities into the open architecture framework.
3. *SR 3.0: The Systems Release (3.0) effort completes SIGINT Bulk Release process and provides a common baseline across the weapon system. Provides the ability to PCPAD the Airborne Signals Intelligence Payload (ASIP) family of systems and integrates the Common Intelligence Collections System (CICS) capability.
4. SIGINT Transformation: Rapidly integrates new capabilities, leverages mission partner methods and tools, improves data exchange, and migrates the SIGINT-specific applications/capabilities into the open architecture framework.
5. Sensor Integration: The Sensor Integration effort rapidly integrates AF, Joint, & Coalition Sensor data into DCGS Enterprise to ingest data, perform sensor planning, and Command & Control.
6. Multi-INT: Provides and supports Open Architecture (OA)-based Enterprise Services, moves to commodity hardware and a virtual desktop environment, facilitates enterprise-wide collaborative tools, and integrates SUTER efforts into OA DCGS.
7. Network Infrastructure Transformation: The Infrastructure Transformation effort modernizes the AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward a cloud architecture.
- 8.*DRT: The Air Force DCGS Reference Imagery Transition (DRT) effort provides data ingest, transfer, and storage capabilities for NGA reference imagery data.

NOTES:

*For FY19, this effort does not have any associated RDT&E funding. The Other Procurement Air Force (OPAF) funding is exhibited in the Procurement Documentation (WSC846080, DCGS-AF).

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: GEOINT Transformation	0.000	0.000	0.000	3.500	3.500

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: The GEOINT Transformation effort rapidly integrates new capabilities and migrates GEOINT-specific applications and capabilities into the open architecture framework. Furthermore, GEOINT Transformation provides continuous and incremental improvement to the capability for planning and direction, collection, processing and exploitation, analysis and production, and dissemination (PCPAD) of advanced imagery intelligence. GEOINT Transformation builds upon GB4.1 to integrate new sensors, provide enhanced processing techniques, and provide imagery analysts the advanced capability to exploit, analyze, produce, and disseminate imagery.</p> <p>FY 2018 Plans: None.</p> <p>FY 2019 Base Plans: None.</p> <p>FY 2019 OCO Plans: Will fund the Full Motion Video Geo-Coordinate Accuracy effort.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to OCO request.</p>					
<p>Title: SIGINT Transformation</p> <p>Description: The Signal Intelligence (SIGINT) Transformation effort rapidly integrates new capabilities, leverages mission partner methods and tools, improves data exchange, and migrates the SIGINT-specific applications/capabilities into the open architecture framework. The SIGINT Segment provides command and control (C2) of ISR sensors, data processing, and data distribution to the customers in near real time from connected sensors at both core and remote sites.</p> <p>FY 2018 Plans: Continue to develop and integrate connectivity directly to NSANET, leveraging SIGINT and the SR 3.0 architecture to improve the tactical SIGINT available to the warfighter.</p> <p>FY 2019 Base Plans: Will continue to develop and integrate connectivity directly to NSANET, leveraging SIGINT and the SR 3.0 architecture to improve the tactical SIGINT available to the warfighter.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>	4.330	9.442	11.386	-	11.386

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force				Date: February 2018	
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funding increased due to requirement to accelerate integration with NSANET.					
Title: Sensor Integration Description: The Sensor Integration effort rapidly integrates AF, Joint, and Coalition Sensor data into the DCGS Enterprise to ingest data, and perform sensor planning and Command and Control. FY 2018 Plans: None. FY 2019 Base Plans: Begin integration of RQ-4 Global Hawk Block 40 sensor modification processing, exploitation, and dissemination capabilities into OA DCGS. FY 2019 OCO Plans: None. FY 2018 to FY 2019 Increase/Decrease Statement: New start.	0.000	0.000	6.580	0.000	6.580
Title: Multi-INT Transformation Description: Provides and supports Open Architecture-based Enterprise Services, moves to commodity hardware and a virtual desktop environment, facilitates enterprise-wide collaborative tools, and integrates SUTER capability into Open Architecture DCGS. FY 2018 Plans: Provide support for all project's test and evaluation activities for the Air Force DCGS weapons system. FY 2019 Base Plans: Will begin efforts to replace existing legacy communications within the weapon system with the Enterprise Communications Capability (ECC) project and to integrate Real-time analytics into the intel analysts' suite of exploitation tools. FY 2019 OCO Plans: None FY 2018 to FY 2019 Increase/Decrease Statement:	0.665	0.884	5.413	0.000	5.413

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funding increased due to work on ECC, Real-time analytics and SUTER capabilities.					
<p>Title: Network Infrastructure Transformation</p> <p>Description: The Network Infrastructure Transformation effort modernizes the AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward a cloud architecture. A primary task is to replace the Asynchronous Transfer Mode (ATM) capability with a non-ATM based Transport Architecture.</p> <p>FY 2018 Plans: -Continue modernizing the AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward an open architecture. - Continue integration and deployment activities for the AF DCGS Transport Architecture.</p> <p>FY 2019 Base Plans: -Will continue modernizing the AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward an open architecture. -Will continue integration and deployment activities for the AF DCGS Transport Architecture. -Weapon System Trainer effort will incrementally add to the DWST intelligence discipline enterprise level and world-wide positional and team/crew virtual training capabilities.</p> <p>FY 2019 OCO Plans: None</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to completion of the RDT&E phase of the Network Enterprise Transformation effort.</p>	13.903	17.175	1.175	0.000	1.175
Accomplishments/Planned Programs Subtotals	18.898	27.501	24.554	3.500	28.054

C. Other Program Funding Summary (\$ in Millions)										
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete Total Cost</u>
• OPAF 04 Line Item, 846080: DCGS-AF	174.688	157.130	426.770	-	426.770	128.537	130.886	133.207	135.577	Continuing Continuing
Remarks										

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>

D. Acquisition Strategy

The AF DCGS acquisition strategy is to transition the weapon system to an open hardware and software architecture. Also, the strategy leverages approved lean and agile industry practices to increase delivery cycles and incorporates remote installation capabilities to speed up the installation tempo.

Contracting strategy involves a combination of Basic Ordering Agreements (BOAs), Indefinite Delivery/Indefinite Quantity (IDIQ) contracts awarded to execute program funds and delivery/task orders are negotiated/awarded individually.

The program is managed as eight ACAT III efforts: GEOINT (GB 4.1), GEOINT Transformation, Systems Release (SR 3.0), SIGINT Transformation, Sensor Integration, Multi-INT-1, Network Infrastructure Transformation, and DCGS Reference Imagery Transition (DRT).

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GEOINT Transformation	Various	Various : Various	-	-		-		0.000		3.500	Dec 2018	3.500	Continuing	Continuing	-
SIGINT Transformation	Various	Various : Various	-	4.330	Nov 2016	8.322	Jun 2018	11.386	Jan 2019	-		11.386	Continuing	Continuing	-
Sensor Integration	Various	Various : Various	-	-		-		6.580	May 2019	-		6.580	Continuing	Continuing	-
Network Infrastructure Transformation	Various	Various : Various	-	11.903	Feb 2017	14.900	Jun 2018	1.175	Feb 2019	-		1.175	Continuing	Continuing	-
Subtotal			-	16.233		23.222		19.141		3.500		22.641	Continuing	Continuing	N/A

Remarks
 Note on "various" entries - Contract Method, Contract Type, Performing Activity, Target Value of Contract are entered as "various" because there are multiple projects within each upgrade and depending on the type of effort to be completed determines the contract vehicle to use. There is no way on this document to delineate the contracts that support each upgrade as they are numerous.

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Multi-Intelligence	Various	Various : Various	-	0.665	Jan 2017	0.779	Jan 2018	5.413	Jan 2019	-		5.413	Continuing	Continuing	-
Subtotal			-	0.665		0.779		5.413		-		5.413	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA	Various	Various : Various	-	2.000	Feb 2017	3.500	Nov 2017	-		-		-	Continuing	Continuing	-
Subtotal			-	2.000		3.500		-		-		-	Continuing	Continuing	N/A

Remarks
 Note on "various" entries - Contract Method, Contract Type, Performing Activity, Target Value of Contract are entered as "various" because there are multiple projects within in each upgrade and depending on the type of effort to be completed determines the contract vehicle to use. There is no way on this document to delineate the contracts that support each upgrade as they are numerous.

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>AF Distributed Common Ground System</i>				
GEOINT Transformation: FMV Geo-Accuracy effort	1	2019	2	2020
SIGINT Transformation: NSANET Integration	1	2017	3	2023
Sensor Integration: Global Hawk Block 40 Maritime Mode	3	2019	3	2020
Multi-INT Transformation: Test Support	1	2017	4	2018
Multi-INT Transformation: Real-time Analytics	1	2019	3	2020
Network Infrastructure Transformation: Network Enterprise Transition Modernization	2	2017	3	2021
Network Infrastructure Transformation: Weapon System Trainer	2	2017	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 675246 / <i>MQ-9 Development and Fielding</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675246: <i>MQ-9 Development and Fielding</i>	-	0.000	0.000	0.000	26.000	26.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0305208F, project 675246, Video Data Link, is a new start.

A. Mission Description and Budget Item Justification

Due to a Database Error, the additional \$26M in FY19 OCO for "MQ-9 Development and Fielding" (Project 675246) was erroneously added to PE 0305208. This funding belongs in Air Force PE 0305829F, "Video Data Link".

Video Data Link (VDL) Family of Systems (FoS) provides situational awareness (SA) to the operator on the ground using real time Full Motion Video (FMV) from secure line of sight links to airborne ISR, NTISR, PR and SF platforms.

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

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Video Data Link	-	-	0.000	26.000	26.000
Description: Video Data Link (VDL) Family of Systems (FoS) provides situational awareness (SA) to the operator on the ground using real time Full Motion Video (FMV) from secure line of sight links to airborne ISR, NTISR, PR and SF platforms.					
FY 2019 Base Plans: N/A					
FY 2019 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 675246 / <i>MQ-9 Development and Fielding</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>--VDL FoS consists of interoperable Mounted (Airborne/Ground) and Handheld terminal variants. Current variants are utilized with 20 different platforms.</p> <p>--Crypto Core Modernization (CCM) driven by NSA will create an imminent DMS issue by FY21; the current VDL equipment is incompatible with the enhanced Crypto Core.</p> <p>--FY19 OCO - MAVDL system development project will provide technology refresh for Mounted and Airborne Video Data Link. Focus areas will be Mobile Ad-Hoc Networking, updated cryptographic hardware, and improved waveforms for LPI/LPD (Low Probability of Intercept/Low Probability of Detection) operation.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: New Start</p>					
Accomplishments/Planned Programs Subtotals	-	-	0.000	26.000	26.000

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 07 846080: DCGS A-F: OPAF 04 Line Item	174.688	157.130	426.770	-	426.770	128.537	130.886	133.207	135.577	Continuing	Continuing

Remarks

D. Acquisition Strategy
The Video Data Link acquisition strategy will be to conduct a competitive acquisition that will involve a CPIF contract vehicle to encourage proposals to integrate the required capability rapidly and within the identified budget.

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 675246 / <i>MQ-9 Development and Fielding</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>Video Data Link Crypto Core Modernization</i>																												
Multi-Domain and Hand-held																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 675246 / <i>MQ-9 Development and Fielding</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Video Data Link Crypto Core Modernization</i>				
Multi-Domain and Hand-held	2	2019	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV
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COST (\$ in Millions)	Prior Years ⁽⁺⁾	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	866.534	244.807	214.849	221.690	0.000	221.690	214.272	168.472	154.523	157.748	Continuing	Continuing
675145: <i>RQ-4 Block 30</i>	364.419	123.237	35.030	25.950	0.000	25.950	30.761	27.490	25.913	26.384	0.000	659.184
675146: <i>RQ-4 Block 40</i>	174.036	0.089	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	174.264
675149: <i>RQ-4 Capability Enhancements</i>	0.000	114.013	167.745	195.739	0.000	195.739	178.390	140.982	128.610	131.364	Continuing	Continuing
67RTIP: <i>MP-RTIP</i>	242.704	7.468	11.935	0.001	0.000	0.001	5.121	0.000	0.000	0.000	0.000	267.229

Program MDAP/MAIS Code: 252
Project MDAP/MAIS Code(s): 293

⁽⁺⁾ The sum of all Prior Years is \$85.375 million less than the represented total due to several projects ending

Note

The sum of all Prior Years is actually \$2031.377 million more than the represented total due to several projects ending.

A. Mission Description and Budget Item Justification

This program element funds related Air Force projects sharing the RQ-4 platform in common: the RQ-4 Block 30, the RQ-4 Block 40, the RQ-4 Ground Segment/Communication System, RQ-4 Capability Enhancements, and Multi-Platform Radar Technology Insertion Program (MP-RTIP). The RQ-4 Block 30, Block 40, and Ground Segment/Communications Segment projects support the development and testing of the baseline ACAT 1C RQ-4 capability and the initiation of the major modernization ACAT programs. The majority of modernization funding was transferred to the Capability Enhancements project to support upgrades and modifications to the fielded RQ-4 weapon system to meet evolving threats and warfighter requirements. The MP-RTIP project completes development and testing of the baseline MDAP MP-RTIP sensor capability.

When judged feasible and affordable, this program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Studies and activities may be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial System (UAS) Command and Control Initiative (UCI) or the DoD's Unmanned Control Segment standards (UCS) and Open Mission Systems (OMS). Ground Segment Modernization Program (GSMP) and Communication System Modernization Program (CSMP) will incorporate UCI and UCS standards.

Per direction of USD(AT&L), the RQ-4 program was restructured from the original project 675144 (Baseline) into multiple projects: (1) Block 30, (2) Block 40, (3) GroundSegment/Communications System, and (4) Common-Airborne Sense and Avoid (C-ABSAA). In FY17 the Ground Segment/Communications System project (675147) ended. Prior year funds in the amount of \$2031.377M were accounted for in project 675144 and \$85.375M were accounted for in project 675147.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver RQ-4 UAV weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

The FY2017 funding was reduced by \$11.500 million to account for the availability of prior year execution balances.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	256.307	214.849	227.143	0.000	227.143
Current President's Budget	244.807	214.849	221.690	0.000	221.690
Total Adjustments	-11.500	0.000	-5.453	0.000	-5.453
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-11.500	0.000			
• Congressional Rescissions	0.000	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	-5.453	0.000	-5.453

Change Summary Explanation

-FY17 \$11.500M decrease: Reduction due to forward financing.

-FY19 \$5.453M decrease: Air Force directed changes for under execution and for realignment within RQ-4 program.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 675145 / RQ-4 Block 30			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675145: RQ-4 Block 30	364.419	123.237	35.030	25.950	0.000	25.950	30.761	27.490	25.913	26.384	0.000	659.184
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The RQ-4 Block 30 Project was directed by an Acquisition Decision Memorandum (ADM) signed 14 Jun 2011 by USD (AT&L). At the time of the ADM signature, and subsequent designation of projects, budgets had already been finalized. Prior budgets for all projects are captured under the RQ-4 Baseline project, as its related Project (675144) was the core project for the RQ-4 program prior to the directed restructure.

A. Mission Description and Budget Item Justification

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance Intelligence, Surveillance, and Reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios. RDT&E funding in this project supports design, development, integration, and testing of capabilities needed to meet validated requirements for Block 30 aircraft, including continuing aircraft system upgrade for Enhanced Integrated Sensor Suite (EISS) sensors, the Airborne Signals Intelligence Payload (ASIP), and alternate sensor payloads.

This funding also supports aircraft systems upgrades to include continuing airframe updates, aircraft operations surety, cybersecurity, airspace and interoperability enhancements, information assurance, and mission critical repair of Government Furnished Equipment (GFE).

Activities include mission planning interoperability enhancements, weather capability enhancements and testing, airspace and interoperability enhancements and updates, airframe and software upgrades and deficiency report resolution across RQ-4 fleet, periodic Operational Flight Program updates and releases, sensor interoperability and communication enhancements and alternate sensor upgrades, upgrades to ASIP Signals Intelligence (SIGINT) sensor, Identification Friend or Foe (IFF) Mode 5 Automatic Dependent Surveillance-Broadcast (ADS-B) development and testing, development and testing activities associated with enhancing sensor capability and sensor integration, integration of alternate sensors, development and testing of ice protection system, support of demonstration/development and technology insertion, and studies and analysis supporting future system enhancements.

This project supports system engineering/program management, test and evaluation, management services, and fielding support for all RQ-4 projects. This reflects contracting/acquisition strategy for these common elements within the Global Hawk program to provide efficiencies.

The RQ-4 program will maintain and upgrade interoperability for Blocks 20/30/40 with system of systems partners and continue to incorporate applicable synergies with other platforms such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploration & Dissemination (PED) elements. The networking capability for intelligence dissemination is required to provide the data transport interface between the Weapons System, Operations Centers, and external Intelligence Community customers.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675145 / RQ-4 Block 30
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver RQ-4 UAV weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

This program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Likewise, studies and activities will be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial System (UAS) Command and Control Initiative (UCI), the DoD's Unmanned Control Segment standards (UCS), or Open Mission Systems (OMS) as well as technology insertion activities in support of Better Buying Power (BBP).

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

	FY 2017	FY 2018	FY 2019
<p>Title: RQ-4 Block 30 Development and Demonstration</p> <p>Description: Global Hawk Unmanned Aerial Vehicle Development and Demonstration includes enterprise management, test and evaluation, software integration, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program updates and releases, studies and analysis supporting future system enhancements.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue upgrades to ASIP SIGINT and EISS sensors - Continue airspace integration activities including IFF Mode 5/ADS-B, comm interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing - Conduct Block 40 enhanced weather capability testing - Continue development of Operational Flight Program updates - Continue risk reduction and analysis of ice protection system <p>FY 2019 Plans:</p> <ul style="list-style-type: none"> - Will continue upgrades to ASIP SIGINT and EISS sensors - Will continue airspace integration activities including comm interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing - Will conduct Battlefield Airborne Communication Node enhanced weather capability testing <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding in this effort continues to decrease as the program transitions modernization into separate Accomplishments/Planned Programs in FY19.</p>	66.642	24.980	10.795
<p>Title: RQ-4 MS-177 Sensor Integration</p> <p>Description: Integration of MS-177 multispectral sensor into Block 30</p> <p>FY 2018 Plans:</p>	36.182	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675145 / RQ-4 Block 30		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>- Continue in project 675149</p> <p>FY 2019 Plans:</p> <p>- N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p> <p>N/A</p>				
<p>Title: RQ-4 Infrastructure</p> <p>Description: RQ-4 Infrastructure includes systems engineering, program management, test and evaluation, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program updates and releases, studies, development testing, and Other Government Costs (OGC). This funding was previously included in the RQ-4 Block 30 Development and Demonstration and Block 30 Government Test and Non-Prime Support Accomplishments/Planned Programs.</p> <p>FY 2018 Plans:</p> <p>-N/A</p> <p>FY 2019 Plans:</p> <p>- Will continue development of Operational Flight Program updates</p> <p>- Will continue program test activities</p> <p>- Will continue non-prime engineering and technical support and Other Government Costs</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p> <p>In FY19, as program transitions into modernization, Global Hawk flight test and system engineering/program management within infrastructure transitions into its own effort and will be contracted in conjunction with capability development.</p>		0.000	0.000	14.733
<p>Title: Block 30 Government Test and Non-Prime Support</p> <p>Description: Government test, non-prime technical support and Other Government Costs (OGC) -- Funding supports RQ-4 development testing at the 412 Test Wing at Edwards AFB, CA as well as for support from Air Force Operational Test and Evaluation Center (AFOTEC), Joint Interoperability Test Command (JITC), Distributed Common Ground System (DCGS), other interoperability partners and OGC.</p> <p>FY 2018 Plans:</p> <p>- Continue government test</p> <p>- Continue non-prime engineering and technical support and Other Government Costs</p> <p>FY 2019 Plans:</p>		20.413	10.050	0.422

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675145 / RQ-4 Block 30

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
- Will continue non-prime engineering and technical support and Other Government Costs			
FY 2018 to FY 2019 Increase/Decrease Statement: Funding in this effort continues to decrease as the program transitions modernization into separate Accomplishments/Planned Programs in FY19. This funding supports remaining OGCs asserted with core program.			
Accomplishments/Planned Programs Subtotals	123.237	35.030	25.950

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 04 Line Item HAEUAV: RQ-4	6.488	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.488
• APAF 05 Line Item HAWK00: RQ-4 Mods	32.045	43.968	23.715	-	23.715	4.851	126.340	117.382	106.166	89.085	543.552
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	0.099	86.695	40.641	-	40.641	130.625	17.428	15.419	15.699	8.364	314.970
• OPAF 03 Line Item 832070: Intelligence Comm Equipment	0.000	0.000	21.269	-	21.269	9.826	0.000	0.000	0.000	0.000	31.095

Remarks

D. Acquisition Strategy

The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: primarily, Indefinite Delivery, Indefinite Quantity (IDIQ) contracts cover development, system upgrade, production, retrofit, fielding, and sustainment efforts. MS-177 Sensor Enhancement RDT&E is being contracted directly with the Original Equipment Manufacturer (OEM), United Technology Corporation Aerospace Systems (UTAS).

The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category (ACAT) IC RQ-4 program will be completed as separate ACAT II and ACAT III modification programs.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675145 / RQ-4 Block 30
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Global Hawk Engineering Manufacturing and Development	SS/ Various	Northrop Grumman Integrated Systems : San Diego, CA	240.188	66.642	May 2017	24.980	Jul 2018	10.795	May 2019	-		10.795	29.750	372.355	372.355
RQ-4 MS-177 Sensor Integration	SS/ Various	Various : Various	86.086	36.182	Feb 2017	-		-		-		-	0.000	122.268	264.808
RQ-4 Infrastructure	Various	Various : Various	0.000	-		-		9.570	May 2019	-		9.570	77.768	87.338	238.615
Subtotal			326.274	102.824		24.980		20.365		-		20.365	107.518	581.961	N/A

Remarks
 Target Value of the Global Hawk EMD, IDIQ, and EPIC Contracts are not segregated by Budget Project Number.
 Target Value of MS-177 contract includes \$142.539M of funding in Budget Project Number 675149, RQ-4 Capability Enhancements.
 Target Value of RQ-4 Infrastructure includes \$151.278M of funding in Budget Project Number 675149, RQ-4 Capability Enhancements.

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Non Prime Technical Support	Various	Various : Dayton, OH	2.655	0.383	Jan 2017	0.396	Jan 2018	-		-		-	0.000	3.434	3.434
Subtotal			2.655	0.383		0.396		-		-		-	0.000	3.434	N/A

Remarks
 Target Value of the Global Hawk effort is not segregated by Budget Project Number.

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Flight Test & Evaluation	MIPR	412 TW : Edwards AFB, CA	21.606	19.020	Oct 2016	6.338	Oct 2017	5.163	Oct 2018	-		5.163	0.000	52.127	52.127
Subtotal			21.606	19.020		6.338		5.163		-		5.163	0.000	52.127	N/A

Remarks
 Target Value of the Global Hawk effort is not segregated by Budget Project Number.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675145 / RQ-4 Block 30
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA: A&AS	Various	Various : Dayton, OH	10.347	0.735	Nov 2016	2.315	Nov 2017	0.349	Nov 2018	-		0.349	2.803	16.549	16.549
PMA: Other Government Costs	Various	Various : Dayton, OH	3.537	0.275	Oct 2016	1.001	Oct 2017	0.073	Oct 2018	-		0.073	0.227	5.113	5.113
Subtotal			13.884	1.010		3.316		0.422		-		0.422	3.030	21.662	N/A

Remarks
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	364.419	123.237	35.030	25.950	-	25.950	110.548	659.184	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675145 / RQ-4 Block 30
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FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
RQ-4 Block 30																												
Enhanced Weather Capability Development																												
Mode 5/ADS-B Development																												
ASIP Inc 1 Development																												
Mission Planning Development																												
Sensor Enhancements & Upgrades (MS-177) Development																												
Operational Flight Program Updates & Releases																												
Test Support																												
RQ-4 Infrastructure & Test																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675145 / RQ-4 Block 30
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
RQ-4 Block 30				
Enhanced Weather Capability Development	1	2017	1	2019
Mode 5/ADS-B Development	1	2017	2	2019
ASIP Inc 1 Development	1	2017	1	2019
Mission Planning Development	1	2017	1	2018
Sensor Enhancements & Upgrades (MS-177) Development	1	2017	4	2017
Operational Flight Program Updates & Releases	3	2017	2	2019
Test Support	1	2017	4	2018
RQ-4 Infrastructure & Test	1	2019	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 675146 / RQ-4 Block 40			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675146: RQ-4 Block 40	174.036	0.089	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	174.264
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The RQ-4 Block 40 Project was directed by an Acquisition Decision Memorandum (ADM) signed 14 Jun 2011 by USD (AT&L). At the time of the ADM signature, and subsequent designation of projects, budgets had already been finalized. Prior budgets for all projects are captured under the RQ-4 Baseline project, as its related Project (675144) was the core project for the RQ-4 program prior to the directed restructure.

In FY 2019, PE 0305220F, RQ-4 UAV, Project 675146, RQ-4 Block 40, efforts were transferred to PE 0305220F, RQ-4 UAV, Project 675149, RQ-4 Capability Enhancements, in order to allow greater visibility into Global Hawk modernization efforts.

A. Mission Description and Budget Item Justification

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance Intelligence, Surveillance, and Reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios.

RDT&E funding in this project supports design, development, integration, and testing of items needed to meet validated requirements for Block 40 aircraft, including further development, creation of additional radar modes, integration and test of the Multi-Platform Radar Technology Insertion Program (MP-RTIP) sensor capabilities. The Block 40 program provides critical Synthetic Aperture Radar (SAR) and Ground Moving Target Indicator (GMTI) data to the warfighter. This funding also supports continued aircraft/communications systems upgrade to include Identification Friend or Foe (IFF) Mode 5/ADS-B, mission planning upgrade development and testing, airspace and interoperability and communication enhancements and updates, periodic Operational Flight Program updates and releases, enhanced weather capability, development and testing of ice protection system, additional radar modes, sensor enhancements, reliability and maintainability improvements, and support of demonstration and technology insertion. Funding continues RQ-4 unique development and integration of upgraded capabilities.

This program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Likewise, studies and activities will be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial System (UAS) Command and Control Initiative (UCI), the DoD's Unmanned Control Segment standards (UCS), or Open Mission Systems (OMS) as well as technology insertion activities in support of Better Buying Power (BBP).

The RQ-4 program will maintain capability and interoperability for Block 40 including efforts with system of systems partners and continue to incorporate applicable synergies with other platforms, such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation & Dissemination (PED) elements.

Activities also include studies and analysis, support to future system enhancements, communication and interoperability enhancements, current and future program planning, and project execution.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675146 / RQ-4 Block 40

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: RQ-4 Block 40 Development and Demonstration	0.089	0.139	0.000
Description: RQ-4 Block 40 Payload and Aircraft/Communications Development and Demonstration as well as periodic Operational Flight Program updates and releases			
FY 2018 Plans: - Complete funding of airspace integration of IFF Mode 5/ADS-B			
FY 2019 Plans: - N/A			
FY 2018 to FY 2019 Increase/Decrease Statement: Efforts have been transferred to Program 0305220F, RQ-4, Project 675149, Capability Enhancements			
Accomplishments/Planned Programs Subtotals	0.089	0.139	0.000

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 04 Line Item HAEUAV: RQ-4	6.488	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.488
• APAF 05 Line Item HAWK00: RQ-4 Mods	32.045	43.968	23.715	-	23.715	4.851	126.340	117.382	106.166	89.085	543.552
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	0.099	86.695	40.641	-	40.641	130.625	17.428	15.419	15.699	8.364	314.970
• OPAF 03 Line Item 832070: Intelligence Comm Equipment	0.000	0.000	21.269	-	21.269	9.826	0.000	0.000	0.000	0.000	31.095
• RDTE 07 PE 0305238F: NATO AGS	38.904	44.729	51.527	-	51.527	32.567	1.787	0.796	0.810	0.000	171.120

Remarks

D. Acquisition Strategy

The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: a legacy Engineering & Manufacturing Development (EMD) "C" contract is being phased out with the completion of current efforts; Indefinite Delivery, Indefinite Quantity (IDIQ) contracts cover development, upgrade, production, retrofit, fielding, and sustainment efforts.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
3600 / 7	PE 0305220F / RQ-4 UAV	675146 / RQ-4 Block 40

The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category (ACAT) IC RQ-4 program will be completed as separate ACAT II and ACAT III modification programs.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675146 / RQ-4 Block 40
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Global Hawk Engineering Manufacturing and Development	SS/ Various	Northrop Grumman Integrated Systems : San Diego, CA	138.984	0.089	Nov 2016	0.139	Jan 2018	-		-		-	0.000	139.212	139.212
Subtotal			138.984	0.089		0.139		-		-		-	0.000	139.212	N/A

Remarks
Target Value of the RQ-4 EMD, IDIQ, and EPIC contracts are not segregated by Budget Project Number.

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Non-Prime Technical Support	Various	Various : Dayton, OH	1.369	-		-		-		-		-	0.000	1.369	-
Subtotal			1.369	-		-		-		-		-	0.000	1.369	N/A

Remarks
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Flight Test & Evaluation	MIPR	412 TW : Edwards AFB, CA	23.231	-		-		-		-		-	0.000	23.231	-
Subtotal			23.231	-		-		-		-		-	0.000	23.231	N/A

Remarks
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675146 / RQ-4 Block 40
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA: A&AS	Various	Various : Dayton, OH	7.040	-		-		-		-		-	0.000	7.040	-
PMA: Other Gov't Cost	Various	Various : Dayton, OH	3.412	-		-		-		-		-	0.000	3.412	-
Subtotal			10.452	-		-		-		-		-	0.000	10.452	N/A

Remarks
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	174.036	0.089	0.139	-	-	-	0.000	174.264	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675146 / RQ-4 Block 40
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FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

RQ-4 Block 40	
Block 40 FOC June 2017	
Enhanced Weather Capability Development	
Mode 5/ADS-B Development	
Sensor Integration/Modes Development	
Operational Flight Program Updates and Releases	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675146 / RQ-4 Block 40
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
RQ-4 Block 40				
Block 40 FOC June 2017	1	2017	4	2017
Enhanced Weather Capability Development	1	2017	4	2017
Mode 5/ADS-B Development	1	2017	2	2019
Sensor Integration/Modes Development	1	2017	4	2017
Operational Flight Program Updates and Releases	1	2017	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 675149 / RQ-4 Capability Enhancements			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675149: RQ-4 Capability Enhancements	0.000	114.013	167.745	195.739	0.000	195.739	178.390	140.982	128.610	131.364	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance Intelligence, Surveillance, and Reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios. RDT&E funding in this project supports design, development, integration, and testing of capabilities needed to meet validated requirements for RQ-4 aircraft, including continuing aircraft system upgrade for current and alternate sensor payloads.

This funding supports aircraft systems upgrade to include continuing aircraft operations surety, cybersecurity, information assurance, and mission critical repair of Government Furnished Equipment (GFE). This will include systems engineering/program management, configuration and data management, test and evaluation, management services, DR/MIP Investigations, studies and analysis and fielding support for Block 30, Block 40, and Ground Segment/Comm System.

Activities include airspace and interoperability and communication enhancements and updates, periodic Operational Flight Program updates and releases, airframe and software upgrades, deficiency report resolution across RQ-4 fleet, sensor enhancements and alternate sensor upgrades including the MS-177 and the Optical Bar Camera (OBC), enhanced comms capabilities, support for demonstration and technology insertion, development and testing of ice protection system, enhanced mission flexibility to accommodate changes to mission objectives inflight, enhancements to support multi-domain contested environment operations, and studies and analysis supporting future system enhancements. Additionally, this project supports design, development, integration, and testing of items needed to meet validated requirements for Block 20/30/40 aircraft, including further development, mode creation, integration and test of the Multi-Platform Radar Technology Insertion Program (MP-RTIP) sensor capabilities, continued aircraft/communications systems upgrade, additional radar modes, reliability and maintainability improvements, Ground Segment Modernization Program (GSMP) and Communication System Modernization Program (CSMP) efforts, as well as next generation communications capabilities. GSMP resolves fleet grounding Diminishing Manufacturing Sources (DMS) and obsolescence issues associated with ground segment equipment and provides critical warfighter capabilities such as building-based multi-aircraft control. It will also enhance interoperability data dissemination as well as provide training capability. CSMP resolves critical DMS and obsolescence issues in the RQ-4 communication infrastructure and provides enhancements across the RQ-4 communication network.

RDT&E funding in this project also supports design, development, integration and testing of the weapon system's legacy ground elements and communications capabilities to enhance functionality and maintain interoperability prior to GSMP/CSMP fielding. The ground segment currently includes the Mission Control Elements (MCE), the Launch and Recovery Elements (LRE), and the networking resources required to simultaneously disseminate intelligence information while remaining compliant with DoD cybersecurity network requirements to operate on the Global Information Grid.

This project supports system engineering/program management, test and evaluation, management services and fielding support for all RQ-4 projects. This reflects contracting/acquisition strategy for these common elements within the Global Hawk program to provide efficiencies.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements
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The RQ-4 program will maintain and upgrade interoperability for Blocks 20/30/40 with system of systems partners and continue to incorporate applicable synergies with other platforms such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation & Dissemination (PED) elements. The networking capability for intelligence dissemination is required to provide the data transport interface between the Weapons System, Operations Centers, and external Intelligence Community customers.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver RQ-4 UAV weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

This program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Likewise, studies and activities will be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial System (UAS) Command and Control Initiative (UCI), the DoD's Unmanned Control Segment standards (UCS), or Open Mission Systems (OMS) as well as technology insertion activities in support of Better Buying Power (BBP).

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

	FY 2017	FY 2018	FY 2019
<p>Title: RQ-4 Capability Enhancements</p> <p>Description: RQ-4 Development and Demonstration (includes development, system integration, software integration, development test, and fielding support for RQ-4 projects as well as studies and analysis supporting future system enhancements). Also supports RQ-4 development testing at the 412 Test Wing at Edwards AFB, CA and also includes funding for support from Air Force Operational Test and Evaluation Center (AFOTEC), Joint Interoperability Test Command (JITC), Distributed Common Ground System (DCGS), other interoperability partners and Other Government Costs (OGC).</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Conduct airspace integration activities, integration of advanced sensors, utilization of additional radar modes, and comms system enhancements - Conduct risk reduction and analysis of ice protection solutions, continued system interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing - Continue development and testing of alternate sensors and upgrades - Continue development to integrate Radar Software Development (RSD) 1.5 software build into Block 40 Program - Continue development of radar capabilities to include Maritime Modes Integration - Continue government test and non-prime engineering and technical support and OGC <p>FY 2019 Plans:</p> <ul style="list-style-type: none"> - Will conduct risk reduction and analysis of ice protection solutions, continued system interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing - Will conduct Communication System Modernization Program (CSMP) pre-contract activities and establish as a formal program 	13.622	90.135	13.546

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
- Will Continue government test and non-prime engineering and technical support and OGC				
FY 2018 to FY 2019 Increase/Decrease Statement: Funding in FY19 decreased in accordance with program office estimate for future capability development.				
Title: Integrated Functional Capability 9 (IFC 9)		0.000	0.000	55.345
Description: IFCs are periodic hardware and software capability, releases similar to an Operational Flight Program (OFP). IFC 9 provides (Optical Bar Camera (OBC), Nose Wheel Steering enhancement, in flight Waypoint Modification as well as numerous software enhancement and deficiency resolutions, and Other Government Costs (OGC).				
FY 2018 Plans: - N/A				
FY 2019 Plans: - Will award contract and begin system design/development - Will Continue government test and non-prime engineering and technical support and OGC				
FY 2018 to FY 2019 Increase/Decrease Statement: Funding in FY19 increased because it was previously included in the RQ-4 Capability Enhancements Accomplishment/Planned Program.				
Title: RQ-4 Ground Segment Modernization Program (GSMP)		55.567	66.610	37.550
Description: GSMP resolves fleet grounding DMS and obsolescence issues associated with ground segment equipment and provides critical warfighter capabilities such as building-based multi-aircraft control. It will also enhance interoperability data dissemination as well as provide training capability.				
FY 2018 Plans: - Continue software development and system level testing of the GSMP - Continue development and hardware purchases for vendor SILs, DT and OT locations for the GSMP - Continue development technical publications, courseware and a trainer for the GSMP - Conduct installation of the GSMP cockpits at SILs, DT and OT locations				
FY 2019 Plans: - Will continue software development and system level testing of the GSMP - Will continue development and hardware purchases for vendor SILs, DT and OT locations for the GSMP - Will continue development technical publications, courseware and a trainer for the GSMP				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
- Will begin developmental test of GSMP				
FY 2018 to FY 2019 Increase/Decrease Statement: Funding in FY19 decreased in accordance with program office estimate and prime contract costs.				
Title: RQ-4 MS-177 Sensor Integration		44.824	11.000	39.732
Description: Integration of MS-177 multispectral sensor into Block 30				
FY 2018 Plans: - Continue the integration, and testing of MS-177 on Block 30, including additional spectral bands - Conduct MS-177 OT and Initial Operational Capability (IOC) - Continue development of MS-177A (10-Band)				
FY 2019 Plans: - Will continue the integration, and testing of MS-177 on Block 30, including additional spectral bands - Will conduct MS-177 OT and attain Initial Operational Capability (IOC) - Will continue development of MS-177A (10-Band) and integration - Will begin DT of MS-177A				
FY 2018 to FY 2019 Increase/Decrease Statement: Funding in FY19 increased in accordance with program office estimate and prime contract costs.				
Title: RQ-4 Infrastructure		0.000	0.000	49.566
Description: RQ-4 Infrastructure includes system engineering, program management, test and evaluation, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program (OFP) updates and releases, development testing, and Other Government Costs (OGC). This funding was previously included in the RQ-4 Capability Enhancements Accomplishment/Planned Program.				
FY 2018 Plans: -N/A				
FY 2019 Plans: - Will develop OFP releases - Will perform government test and non-prime engineering and technical support and OGC				
FY 2018 to FY 2019 Increase/Decrease Statement:				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
In FY19, as program transitions into modernization, Global Hawk flight test and system engineering/program management within infrastructure transitions into its own effort and will be contracted in conjunction with capability development.			
Accomplishments/Planned Programs Subtotals	114.013	167.745	195.739

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

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 04 Line Item HAEUAV: RQ-4	6.488	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.488
• APAF 05 Line Item HAWK00: RQ-4 Mods	32.045	43.968	23.715	-	23.715	4.851	126.340	117.382	106.166	89.085	543.552
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	0.099	86.695	40.641	-	40.641	130.625	17.428	15.419	15.699	8.364	314.970
• OPAF 03 Line Item 832070: Intelligence Comm Equipment	0.000	0.000	21.269	-	21.269	9.826	0.000	0.000	0.000	0.000	31.095

Remarks

D. Acquisition Strategy

The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: primarily, IDIQ contracts cover development, upgrade, production, retrofit, fielding, and sustainment efforts.

The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category (ACAT) IC RQ-4 program will be completed as separate ACAT II and ACAT III modification programs.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RQ-4 Capability Enhancements	SS/ Various	Northrop Grumman Integrated Systems : San Diego, CA	0.000	11.144	Mar 2017	78.708	Mar 2018	9.573	Mar 2019	-		9.573	Continuing	Continuing	464.274
Integrated Functional Capability 9	SS/CPIF	Northrop Grumman Integrated Systems : San Diego, CA	0.000	0.000		0.000		51.345	Feb 2019	-		51.345	Continuing	Continuing	119.709
RQ-4 Ground Segment Modernization Program (GSMP)	SS/CPIF	Northrop Grumman Integrated Systems : San Diego, CA	0.000	55.567	Apr 2017	66.610	Apr 2018	37.550	Apr 2019	-		37.550	Continuing	Continuing	216.468
RQ-4 MS-177 Sensor Integration	SS/ Various	Various : San Diego, CA	0.000	44.824	Nov 2017	11.000	Apr 2018	39.732	Apr 2019	-		39.732	Continuing	Continuing	264.808
RQ-4 Infrastructure	Various	Various : Various	-	0.000		0.000		39.286	May 2019	-		39.286	Continuing	Continuing	238.615
Subtotal			0.000	111.535		156.318		177.486		-		177.486	Continuing	Continuing	N/A

Remarks
 Target Value of the RQ-4 EMD, IDIQ, and EPIC Contracts is not segregated by Budget Project Number.
 Target Value of GSMP contract includes \$28.414M of funding in Budget Project Number 675147, RQ-4 Grnd Segment/Comm System
 Target Value of MS-177 contract includes \$122.268M of funding in Budget Project Number 675145, RQ-4 Block 30
 Target Value of RQ-4 Infrastructure includes \$87.338M of funding in Budget Project Number 675145, RQ-4 Block 30

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Non Prime Technical Support	Various	Various : Dayton, OH	-	0.267	Feb 2017	1.137	Feb 2018	1.421	Feb 2019	-		1.421	Continuing	Continuing	-
Subtotal			-	0.267		1.137		1.421		-		1.421	Continuing	Continuing	N/A

Remarks
 Target Value of the RQ-4 effort is not segregated by Budget Project Number.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements
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Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Flight Test & Evaluation	MIPR	412 TW : Edwards AFB, CA	-	-		4.717	Oct 2017	10.280	Oct 2018	-		10.280	Continuing	Continuing	-
Subtotal			-	-		4.717		10.280		-		10.280	Continuing	Continuing	N/A

Remarks
Target Value of the RQ-4 effort is not segregated by Budget Project Number.

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA: A&AS	Various	Various : Dayton, OH	-	1.893	Nov 2016	3.985	Nov 2017	4.653	Nov 2018	-		4.653	Continuing	Continuing	-
PMA: Other Government Costs	Various	Varous : Dayton, OH	-	0.318	Oct 2016	1.588	Oct 2017	1.899	Oct 2018	-		1.899	Continuing	Continuing	-
Subtotal			-	2.211		5.573		6.552		-		6.552	Continuing	Continuing	N/A

Remarks
Target Value of the RQ-4 effort is not segregated by Budget Project Number.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	114.013	167.745	195.739	-	195.739	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

RQ-4 Capability Enhancements	
Sensor Enhancements & Upgrades (MS-177) Development	
Ice Protection System Risk Reduction & Analysis	
Ground Segment Maintenance/Upgrades Development	
Ground Segment Modernization Program Development	
Comms Systems Maintenance/Upgrades Development	
Communication System Modernization Program Development	
RQ-4 Infrastructure & Test	
Integrated Functional Capability 9	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
RQ-4 Capability Enhancements				
Sensor Enhancements & Upgrades (MS-177) Development	1	2017	3	2020
Ice Protection System Risk Reduction & Analysis	4	2017	3	2019
Ground Segment Maintenance/Upgrades Development	1	2017	4	2018
Ground Segment Modernization Program Development	1	2017	2	2020
Comms Systems Maintenance/Upgrades Development	1	2017	3	2019
Communication System Modernization Program Development	2	2020	4	2023
RQ-4 Infrastructure & Test	1	2019	4	2023
Integrated Functional Capability 9	2	2019	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 67RTIP / MP-RTIP			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67RTIP: MP-RTIP	242.704	7.468	11.935	0.001	0.000	0.001	5.121	0.000	0.000	0.000	0.000	267.229
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 293

Note

Beginning in FY09, the Multi-Platform Radar Technology Insertion Program (MP-RTIP) funding was transferred to program 0305220F (RQ-4) Global Hawk (GH). Therefore, the data in this package includes only FY09 and subsequent funding related to program 0305220F.

A. Mission Description and Budget Item Justification

The MP-RTIP sensor was designed as a family of modular, scalable sensors to provide next generation capabilities to support sustainable network centric operations with integrated Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR) capability. MP-RTIP provides the RQ-4 Block 40 aircraft with advanced Synthetic Aperture Radar (SAR) and Moving Target Indicator (MTI) sensor capabilities.

This project (67RTIP) includes MP-RTIP modernization and integration efforts for the RQ-4 Block 40 Platform. MP-RTIP modernization studies and development insertion include the implementation of Maritime Modes (MM), Maritime Inverse SAR(MISAR), product improvements and other advanced capabilities. GH Program Office will continue integration of radar capabilities to include Maritime Modes integration into RQ-4 aircraft and ground systems.

Activities also include studies and analysis supporting current and future program planning and future modes development based on user requirements. This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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

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

	FY 2017	FY 2018	FY 2019
Title: Multi-Platform Radar Tech Insertion Program (MP-RTIP)	7.468	11.935	0.001
Description: MP-RTIP development and integration			
FY 2018 Plans:			
- Will complete transition of core capability development.			
- Will begin development to integrate Radar Software Development (RSD) 1.5 software build into the RQ-4 Block 40 Program.			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 67RTIP / MP-RTIP

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
- Will complete transition to sustainment. GH Program Office will have responsibility for future radar development in the RQ-4 Capability Enhancements Program.			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Decrease due to transition to sustainment and realignment of funds from MPRTIP to GH Capability Enhancements for future radar development and integration.			
Accomplishments/Planned Programs Subtotals	7.468	11.935	0.001

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 04 Line Item HAEUAV: RQ-4	6.488	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.488
• APAF 05 Line Item HAWK00: RQ-4 Mods	32.045	43.968	23.715	-	23.715	4.851	126.340	117.382	106.166	89.085	543.552
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	0.099	86.695	40.641	-	40.641	130.625	17.428	15.419	15.699	8.364	314.970
• OPAF 03 Line Item 832070: Intelligence Comm Equipment	0.000	0.000	21.269	-	21.269	9.826	0.000	0.000	0.000	0.000	31.095
• RDTE 07 PE 0305238F: NATO AGS	38.904	44.729	51.527	-	51.527	32.567	1.787	0.796	0.810	0.000	171.120

Remarks

D. Acquisition Strategy

- Will complete transition to sustainment and GH Program Office will have responsibility for future radar development including integration of RSD 1.5 and Maritime Mode software in incorporate into Integrated Functional Capability (IFC) 9 plan.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 67RTIP / MP-RTIP
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MP-RTIP	SS/CPFF	Northrop Grumman Integrated Systems : El Segundo, CA	194.906	5.547	Feb 2017	11.935	Feb 2018	0.001	Feb 2019	-		0.001	35.492	247.881	-
Subtotal			194.906	5.547		11.935		0.001		-		0.001	35.492	247.881	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IRT Study	Various	Various : Various, NV	0.105	-		-		-		-		-	0.000	0.105	0.105
Logistics Planning	SS/CPFF	Northrop Grumman Integrated Systems : El Segundo, CA	3.667	-		-		-		-		-	0.000	3.667	3.667
Subtotal			3.772	-		-		-		-		-	0.000	3.772	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Flight Test & Evaluation	MIPR	Various : Various, NV	9.536	-		-		-		-		-	0.000	9.536	-
Subtotal			9.536	-		-		-		-		-	0.000	9.536	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA: A&AS	C/CPFF	Various : Various, NV	30.698	1.893	Nov 2016	-		-		-		-	0.000	32.591	-
PMA: Other Gov't Cost	Various	Various : Boston, MA	3.792	0.028	Nov 2016	-		-		-		-	0.000	3.820	-
Subtotal			34.490	1.921		-		-		-		-	0.000	36.411	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 67RTIP / MP-RTIP
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	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	242.704	7.468	11.935	0.001	-	0.001	35.492	297.600	N/A

Remarks
Funds are required in FY20 to close out the entire MP-RTIP SDD contract #F19628-00-C-0100.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 67RTIP / MP-RTIP
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
MP-RTIP																																
Radar Software Build Development																																
SDD MP-RTIP Radar Transition to RQ-4 Block 40 Program Office																																
Radar Mode Integration & Mode Development (IFC 9/10)																																
SDD Contract Close Out																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 67RTIP / MP-RTIP
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>MP-RTIP</i>				
Radar Software Build Development	1	2017	4	2017
SDD MP-RTIP Radar Transition to RQ-4 Block 40 Program Office	1	2018	4	2018
Radar Mode Integration & Mode Development (IFC 9/10)	1	2018	4	2018
SDD Contract Close Out	1	2020	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	18.088	18.842	14.288	0.000	14.288	14.752	15.077	15.391	15.671	Continuing	Continuing
675197: <i>NCCT Core Technology</i>	-	15.593	16.295	14.288	0.000	14.288	14.752	15.077	15.391	15.671	Continuing	Continuing
675275: <i>SUTER</i>	-	2.495	2.547	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note
 In FY 2019, PE 0305221F, Network-Centric Collaborative Targeting, Project 675275, SUTER efforts were transferred to PE 0305208F, Distributed Common Ground/Surface Systems, Project 674826, Common Imagery Ground/Surface Systems, in order to facilitate the development and integration of SUTER as a mission application on Open Architecture (OA) DCGS.

A. Mission Description and Budget Item Justification

Network Centric Collaborative Targeting (NCCT) is the Air Force program of record responsible for developing core technologies and sub-nodal analysis tools to horizontally and/or vertically integrate network collaborative Intelligence, Surveillance and Reconnaissance (ISR) sensor systems within and across intelligence disciplines. Operational uses of core technologies can include, but are not limited to, Signals Intelligence to Signals Intelligence (SIGINT-SIGINT) correlation and Ground Moving Target Indicator to Signals Intelligence (GMTI-SIGINT) correlation. Operational uses of sub-nodal analysis tools can include, but are not limited to, determining which nodes of the adversary's Command, Control, Communications, Computers, Intelligence (C4I) network to engage or protect to achieve desired effects, and modeling execution plans to determine the need to disrupt or monitor the required network aim-points in order to redirect activities based on changing battlefield conditions. NCCT software applications employ Machine-to-Machine (M2M) interfaces and Internet Protocol (IP) connectivity to coordinate sensor cross-cues and collection activities. NCCT correlation and fusion services ingest collection data to produce a single, composite track (geo-location and identification) for high-value targets. NCCT research and development funding supports evolutionary development of the NCCT message set and network management systems (for example Operations Interfaces, Network Controllers, Fusion Engines, Data Guards, Interface to Command & Control, and Interface to Overhead Intelligence Operations (OIO)), the migration of the NCCT technologies to emerging network centric technologies such as Service Oriented Architectures (SOA), global web-enabled services, and satisfying DoD standards and Information Assurance requirements.

NCCT Core Technology develops the hardware and software to horizontally integrate dissimilar Joint and Coalition Battle Management, Command & Control (BMC2), and ISR assets and systems into integrated target tracks shared across networked platforms. NCCT Core Technology includes, but is not limited to, network management software, operator interfaces, standard network messages and formats, correlation software and data rules of interaction, NCCT multi-level security hardware and software items, and platform specific Platform Interface Modules (PIMs). Prospective Coalition, Joint or Service systems are required to fund the integration of PIMs and associated improvements to core technology software for their respective platform. Development funds are required for software modifications and necessary for continuous modernization and software technologies associated with automation, data fusion, and information assurance/cyber security while keeping pace with evolving adversary tactics, techniques, and procedures (TTPs). FY 2018 RDT&E funding addresses Air Combat Command's validated requirement for the continuous operation of NCCT within the current tactical battlespace of today as well as development in the Core Technology to provide enhanced capabilities for the strategy of operating in highly contested and Anti-Access environments.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	
<p>SUTER develops concepts, Tactics/Techniques/Procedures (TTPs) and technologies for synchronizing the capabilities of ISR and non-kinetic capabilities in a coordinated fashion with traditional kinetic weapons to prosecute targets connected together or dependent upon some form of communications network. Suter's planning, execution and assessment capability is implemented in a virtual architecture available to all Air Operations Centers (AOCs), taking advantage of the military value added from the synergies of Joint composite ISR, non-kinetic, and/or kinetic strike packages operating against networked target sets. This virtualized Service Oriented Architecture (SOA) utilizes software applications which employ Machine-to-Machine (M2M) interfaces and IP communications to impact these target sets by "attacking" or influencing/shaping links, nodes or end points in the network to include: Radio Frequency (RF) and terrestrial links, switches, routers, hubs, servers, IP addresses, cell phones, antennas, radars, microwave relays, Satellite Communications (SATCOM) receivers, transceivers, etc. The three main pieces of the SUTER Concept of Operations (CONOPS) include: first, the use of SUTER's sub-nodal analysis software to determine which nodes of the adversary's C4I network to engage or protect to achieve desired effects; second, the SUTER's distributed operations architecture to tie together relevant planning cells (e.g. AOCs, Joint Information Operations Warfare Center (JIOWC), etc.) so they can collaborate in developing and modeling the execution plan(s) needed to disrupt or monitor the required network aim-points; and third, via SUTER's combined network Graphical User Interface (GUI), all involved "players" monitor the plan's execution, provide Near-Real Time (NRT) updates to the status of on-going activities, provide continuous assessment/updates of the execution of the plan, and, within authorities (Rules of Engagement/ ROEs), re-direct activities based on changing battlefield conditions. SUTER is the technology that assists Combatant Commanders and Components to exercise synchronized dynamic Command and Control (C2) of ISR, kinetic and non-kinetic Joint operations against conventional and terrorist threat networks. SUTER provides decision makers and operators supporting airborne, ship-borne, cyber and land-based C2ISR platforms and at supporting locations continuous Predictive Battlespace Awareness (PBA) of the information superiority fight. It also incorporates the Machine-to-Machine (M2M) capabilities that rapidly synchronize the employment of kinetic weapons, non-kinetic weapons and ISR assets to target challenging threat systems responsively. SUTER depicts a dynamic, multi-security-level picture of current and predicted threat network status, capitalizing on data inputs from sources such as Modernized Intelligence Database (MIDB), Net-Centric Collaborative Targeting (NCCT), Joint Targeting Database (JTDB), Computer Network Operations Database (CNODB), National Air and Space Intelligence Center (NASIC) Links and Nodes, and Integrated Broadcast Service (IBS). SUTER provides a GUI that can be tailored to support the integration of ISR, kinetic, and non-kinetic composite target packages supporting COCOM and Component specified information superiority effects and objectives. FY 2018 funding is dedicated to optimizing the SUTER architecture within a commercial cloud service (C2S) environment and improve machine-to-machine (M2M) data interfaces via several Intelligence Community data sources while updating data models to existing data sources.</p> <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver NCCT weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.</p> <p>This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	22.610	18.842	16.982	0.000	16.982
Current President's Budget	18.088	18.842	14.288	0.000	14.288
Total Adjustments	-4.522	0.000	-2.694	0.000	-2.694
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-4.522	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-2.694	0.000	-2.694

Change Summary Explanation

FY17: -4.522M BTR to ASIP Inc 1 and 2A

FY19: -2.587M transfer from PE 0305221F, Network-Centric Collaborative Targeting, Project 675275 to PE 0305208F, Distributed Common Ground/Surface Systems, Project 674826, Common Imagery Ground/Surface Systems.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675197 / <i>NCCT Core Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675197: <i>NCCT Core Technology</i>	-	15.593	16.295	14.288	0.000	14.288	14.752	15.077	15.391	15.671	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Network Centric Collaborative Targeting (NCCT) is the Air Force program of record responsible for developing core technologies to horizontally and/or vertically integrate network collaborative Intelligence, Surveillance and Reconnaissance (ISR) sensor systems within and across intelligence disciplines. Operational uses of core technologies can include, but are not limited to, Signals Intelligence to Signals Intelligence (SIGINT-SIGINT) correlation and Ground Moving Target Indicator to Signals Intelligence (GMTI-SIGINT) correlation.

NCCT software applications employ Machine-to-Machine (M2M) interfaces and Internet Protocol (IP) connectivity to coordinate sensor cross-cues and collection activities. NCCT correlation and fusion services ingest collection data to produce a single, composite track (geo-location and identification) for high-value targets. NCCT research and development funding supports evolutionary development of the NCCT message set and network management systems. Examples include upgrades to operations interfaces, network controllers, fusion engines, data guards, interface to command & control, interface to Overhead Intelligence Operations (OIO), the migration of NCCT to emerging network centric technologies such as Service Oriented Architectures (SOA), global web-enabled services, and satisfying DoD standards and Information Assurance requirements.

NCCT Core Technology develops the hardware and software to horizontally integrate dissimilar Joint and Coalition Battle Management, Command & Control (BMC2), and ISR assets and systems into integrated target tracks shared across networked platforms. NCCT Core Technology includes, but is not limited to, network management software, operator interfaces, standard network messages and formats, correlation software and data rules of interaction, NCCT multi-level security hardware and software items, and platform specific Platform Interface Modules (PIMs). Prospective Coalition, Joint or Service systems are required to fund the integration of PIMs and associated improvements to core technology software for their respective platform. Development funds are required for software modifications and necessary for continuous modernization and software technologies associated with automation, data fusion, and information assurance/cyber security while keeping pace with evolving adversary tactics, techniques, and procedures (TTPs). FY 2019 RDT&E funding addresses Air Combat Command's validated requirement for the continuous operation of NCCT within the tactical battlespace of today as well as development in the Core Technology to provide enhanced capabilities for the strategy of operating in highly contested and Anti-Access environments.

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Core Technology	15.593	16.295	14.288	0.000	14.288

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675197 / <i>NCCT Core Technology</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: Accomplishments and planned efforts include development and update of Network-Centric Collaborative Targeting (NCCT) Core Technology; technical support to users, and management activities</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> • Completing installation and delivery of NCCT software version 5.1 for track amplification and enhanced track identification and awareness via Link 16 ingest capability • Continuing development efforts for Core Tech Software version 5.2. These efforts include evaluation of additional systems and data types such as OPIR fusion and national data feeds; fusion for the technology enhancements required for NCCT to operate in highly contested and Anti-Access/Area-Denied environments; developing Air track sources for Air Track to SIGINT correlation capability; and interface with DMO/DMT • Began development efforts for Core Tech Software version 5.3 which supports evaluation of commercial cloud services for eventual transition into the cloud environment <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> • Will complete development efforts for Core Tech Software version 5.2; take first article delivery and begin fielding effort • Will continue development efforts for Core Tech Software version 5.3; moving NCCT into a cloud architecture <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased because major development efforts on NCCT software version 5.1 will be completed in FY 2018.</p>					
Accomplishments/Planned Programs Subtotals	15.593	16.295	14.288	0.000	14.288

C. Other Program Funding Summary (\$ in Millions)										
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete Total Cost
• OPAF 03 Line Item 832070: <i>Intelligence Comm Equipment</i>	2.583	3.312	3.095	-	3.095	3.148	3.207	3.264	3.322	Continuing Continuing
Remarks										

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675197 / <i>NCCT Core Technology</i>

D. Acquisition Strategy

The Network-Centric Collaborative Targeting (NCCT) Core Technology capabilities are developed, maintained and sustained with baseline/incremental upgrades plus any Quick Reaction Capability (QRC) developments acquired through the 645th Aeronautical System Group (645 AESG) in accordance with their Program Management Directive (PMD), Class Justification and Approval (J&A), and Life Cycle Management Plan (LCMP) across the full spectrum of system life cycle management ("cradle to grave" support concept). Due to the rapidly changing threat environment encountered during our prolonged commitment to Overseas Contingency Operations (OCO), the acquisition program manager has the authority to redirect funding as necessary to meet current stated and emerging/evolving Combatant Commander requirements.

645 AESG, Wright Patterson AFB OH, manages the Cost Plus Fixed Fee (CPFF) contracts used to develop NCCT Core Technology. 645 AESG will develop NCCT Core Technology software on common hardware for systems and platforms designated to field this ISR capability. Individual platform program management offices may contract directly with their prime contractors or through the 645 AESG for integration of NCCT capabilities on their respective systems and platforms.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675197 / <i>NCCT Core Technology</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Core Technology Development A	SS/CPFF	L-3 ComCept : Rockwall, TX	-	5.500	May 2017	7.000	Nov 2017	5.000	Nov 2018	-		5.000	Continuing	Continuing	-
Core Technology Development B	SS/CPFF	L-3 ComCept : Rockwall, TX	-	9.093	Jul 2017	8.248	Jul 2018	8.228	Jul 2019	-		8.228	Continuing	Continuing	-
Subtotal			-	14.593		15.248		13.228		-		13.228	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Security Certification/ Technical Engineering	SS/CPFF	L-3 ComCept : Rockwall, TX	-	0.500	Mar 2017	0.500	Mar 2018	0.500	Mar 2019	-		0.500	Continuing	Continuing	-
Subtotal			-	0.500		0.500		0.500		-		0.500	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA	Allot	645 AESG : Dayton, OH	-	0.500	Mar 2017	0.547	Mar 2018	0.560	Mar 2019	-		0.560	Continuing	Continuing	-
Subtotal			-	0.500		0.547		0.560		-		0.560	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		-	15.593	16.295	14.288	-	14.288	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675197 / <i>NCCT Core Technology</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Core Technology	
Version 5.1 Development, Integration, and Test	
Version 5.2 Development, Integration, and Test	
Version 5.3 Development, Integration, and Test	
Version 5.4 Development, Integration, and Test	
Version 5.5 Development, Integration, and Test	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675197 / <i>NCCT Core Technology</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Core Technology				
Version 5.1 Development, Integration, and Test	1	2017	2	2018
Version 5.2 Development, Integration, and Test	1	2017	2	2019
Version 5.3 Development, Integration, and Test	3	2018	1	2021
Version 5.4 Development, Integration, and Test	3	2020	1	2023
Version 5.5 Development, Integration, and Test	3	2022	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675275 / SUTER
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675275: SUTER	-	2.495	2.547	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2019, PE 0305221F, Network-Centric Collaborative Targeting, Project 675275, SUTER efforts were transferred to PE 0305208F, Distributed Common Ground/Surface Systems, Project 674826, Common Imagery Ground/Surface Systems, in order to facilitate the development and integration of SUTER as a mission application on Open Architecture (OA) DCGS.

A. Mission Description and Budget Item Justification

SUTER is a project responsible for developing sub-nodal analysis tools to horizontally and/or vertically integrate network collaborative Intelligence, Surveillance, and Reconnaissance (ISR) sensor systems within and across intelligence disciplines. Operational uses of sub-nodal analysis tools would include, but are not limited to, determining which nodes of the adversary's C4I network are engaged or protected to achieve desired effects, and modeling execution plans to determine the need to disrupt or monitor the required network aim-points in order to redirect activities based on changing battlefield conditions.

SUTER develops technologies for synchronizing the capabilities of ISR and non-kinetic capabilities in a coordinated fashion with traditional kinetic weapons to prosecute targets connected together or dependent upon some form of network. SUTER's planning, execution and assessment capability is implemented in a virtual architecture available to all Air Operations Centers (AOCs), taking advantage of the military value added from the synergies of Joint composite ISR, non-kinetic, and/or kinetic strike packages operating against networked target sets. This virtualized Service Oriented Architecture (SOA) utilizes software applications which employ machine-to-machine interfaces and Internet Protocol (IP) communications to impact these target sets by "attacking" or influencing/shaping links, nodes or end points in the network to include: Radio Frequency (RF) and terrestrial links, switches, routers, hubs, servers, IP addresses, cell phones, antennas, radars, microwave relays, Satellite Communications (SATCOM) receivers, transceivers, etc. The three main pieces of the SUTER Concept of Operations (CONOPS) include: first, the use of SUTER's sub-nodal analysis software to determine which nodes of the adversary's C4I network to engage or protect to achieve desired effects; second, the use of SUTER's distributed operations architecture to tie together relevant planning cells (e.g. AOCs, Joint Information Operations Warfare Command (JIOWC), etc.) so they can collaborate in developing and modeling the execution plan(s) needed to disrupt or monitor the required network aim-points; and third, via SUTER's combined network Graphical User Interface (GUI), all involved "players" monitor the plan's execution, provide Near-Real Time (NRT) updates to the status of on-going activities, provide continuous assessment/updates of the execution of the plan, and, within authorities (Rules of Engagement or ROEs), re-direct activities based on changing battlefield conditions.

SUTER is the technology that assists Combatant Commanders (COCOMs) and Components to exercise synchronized dynamic Command and Control (C2) of ISR, kinetic and non-kinetic Joint operations against conventional and terrorist threat networks. SUTER provides decision makers and operators supporting airborne, ship-borne, cyber and land-based Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR) platforms and at supporting locations continuous Predictive Battlespace Awareness (PBA) of the information superiority fight. It also incorporates the Machine-to-Machine (M2M) capabilities that rapidly synchronize the employment of kinetic weapons, non-kinetic weapons and ISR assets to target challenging threat systems responsively. SUTER depicts a dynamic, multi-security level picture of current and predicted threat network status, capitalizing on data inputs from sources such as Modernized Intelligence Database (MIDB), Net-Centric

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675275 / <i>SUTER</i>
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Collaborative Targeting (NCCT), Joint Targeting Database (JTDB), Computer Network Operations Database (CNODB), National Air and Space Intelligence Center (NASIC) Links and Nodes, and Integrated Broadcast Service (IBS). SUTER provides a GUI that can be tailored to support the integration of ISR, kinetic, and non-kinetic composite target packages supporting Combatant Commands and Component specified information superiority effects and objectives across the full spectrum of conflict from tactical operations to an Anti-Access Area Denial (A2AD) strategy. FY 2018 funding is dedicated to optimizing the SUTER mission application within an enterprise environment and develop machine-to-machine (M2M) data interfaces via several Department of Defense and Intelligence Community data sources while enhancing and updating data models to existing data sources.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: SUTER Software Development</p> <p>Description: Planned efforts include development and release of SUTER software upgrade.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> • Continuing development of manual analysis and manual course of action capability to support target identification and to predict effects of actions executed to achieve decision maker objectives • Beginning research and development of new machine-to-machine data interfaces for interfacing with several national and defense Intelligence Community data sources, while updating data models of existing interfaced data sources • Beginning research and development of interoperability with Air Operations Center and Air Force Distributed Common Ground System weapon systems • Evaluating the ability to leverage Pivotal Cloud Foundry for eventual development of commercial cloud services capability <p>FY 2019 Base Plans: N/A</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: In FY 2019 SUTER funding (\$2.587M) was transferred to PE 0305208F, Distributed Common Ground/Surface Systems, Project 674826, Common Imagery Ground/Surface Systems.</p>	2.495	2.547	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	2.495	2.547	0.000	0.000	0.000

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675275 / <i>SUTER</i>

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

Remarks

D. Acquisition Strategy

Prior to FY 2017, SUTER capabilities were developed, maintained and sustained with baseline/incremental upgrades plus any Quick Reaction Capability (QRC) developments acquired through the 645 AESG. In FY 2017, due to software limitations and a lack of technical maturity of SUTER's capabilities, the Air Force decided not to proceed with the 645 AESG technical plan on SUTER and transitioned SUTER program execution responsibilities to the Air Force Research Laboratory (AFRL). AFRL is increasing the technical maturity of the SUTER software and capabilities to a level suitable for operational capability and for transition to PE 0305208F, Distributed Common Ground/Surface Systems, Project 674826, Common Imagery Ground/Surface Systems. This transition will be made in order to facilitate the development and integration of SUTER as a mission application on Open Architecture (OA) DCGS.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675275 / <i>SUTER</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SUTER Technology Development and Maturation	SS/CPFF	Northrup Grumman : Bellevue, NY	-	1.855		1.882		-		-		-	Continuing	Continuing	-
Subtotal			-	1.855		1.882		-		-		-	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SUTER Technical Support	C/CPFF	BAE Systems : Rome, NY	-	0.600	Sep 2017	0.625	Sep 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	0.600		0.625		-		-		-	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Activity (PMA)	MIPR	AFRL : Rome, NY	-	0.040	Sep 2017	0.040	Sep 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	0.040		0.040		-		-		-	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	2.495	2.547	-	-	-	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675275 / <i>SUTER</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

SUTER	
SUTER 6.1.4 Development, Integration, and Test	██████████
SUTER Technology Development and Maturation	██

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	Project (Number/Name) 675275 / <i>SUTER</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SUTER				
SUTER 6.1.4 Development, Integration, and Test	1	2017	2	2017
SUTER Technology Development and Maturation	3	2017	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305238F / NATO AGS
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	38.904	44.729	51.527	0.000	51.527	32.567	1.787	0.796	0.810	Continuing	Continuing
676001: NATO AGS	-	38.904	44.729	51.527	0.000	51.527	32.567	1.787	0.796	0.810	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program funds the U.S. contribution to the Alliance Ground Surveillance (AGS) system, a North Atlantic Treaty Organization (NATO), Direct Commercial Sale acquisition. AGS is an airborne ground surveillance capability that provides continuous, wide area surveillance in all weather conditions. It will provide NATO decision makers with near real time information and situational awareness concerning friendly, neutral and opposing ground and maritime forces to support mission planning and execution, including force protection and targeting. All NATO nations will have access to AGS collection data, creating opportunities for burden sharing with similar U.S. assets.

The AGS program includes: air and ground segment acquisitions, operations of the NATO AGS Management Agency (NAGSMA), development of operations and support concepts and definition and establishment of an initial support capability. The air segment consists of five (5) air vehicles based on unique exportable configurations of the United States Air Force Global Hawk air frame, Navy Triton command and control architecture and the U.S. Multi-Platform Radar Technology Insertion Program (MP-RTIP) radar. The U.S. will also integrate new Maritime Moving Target and Inverse Synthetic Aperture Radar capability into the MP-RTIP radar for NATO AGS. The ground segment consists of fixed site and transportable/mobile ground stations for air vehicle Command and Control (C2), data exploitation and distribution. Operations and continuing In-Service Support will be funded through a future NATO Military Commanders' Capability Package funded within the NATO Security Investment Program (NSIP).

U.S. participation in NATO AGS was ratified by Secretary of Defense (SECDEF) signature/approval of the NATO AGS Program Memorandum of Understanding (PMOU) in June 2009 and includes 15 nations. In FY 2012, OSD transferred the NATO AGS program to the U.S. Air Force (USAF) for management and execution of the Research and Development effort.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305238F / NATO AGS
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	38.904	44.729	38.915	0.000	38.915
Current President's Budget	38.904	44.729	51.527	0.000	51.527
Total Adjustments	0.000	0.000	12.612	0.000	12.612
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	12.612	0.000	12.612

Change Summary Explanation

Funding increased due to MP-RTIP system development, integration, initial testing efforts and inflation.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>Title: Design / Development of NATO Alliance Ground Surveillance (AGS)</p> <p>Description: U.S. contribution to NATO for AGS development acquisition and initial fielding.</p> <p>Supports configuration changes at a system level and air vehicle exportability modifications.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue U.S. contribution to NATO for AGS development acquisition and initial fielding - Will continue configuration changes at a system level - Tactical Ground Stations will be delivered to NATO <p>FY 2019 Plans:</p> <ul style="list-style-type: none"> - Aircraft #1 & #2 will be delivered to NATO - Aircraft #3 & #4 will be delivered to NATO <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p> <p>Funding decreased because NATO AGS development is nearing completion: air vehicles 95% complete and ground elements 90% complete. Program will begin transition to Operations and Sustainment (O&S) in FY18, which is financed via NATO common funds.</p>	34.139	11.142	3.533
Title: Design/Development of Maritime Modes	3.889	33.487	47.894

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0305238F / NATO AGS		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Description: Supports development and flight testing of maritime modes capability for RTIP and additional configuration changes that cannot be performed under the direct commercial sale contract between Northrop Grumman and NAGSMA.</p> <p>FY 2018 Plans: - Will continue development of maritime modes capability and additional configuration changes that cannot be performed under the direct commercial sale contract between Northrop Grumman and NAGSMA</p> <p>FY 2019 Plans: - Will continue development of maritime modes capability and additional configuration changes that cannot be performed under the direct commercial sale contract between Northrop Grumman and NAGSMA</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to inflation and MP-RTIP system development, integration, and initial testing efforts.</p>				
<p>Title: Technical Support for NATO Alliance Ground Surveillance (AGS)</p> <p>Description: Provide engineering and logistics support for NATO AGS development and initial fielding.</p> <p>FY 2018 Plans: - Will continue engineering, logistics and program office support for NATO AGS development and initial fielding.</p> <p>FY 2019 Plans: - Will continue engineering, logistics and program office support for NATO AGS development and initial fielding.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>		0.570	0.100	0.100
<p>Title: Test and Evaluation Support for NATO Alliance Ground Surveillance (AGS)</p> <p>Description: Provide testing and evaluation via the Air Force Test Center.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>		0.306	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305238F / NATO AGS
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
N/A			
Accomplishments/Planned Programs Subtotals	38.904	44.729	51.527

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

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• RDTE 07 PE 0305220F: RQ-4 UAV	256.307	321.807	260.038	-	260.038	300.498	235.024	-	-	Continuing	Continuing

Remarks

E. Acquisition Strategy

Acquisition of the AGS system is being accomplished via a single delivery strategy. The system will be delivered via a fixed price direct commercial sale contract between Northrop Grumman Integrated System Sector International, Incorporated (NGISSII) & NATO, which was signed on 20 May 2012. The program is managed by the NATO AGS Management Agency (NAGSMA).

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305238F / NATO AGS	Project (Number/Name) 676001 / NATO AGS
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NATO AGS Design / Development	SS/FFP	NATO AGS Management Agency : Brussels, Belgium	-	34.139	Oct 2016	10.217	Oct 2017	2.604	Oct 2018	-		2.604	Continuing	Continuing	-
NATO AGS System Level Configuration Changes	SS/FFP	AFLCMC/WI : Wright Patterson, AFB, OH	-	-		-		-		-		-	Continuing	Continuing	-
MP-RTIP for NATO AGS Design / Development	SS/FFP	AFLCMC/HB : Hanscom AFB, MA	-	3.889	Oct 2016	33.487	Dec 2017	47.894	Dec 2018	-		47.894	Continuing	Continuing	-
Subtotal			-	38.028		43.704		50.498		-		50.498	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NATO AGS Technical Support	SS/FFP	Multiple : Hanscom, WPAFB, OH	-	0.295	Apr 2017	0.100	Dec 2017	0.100	Oct 2018	-		0.100	Continuing	Continuing	-
Subtotal			-	0.295		0.100		0.100		-		0.100	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NATO AGS Test and Evaluation Support	SS/FFP	Multiple: AFLCMC/WI, AFLCMC/HB, 412 TW, 88 CG : Hanscom, WPAFB, Edwards	-	0.306	Apr 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.306		-		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305238F / NATO AGS	Project (Number/Name) 676001 / NATO AGS
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NATO AGS Management Services	SS/FFP	Multiple : Hanscom, WPAFB, Pax River	-	0.275	Jul 2017	0.925	Jan 2018	0.929	Jan 2019	-		0.929	Continuing	Continuing	-
Subtotal			-	0.275		0.925		0.929		-		0.929	Continuing	Continuing	N/A
Project Cost Totals			-	38.904		44.729		51.527		-		51.527	Continuing	Continuing	N/A

Remarks
 The Industrial Structure consists of Northrop Grumman (Northrop Grumman Integrated Systems Sector International, Incorporated - NGISSII) prime contractor, three subcontractors, and 15 participating nation industries that will receive direct work. There are no indirect offsets. The technical support of the NATO AGS program includes MITRE Engineering, U.S. Navy's Triton program office support, U.S. government travel, and supplies. The test and evaluation support of the NATO AGS program includes the AFMC 412 Test Wing support of Flight Testing and Frequency Management by the AFMC 88 Communication Group. The management services support of the NATO AGS program includes Advisory & Assistance Services.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305238F / NATO AGS	Project (Number/Name) 676001 / NATO AGS
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FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

NATO AGS																												
Design and Development - NATO AGS																												
Aircraft #1 Ferry Flight to Main Ops Base (March 2019)																												
Aircraft #2 Delivery to NATO (April 2019)																												
Aircraft #3, #4 & #5 Delivery to NATO																												
System Level Performance Verification																												
IOC (September 2019)																												
FOC (September 2023)																												
Flight Test - NATO AGS																												
Design, Development, & Test - Maritime Mode																												
Ground Station Delivery																												
Tech Support - NATO AGS																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305238F / NATO AGS	Project (Number/Name) 676001 / NATO AGS
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
NATO AGS				
Design and Development - NATO AGS	1	2017	4	2019
Aircraft #1 Ferry Flight to Main Ops Base (March 2019)	2	2019	2	2019
Aircraft #2 Delivery to NATO (April 2019)	3	2019	3	2019
Aircraft #3, #4 & #5 Delivery to NATO	3	2019	1	2020
System Level Performance Verification	3	2019	2	2020
IOC (September 2019)	4	2019	4	2019
FOC (September 2023)	4	2023	4	2023
Flight Test - NATO AGS	1	2017	4	2018
Design, Development, & Test - Maritime Mode	1	2017	1	2022
Ground Station Delivery	1	2017	1	2018
Tech Support - NATO AGS	1	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305240F / <i>Support to DCGS Enterprise</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	23.084	26.349	26.579	0.000	26.579	27.074	27.544	28.117	28.630	Continuing	Continuing
674826: <i>Common Imagery Ground / Surface Systems</i>	-	13.431	14.969	15.100	0.000	15.100	15.382	15.649	15.974	16.266	Continuing	Continuing
675265: <i>Common Imagery Processor (CIP)</i>	-	9.653	11.380	11.479	0.000	11.479	11.692	11.895	12.143	12.364	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element funds 1) the Distributed Common Ground/Surface Multi-Service Execution Team (MET) Office (DMO) which oversees the DCGS Integration Backbone (DIB) Development and the DCGS Test and Community Support (D-TACS) Programs, 2) the Support to DCGS Enterprise Integrated Product Team (IPT) effort, and 3) the Imagery Processing effort which consists of the Virtual Imagery Processing Capability (VIP-C) program.

1) The DMO is the persistent, working level organization supporting the DCGS Family of Systems (FoS) interoperability efforts, for which the AF is lead service. The DCGS FoS, including AF DCGS, was directed to migrate to a net-centric DoD Intelligence, Surveillance and Reconnaissance (ISR) enterprise, enabling the Services to operate and share intelligence products more effectively in a joint environment. All Services must pursue a common path based on a set of common enterprise services consistent with the Department's net-centric vision while maintaining flexibility to support the full range of warfighter missions. Specifically, DoD charged the Air Force to lead the development, upgrade, integration, test, and maintenance of the common DCGS Integration Backbone (DIB) enterprise services. The DIB is a set of enterprise standards and services that enable interoperability and component reuse. All the military Services are mandated to incorporate DIB interoperability standards through the Service DCGS Programs of Record (PoR), and are committed to DIB architecture as the migration path to common DCGS enterprise services. The DCGS FoS is the core of the Defense Intelligence Information Enterprise (DI2E), and the DIB forms the core of current DI2E interoperability. Activities also include studies and analysis to support both current program planning and execution and future program planning.

To carry out its mission, the DMO manages multiple development and test programs. The DIB Development Program is responsible for DIB Development and the DCGS Test and Community Support (D-TACS) Program provides software test, Independent Verification and Validation (IV&V), and cybersecurity development for the products developed by the DIB Development Program. The D-TACS Program also provides a wide range of Community Support to the PoRs and the DCGS Enterprise, including Cybersecurity support. The Cybersecurity effort improves DCGS Enterprise Cybersecurity practices, including reciprocity. It also involves the development and review of new Cybersecurity practices within the US Government, including providing commentary to the Committee on National Security Systems (CNSS) and DoD Risk Management Framework Technical Advisory Group (RMF TAG) as directed by the DMO.

The D-TACS Program manages the DCGS Test Laboratory (DTL) at Hanscom AFB, MA and a mobile DCGS-Imagery (DCGS-I) Testbed currently located at Nellis AFB, NV. These facilities support software development and test and DI2E/DCGS Enterprise evaluation and test events and exercises.

The DCGS Test Laboratory (DTL) conducts software development, test and test development, acceptance testing, including functional verification and validation and performance testing on DIB and DIB related software.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305240F / <i>Support to DCGS Enterprise</i>
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DCGS-I Testbed is an integration and test environment, used by the Services and Agency DCGS Program Offices to conduct integration of DCGS components and test interoperability interfaces with new sensors, applications, and net-centric operations. This Testbed also supports the integration and testing of DoD DCGS components prior to introduction into the operational environment. Periodic upgrades ensure the Testbed stays current with DCGS standards and architecture. The Testbed supports the annual DCGS test event Enterprise Challenge, multiple USAF Weapons School Integration (WSINT) events, USAF Warfare Center Red Flag events and Global Hawk Interoperability Tests.

2) The Support to DCGS Enterprise IPT provides support to OUSD(I), AF DCGS and NATO interoperability efforts. This includes the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability.

3) The Imagery Processing effort develops the Virtual Imagery Processing Capability (VIP-C) within the DCGS architecture. The VIP-C provides end-to-end image processing to include raw data ingest, data format standardization to facilitate exploitation, secondary image processing, metadata conditioning, and image quality enhancements. Current efforts are focused on ensuring new sensors being fielded and associated data types can be processed.

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

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	23.084	26.349	26.779	0.000	26.779
Current President's Budget	23.084	26.349	26.579	0.000	26.579
Total Adjustments	0.000	0.000	-0.200	0.000	-0.200
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.200	0.000	-0.200

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise				Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
674826: <i>Common Imagery Ground / Surface Systems</i>	-	13.431	14.969	15.100	0.000	15.100	15.382	15.649	15.974	16.266	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element funds the Distributed Common Ground/Surface System (DCGS) Multi-Service Execution Team (MET) Office (DMO), which is the persistent, working level organization supporting the DCGS Family of Systems (FoS) interoperability efforts, for which the AF is lead service. The DCGS FoS, including AF DCGS, was directed to migrate to a net-centric DoD Intelligence, Surveillance and Reconnaissance (ISR) enterprise, enabling the Services to operate and share intelligence products more effectively in a joint environment. All Services must pursue a common path based on a set of common enterprise services consistent with the Department's net-centric vision while maintaining flexibility to support the full range of warfighter missions. Specifically, DoD charged the Air Force to lead the development, upgrade, integration, test, and maintenance of the common DCGS Integration Backbone (DIB) enterprise services. The DIB is a set of enterprise standards and services that enable interoperability and component reuse and provide an existing, flexible, and singularly sustainable path to information sharing across the global ISR enterprise. The deployment of the DIB into the Defense Intelligence Information Enterprise (DI2E) Reference Implementation will provide common applications and services and a managed service framework for the Command, Control, Communications, Computers, & Intelligence (C4I) Learning Environment (C4ILE) that supports the development, test and integration of machine-aided decision making capabilities.

All the military Services are mandated to incorporate DIB interoperability standards through the Service DCGS Programs of Record (PoR), and are committed to DIB architecture as the migration path to common DCGS enterprise services. The DCGS FoS is the core of the Defense Intelligence Information Enterprise (DI2E), and the DIB forms the core of current DI2E interoperability. Activities also include studies and analysis to support both current program planning and execution and future program planning.

To carry out its mission, the DMO manages multiple development and test programs. The DIB Development Program is responsible for DIB Development and the DCGS Test and Community Support (D-TACS) Program provides software test, Independent Verification and Validation (IV&V), and cybersecurity development for the products developed by the DIB Development Program. The D-TACS Program also provides a wide range of Community Support to the PoRs and the DCGS Enterprise, including Cybersecurity support. The Cybersecurity effort improves DCGS Enterprise Cybersecurity practices, including reciprocity. It also involves the development and review of new Cybersecurity practices within the US Government, including providing commentary to the Committee on National Security Systems (CNSS) and DoD Risk Management Framework Technical Advisory Group (RMF TAG) as directed by the DMO.

The D-TACS Program manages the DCGS Test Laboratory (DTL) at Hanscom AFB, MA and a mobile DCGS-Imagery (DCGS-I) Testbed, currently located at Nellis AFB, NV. These facilities support software development and test and Defense Intelligence Information Enterprise (DI2E)/DCGS Enterprise evaluation and test events and exercises.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise	Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems
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The DCGS Test Laboratory (DTL) conducts software development, test and test development, acceptance testing, including functional verification and validation and performance testing on DIB and DIB related software.

DCGS-I Testbed is an integration and test environment, used by the Services and Agency DCGS Program Offices to conduct integration of DCGS components and test interoperability interfaces with new sensors, applications, and net-centric operations. This Testbed also supports the integration and testing of DoD DCGS components prior to introduction into the operational environment. Periodic upgrades ensure the Testbed stays current with DCGS standards and architecture. The Testbed supports the annual DCGS test event Enterprise Challenge, multiple USAF Weapons School Integration (WSINT) events, USAF Warfare Center Red Flag events and Global Hawk Interoperability tests.

The funding also provides support to OUSD(I), AF DCGS and NATO interoperability efforts. This includes the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability.

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

	FY 2017	FY 2018	FY 2019
<p>Title: Distributed Common Ground / Surface System (DCGS) Integration Backbone</p> <p>Description: Upgrade, improve and manage the DCGS Integration Backbone (DIB).</p> <p>FY 2018 Plans: - Continue to upgrade, improve and manage the DIB with the next major/minor version release. Upgrade DCGS-A to the latest operationally fielded DIB version. Award new DIB Development contract.</p> <p>FY 2019 Plans: - Will continue to upgrade, improve and manage the DIB with the next/minor version release. Continue to work with DCGS Army to upgrade to the latest operationally fielded DIB version to support the global ISR enterprise.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to adjustment for inflation.</p>	4.055	6.173	6.273
<p>Title: DCGS Test and Community Support (D-TACS)</p> <p>Description: Provide test, independent verification and validation (IV&V) and Community Support to the DIB and the DoD DCGS Family of Systems.</p> <p>FY 2018 Plans: - Continue to enhance and improve the effectiveness and integration of the DTL and DCGS-I Test bed as a single integrated lab supporting DI2E test event Enterprise Challenge, multiple USAF Weapons School Integration (WSINT) events, USAF Warfare</p>	7.176	6.556	6.660

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise	Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Center Red Flag events and Global Hawk Interoperability Tests. Increase and improve overall support to the DCGS Enterprise. Continue DTL and Testbed technology refresh including upgrade to downlink antenna at the Nellis Testbed. FY 2019 Plans: - Will continue to enhance and improve the effectiveness and integration of the DTL and DCGS-I Test bed as a single integrated lab supporting DI2E test event Enterprise Challenge, multiple USAF Weapons School Integration (WSINT) events, USAF Warfare Center Red Flag events and Global Hawk Interoperability Tests. Will continue DTL and Testbed technology refresh including upgrade to downlink antenna at the Nellis Testbed. FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to adjustment for inflation.			
Title: Support to DCGS Enterprise Description: Provide support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts. FY 2018 Plans: - Continue to support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts FY 2019 Plans: - Will continue to support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to minor adjustment by the Air Force.	2.200	2.240	2.167
Accomplishments/Planned Programs Subtotals	13.431	14.969	15.100

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks
D. Acquisition Strategy The Air Force uses an evolutionary acquisition approach with version releases and periodic upgrades to develop, field, and upgrade the system. The Air Force structures contracts to provide the improved capabilities through full and open competition to the maximum extent possible. For management, the Air Force leads the Multi-Service Execution Team and the DCGS Multi-Service Execution Team (MET) Office (DMO) which coordinates the Joint Service requirements for the DIB in support of USD(I) direction.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / <i>Support to DCGS Enterprise</i>	Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0305240F / Support to DCGS Enterprise				674826 / Common Imagery Ground / Surface Systems							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DIB Modernization, Integration, DT and Interoperability	C/T&M	Various : Various	-	5.648	Jan 2017	8.008	Jan 2018	6.052	Jan 2019	-		6.052	Continuing	Continuing	-
DCGS Test and Community Support	C/CPFF	Various : Various	-	4.311	Jun 2017	2.433	Jun 2018	4.953	Jun 2019	-		4.953	Continuing	Continuing	-
Subtotal			-	9.959		10.441		11.005		-		11.005	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DCGS Team Support for DCGS Enterprise	C/Various	Various : Various	-	2.200	Jul 2017	2.247	Apr 2018	2.167	Apr 2019	-		2.167	Continuing	Continuing	-
Subtotal			-	2.200		2.247		2.167		-		2.167	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Mgmt Services	C/CPFF	Various : Bedford, MA	-	0.422	Apr 2017	1.090	Apr 2018	0.710	Apr 2019	-		0.710	Continuing	Continuing	-
PMA	C/CPAF	Various : Various	-	0.850	Feb 2017	1.191	Feb 2018	1.218	Feb 2019	-		1.218	Continuing	Continuing	-
Subtotal			-	1.272		2.281		1.928		-		1.928	Continuing	Continuing	N/A
Project Cost Totals			-	13.431		14.969		15.100		-		15.100	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise	Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Virtual Imagery Processing Capability																												
Software Release (DIB 4.4)																												
Software Release (DIB 4.5)																												
Software Release (DIB 4.6)																												
Software Release (DIB 4.7)																												
Software Release (DIB 4.8)																												
Software Release (DIB 4.9)																												
Software Release (DIB x.x)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / <i>Support to DCGS Enterprise</i>	Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Virtual Imagery Processing Capability</i>				
Software Release (DIB 4.4)	1	2017	3	2017
Software Release (DIB 4.5)	3	2017	1	2018
Software Release (DIB 4.6)	1	2018	3	2018
Software Release (DIB 4.7)	3	2018	1	2019
Software Release (DIB 4.8)	1	2019	3	2019
Software Release (DIB 4.9)	3	2019	1	2020
Software Release (DIB x.x)	3	2020	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise	Project (Number/Name) 675265 / Common Imagery Processor (CIP)
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675265: Common Imagery Processor (CIP)	-	9.653	11.380	11.479	0.000	11.479	11.692	11.895	12.143	12.364	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Imagery Processing effort develops the Virtual Imagery Processing Capability (VIP-C) within the DCGS architecture. VIP-C accepts airborne imagery data, processes it into an exploitable format, and provides it to other elements within the weapon system and/or the DCGS Enterprise. Current efforts are transitioning the legacy imagery processor from a hardware/software capability to a virtual software capability, thereby improving enterprise processing capabilities. Efforts continue to keep the capability on track to handle the current sensors. Activities also include testing, development, and demonstrations integrating updated and new/emerging sensors into DCGS.

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

	FY 2017	FY 2018	FY 2019
Title: Imagery Processor	9.653	11.380	11.479
Description: Continue developing VIP-C to keep pace with growing sensor baseline and enhance imagery data quality.			
FY 2018 Plans: - Continue developing new VIP-C versions that provide increased data throughput, image data conditioning, quality enhancements, and migrate new sensor data ingest capabilities (like MS-177/A) into the architecture.			
FY 2019 Plans: - Will continue to upgrade and improve VIP-C to enable better geo-coordinate accuracy, facilitate automated intelligence discovery and integrate new algorithms.			
FY 2018 to FY 2019 Increase/Decrease Statement: Inflation			
Accomplishments/Planned Programs Subtotals	9.653	11.380	11.479

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

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPAF 04 Line Item 846080: DCGS-AF	3.532	3.611	3.697	-	3.697	3.780	3.521	3.585	3.612	Continuing	Continuing

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / <i>Support to DCGS Enterprise</i>	Project (Number/Name) 675265 / <i>Common Imagery Processor (CIP)</i>

D. Acquisition Strategy

For imagery processing the Air Force uses an evolutionary acquisition approach with increments and spirals to develop, field, and upgrade the system and structure contracts for the improved capabilities through full and open competition to the maximum extent possible. In terms of management, Air Force leads the Cross Service Working Group that aligns imagery processing capabilities across the Joint Services in support of USD(!)direction.

E. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise	Project (Number/Name) 675265 / Common Imagery Processor (CIP)
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Virtual Imagery Processing Capability																												
Software Release (3.42)	■																											
Software Release (3.44)		■	■	■																								
Software Release (3.46)				■	■	■																						
Software Release (3.48)						■	■	■																				
Software Release (3.50)								■	■	■																		
Software Release (3.52)										■	■	■																
Software Release (3.54)												■	■	■														
Software Release (3.x)														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise	Project (Number/Name) 675265 / Common Imagery Processor (CIP)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Virtual Imagery Processing Capability</i>				
Software Release (3.42)	1	2017	1	2017
Software Release (3.44)	2	2017	3	2017
Software Release (3.46)	4	2017	1	2018
Software Release (3.48)	2	2018	3	2018
Software Release (3.50)	4	2018	1	2019
Software Release (3.52)	2	2019	3	2019
Software Release (3.54)	4	2019	1	2020
Software Release (3.x)	2	2020	3	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305265F / <i>GPS III Space Segment</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	165.794	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
676007: <i>DASS Integration, GPS</i>	-	1.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A019: <i>GPS III</i>	-	164.729	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 0305265F, GPS III Space Segment efforts were transferred to PE 1203265F, GPS III Space Segment, due to the creation of a new Major Force Program for Space. FY2017 funding is documented in the exhibits for PE 1203265F.

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	179.188	0.000	0.000	0.000	0.000
Current President's Budget	165.794	0.000	0.000	0.000	0.000
Total Adjustments	-13.394	0.000	0.000	0.000	0.000
• Congressional General Reductions	-0.045	0.000			
• Congressional Directed Reductions	-37.300	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	30.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-6.049	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305265F / GPS III Space Segment				Project (Number/Name) 676007 / DASS Integration, GPS			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
676007: DASS Integration, GPS	-	1.065	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.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305265F / GPS III Space Segment				Project (Number/Name) 67A019 / GPS III			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A019: GPS III	-	164.729	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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305600F / <i>International Intelligence Technology and Architectures</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	2.360	3.491	8.464	0.000	8.464	8.515	8.660	8.711	8.780	Continuing	Continuing
675898: <i>International Intelligence Technology and Arc</i>	-	2.360	3.491	8.464	0.000	8.464	8.515	8.660	8.711	8.780	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

International Intelligence Technology and Architectures oversees, manages, and provides the United States (US) component of the multi-national Battlefield Information Collection and Exploitation System (US BICES) with a collaborative environment and intelligence sharing enterprise required for processing and disseminating critical intelligence information between and among US, North Atlantic Treaty Organization (NATO), allied and coalition forces. The US BICES program procures and maintains a standing intelligence information sharing capability across Department of Defense (DoD), Combat Support Agencies, and multiple Combatant Commands (CCMD) for the Office of the Under Secretary of Defense, Intelligence (OUSD(I)). At the request of OUSD(I), US BICES is extended beyond U.S. European Command (EUCOM) into all CCMDs and is known as US BICES Extended (US BICES-X). US BICES provides an "enduring" US and Coalition interoperable intelligence sharing multi-level secure technical architecture utilizing releasable elements of the Defense Intelligence Information Enterprise (DI2E) framework and functions to support the full spectrum of intelligence operations and dissemination throughout the DoD community. Also, it enables instantiation of US BICES/US BICES-X as the intelligence contribution to the Mission Partner Environment (MPE).

Research and Development funding will:

- Provide increased intelligence information sharing capabilities in support of US and coalition forces utilizing the US BICES and NATO virtual networks and provide increased database information via Distributed Common Ground System - Army.
- Expand available intelligence disciplines (Geospatial Intelligence, Signal Intelligence, and potentially Human Intelligence) to support US and allied/coalition forces. Support increased intelligence advanced analytics tools, Joint Intelligence Operation Center-IT and DI2E developments to significantly increase the timeliness of intelligence and bring US BICES/NATO Special Operations Forces Headquarters/NATO Intelligence Fusion Center capabilities into the current technology baselines.
- Develop and provide a federated Trusted Network Environment (TNE) that incorporates the Asian Pacific intelligence Information Network to support the National Defense Strategy.
- Provide multi-level security intelligence bi-laterals and multi-laterals to meet Combatant Commander Integrated Priority Lists.
- Develop the Coalition Partner Network for CENTCOM, the Coalition Information Exchange Network for SOUTHCOM, and the Coalition Partner Network for EUCOM and AFRICOM.
- Expand capabilities for bi-lateral and multi-lateral federated TNEs in support of CCMD requirements.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305600F / <i>International Intelligence Technology and Architectures</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	2.360	3.491	3.527	0.000	3.527
Current President's Budget	2.360	3.491	8.464	0.000	8.464
Total Adjustments	0.000	0.000	4.937	0.000	4.937
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	4.937	0.000	4.937

Change Summary Explanation

The FY2019 increase supports additional design, development, testing, and technical refresh for cross-domain capabilities (such as the TNE), new US BICES-enabled ISR capabilities, and new Geospatial Intelligence and biometric tools for the US BICES Enterprise. This will enable the US BICES Program Office (BPO) to: a) modernize and transform the US BICES/US BICES-X worldwide enterprise; b) align US BICES/US BICES-X with the Joint Information environment (JIE) and the DI2E standards, process, and framework; c) develop a cybersecurity roadmap and implement improved cybersecurity assessment tools; and d) smartly enhance capability, capacity, and scalability across the US BICES/US BICES-X enterprise seeking improved integration with the Distributed Common Ground/ Surface System (DCGS) family of Systems.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: International Intelligence Technology and Architectures	2.360	3.491	8.464
Description: Continue the research and development in emerging and maturing technologies and capabilities for modernizing and transforming US BICES/US BICES-X for improved agility, scalability, access, cybersecurity, and data and information sharing tools and infrastructure.			
FY 2018 Plans: Continue the research and development for future releases of the TNE, to include Identity and Access Management (IdAM), peer-federated chat services, and adding video to the telephony services. Begin the Certification Test and Evaluation (CT&E) of new capabilities, to include the implementation and certification of new services such as video teleconferencing (VTC), metadata handling, restricted user communities for isolating authoritative data sources, integration of multi-domain relational database operations, and an application programming interface that will enhance information sharing through the use of existing applications like Share Point with the TNE.			
FY 2019 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305600F / <i>International Intelligence Technology and Architectures</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Continue the research and development for future releases of the TNE, to include IdAM, peer-federated chat services, and adding video to the telephony services. Continue the CT&E of new capabilities, to include the implementation and certification of new services such as VTC, metadata handling, restricted user communities for isolating authoritative data sources, integration of multi-domain relational database operations, and an application programming interface that will enhance information sharing through the use of existing applications like Share Point with the TNE. FY 2018 to FY 2019 Increase/Decrease Statement: \$5 million was added for additional software testing to accelerate software releases to the field.			
Accomplishments/Planned Programs Subtotals	2.360	3.491	8.464

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• O&M PE 0305600F: <i>Int'l Intel Tech Architecture</i>	-	101.488	96.567	-	96.567	75.619	75.498	75.751	77.115	Continuing	Continuing
• OPAF 03 Line item 832050: <i>International Intelligence Technology and Architecture</i>	18.350	22.335	8.290	-	8.290	11.386	11.314	10.884	11.167	Continuing	Continuing

Remarks

E. Acquisition Strategy

Utilize existing General Dynamics Mission Systems (GDMS) contract number FA8240-14-D-2751. The contract is structured as a fixed price incentive fee with one base year and four option years and a period of performance beginning 1 June 2014 through 31 May 2019. US BICES also utilizes the Air Force Research Laboratory for majority of the testing of the latest TNE releases.

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305600F / <i>International Intelligence Technology and Architectures</i>	Project (Number/Name) 675898 / <i>International Intelligence Technology and Arc</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Trusted Network Environment Software Version 2.2 features Voice over IP, Cross Domain View.																												
TNE	██████████																											
Trusted Network Environment Software Version 3.0 features Database replication, federated P2P Voice, Non-Federated Virtual Desktop Interface																												
TNE	████████████████████																											
Trusted Network Environment Software Version 3.1 features Search, Face Phone Video, Improved Content Inspection, Increased Network Capacity																												
TNE	██																											
Trusted Network Environment Software Version 3.2 features Conferencing & Video Teleconferencing, Advanced Search, Metadata, XML Messaging, Chat Peer Federation, Federated Virtual Desktop Interface																												
TNE	██																											
Trusted Network Environment Software Version 4.0 features Full Motion Video, Multi-party federated Video Teleconferencing, Intel Mission applications support, Intel Mission database federation																												
TNE	██																											
Trusted Network Environment Software Version 4.1 features SharePoint Search																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305600F / <i>International Intelligence Technology and Architectures</i>	Project (Number/Name) 675898 / <i>International Intelligence Technology and Arc</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>enhancement, Common operating picture, Video Teleconferencing Enhancement</i>	
TNE	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305600F / <i>International Intelligence Technology and Architectures</i>	Project (Number/Name) 675898 / <i>International Intelligence Technology and Arc</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Trusted Network Environment Software Version 2.2 features Voice over IP, Cross Domain View.</i>				
TNE	1	2017	3	2017
<i>Trusted Network Environment Software Version 3.0 features Database replication, federated P2P Voice, Non-Federated Virtual Desktop Interface</i>				
TNE	1	2017	4	2018
<i>Trusted Network Environment Software Version 3.1 features Search, Face Phone Video, Improved Content Inspection, Increased Network Capacity</i>				
TNE	1	2017	3	2019
<i>Trusted Network Environment Software Version 3.2 features Conferencing & Video Teleconferencing, Advanced Search, Metadata, XML Messaging, Chat Peer Federation, Federated Virtual Desktop Interface</i>				
TNE	3	2018	4	2020
<i>Trusted Network Environment Software Version 4.0 features Full Motion Video, Multi-party federated Video Teleconferencing, Intel Mission applications support, Intel Mission database federation</i>				
TNE	1	2019	4	2022
<i>Trusted Network Environment Software Version 4.1 features SharePoint Search enhancement, Common operating picture, Video Teleconferencing Enhancement</i>				
TNE	3	2020	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305614F / JSPOC Mission System
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	76.467	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A030: <i>Infrastructure</i>	-	26.619	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A031: <i>Mission Applications</i>	-	19.821	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A035: <i>INCREMENT 3</i>	-	30.027	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 0305614F, JSPOC Mission System efforts were transferred to PE 1203614F, JSPOC Mission System, due to the creation of a new Major Force Program for Space. FY2017 funding is documented in the exhibits for PE 1203614F.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	87.889	0.000	0.000	0.000	0.000
Current President's Budget	76.467	0.000	0.000	0.000	0.000
Total Adjustments	-11.422	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	-0.500	0.000			
• SBIR/STTR Transfer	-2.622	0.000			
• Other Adjustments	-8.300	0.000		0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305614F / JSPOC Mission System			Project (Number/Name) 67A030 / Infrastructure				
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A030: <i>Infrastructure</i>	-	26.619	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.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305614F / JSPOC Mission System				Project (Number/Name) 67A031 / Mission Applications			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A031: <i>Mission Applications</i>	-	19.821	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.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305614F / JSPOC Mission System			Project (Number/Name) 67A035 / INCREMENT 3				
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A035: INCREMENT 3	-	30.027	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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	4.123	4.899	4.303	0.000	4.303	4.383	4.460	4.552	4.635	Continuing	Continuing
670374: <i>Electronic Combat Spt, C3 Protection/Multi-Mission, Technology and Spt</i>	-	4.123	4.899	4.303	0.000	4.303	4.383	4.460	4.552	4.635	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 This program, BA 7, PE 0305881F, project 670374, Cyber Capability Support Office, is a new start.

A. Mission Description and Budget Item Justification

A.1. Mission Description.

Program element includes the manpower, equipment, research and development, developmental testing, operational test and evaluation, transition funding to foundational programs, necessary facilities, legal and associated costs supporting cyber innovation through rapid development (days to months), technology transition and/or acquisition of cyber capabilities. Key areas include; defense of the Air Force Network, mission assurance capabilities to protect cyber infrastructure and attack and exploitation of networks and associated systems used by adversaries as directed by the appropriate Combatant Commander or Joint Force Commander. These capabilities will directly support interagency partners and joint forces.

A.2. Other.

May include expedited development of innovative solutions for existing and emerging technologies

A.3. Budget Item Justification.

Rapid Cyber Acquisition (RCA) provides Combatant Commanders with the ability to rapidly respond to merging cyber needs. RCA provides rapid fielding of offensive cyber capabilities in the following areas: attack, exploitation, defense, and command and control of offensive cyber operations through all phases of warfare; and new cyber operational capabilities that address cyber gaps in evolving mission areas.

RCA delivers operational cyber capabilities to 24th Air Force (24 AF) warfighters in mission-relevant timeframes. RCA provides capabilities in support of US national security interests and to enhance the nation's ability to operate in cyberspace. It expedites cyber development and modifications of USAF and DoD cyber capabilities. RCA provides solution sets for offensive cyberspace operations: attack, defense, command and control/situational awareness, exploitation, critical infrastructure support, and combat support. RCA provides integration, and technical support to other Service and Government Agency activities to leverage select Air Force-developed technologies and/or operational capabilities. RCA will develop material or non-material cyber solutions, conduct rapid prototyping, integration, and transition activities for cyber systems. Activities include, but are not limited to: development of software/hardware systems; integration and transition of lab-developed cyber capabilities to the warfighter; testing and evaluation; program management administration, studies, analysis, pilots, demonstrations, and risk reduction for emerging technologies.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i>
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The Cyber Capability Support Office (CCSO) is a rapid cyber capability development organization charged with meeting AF Offensive Cyber Operations (OCO) mission requirements in support of multi-domain superiority across the 5 Air Force core missions. By utilizing a unique blend of technology, intelligence, and operations Subject Matter Experts, CCSO develops Phase-0 focused capability to enable the achievement of the CCDR's mission requirements.

In FY19, RCA will shift focus from the rapid fielding of capability to funding a standing research and development team to conduct quick look assessments, solution design, rapid prototyping, and field quick reaction capabilities in support of urgent warfighter requirements.

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

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	4.280	4.899	4.336	0.000	4.336
Current President's Budget	4.123	4.899	4.303	0.000	4.303
Total Adjustments	-0.157	0.000	-0.033	0.000	-0.033
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.157	0.000			
• Other Adjustments	0.000	0.000	-0.033	0.000	-0.033

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: RCA Hardware/Software Development	3.923	4.300	0.000	0.000	0.000
Description: Hardware and software cyber security enhancement in support of offensive, defensive, command and control/situational awareness weapon system requirements.					
FY 2018 Plans: - Complete development, integration and technical support efforts/activities.					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i>			
C. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Complete development of independent operational and technical assessment of cyber capabilities and vulnerabilities. FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease due to realignment of FY19 funds to the Cyber Capability Support Office effort.					
Title: RCA Hardware Integration					
Description: Integrates organically developed and/or acquired capabilities for the following AF Weapon System Sustainment (WSS) programs: Cyberspace Vulnerability Assessment/Hunter (CVA/H), Cyber Security Control System (CSCS), Cyberspace Defense Analysis (CDA), Air Force Cyber Defense (ACD), and Cyber Command and Control Mission System (C3MS).					
FY 2018 Plans: - Complete integration and technical support of select Air Force developmental technologies and operational capabilities. - Complete independent operational and technical assessments of cyberspace capabilities.					
FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease due to realignment of FY19 funds to the Cyber Capability Support Office effort.					
Title: Test and Evaluation					
Description: Provides a secure network environment to support developmental testing in preparation for the fielding of RCA efforts.					
	0.100	0.499	0.000	0.000	0.000
	0.100	0.100	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force				Date: February 2018	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i>			
C. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>FY 2018 Plans: - Complete developmental testing of developed capabilities.</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2019 OCO Plans: N/A.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease due to realignment of FY19 funds to the Cyber Capability Support Office effort.</p>					
<p>Title: Cyber Capability Support Office</p> <p>Description: Provide a standing research and development team to conduct quick look assessments, solution design, rapid prototyping, and field quick reaction capabilities.</p>					
<p>FY 2018 Plans: N/A.</p> <p>FY 2019 Base Plans: - Will provide professional and technical subject matter expertise to deliver direction and guidance for Offensive Cyber Operations and Computer Network Exploitation information systems to support the Air Force's mission objectives - Will develop a highly skilled rapid reaction team to prototype and deliver capability within 0-60 days, and perform quick look operational and technical assessments of cyber capabilities - Will implement a multidisciplinary targeting cell to execute target systems analysis and developmental planning in support of the USAF offensive cyber operations mission - Will provide a secure network environment to support research, prototyping, development, and testing of offensive cyber capabilities</p> <p>FY 2019 OCO Plans: N/A.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased to stand up Cyber Capability Support Office efforts.</p>					
Accomplishments/Planned Programs Subtotals					
	0.000	0.000	4.303	0.000	4.303
	4.123	4.899	4.303	0.000	4.303

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force Date: February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i>
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D. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

E. Acquisition Strategy

Rapid Cyber Acquisition utilizes a tailorable acquisition strategy that facilitates rapid delivery of material and non-material solutions to solve operational cyber needs. This approach allows flexibility for solutions to enter into the acquisitions process at any phase of the acquisitions life cycle management system. These plans meet the written acquisition planning requirements and guidance. All plans will contain sufficient information for the Milestone Decision Authority to determine readiness to enter into the applicable phase of the acquisition process. Rapid Cyber Acquisition considers existing contracting vehicles, including but not limited to: Network Centric Solutions (NETCENTS), NETCENTS 2, Information Technology Enterprise Solutions-2 (ITES-2), Government-Wide Acquisition Contract vehicles (Alliant, Encore II, Solutions for Enterprise-Wide Procurement IV (SEWP IV)), General Services Administration Federal Supply Schedules, CCSO Indefinite Delivery Indefinite Quantity (IDIQ) contracts, HNCY Cyber IDIQ contract, National Security Agency vehicles and Cyber Warfare Systems Branch Class Justification and Approval document. Multiple award contractual vehicles, such as National Aeronautics and Space Administration's SEWP IV, provide a wide range of commercially-available products and services that should be able to meet many requirements related to Rapid Cyber Acquisition. These multiple-award vehicles have already met the statutory requirements of the Competition in Contracting Act and only require that Rapid Cyber Acquisition provide a fair opportunity to all contract holders, in accordance with Federal Acquisition Regulation 16.505, unless an exception to fair opportunity applies.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i>					Project (Number/Name) 670374 / <i>Electronic Combat Spt, C3 Protection/Multi-Mission, Technology and Spt</i>				

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RCA HW/SW (LOGAN) ACTD	MIPR	AFRL : Rome, NY	-	0.675	Jul 2017	-		-		-		-	Continuing	Continuing	-
RCA HW/SW (Mission Oriented Mapping) CVA/H	C/CPAF	Various : San Antonio, TX	-	3.096	Oct 2016	-		-		-		-	Continuing	Continuing	-
RCA HW Integration	Various	Various : Various	-	0.134	Jan 2018	0.165	May 2018	-		-		-	Continuing	Continuing	-
RCA HW/SW (LOGAN)	MIPR	AFRL : Rome, NY	-	-		2.500	Jan 2018	-		-		-	Continuing	Continuing	-
RCA HW/SW (Architecture Development)	Various	Various : Various	-	-		1.800	Jun 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	3.905		4.465		-		-		-	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Cyber Capabilities Support Office (CCSO)	Various	Various : Various	-	-		-		4.303	Nov 2018	-		4.303	Continuing	Continuing	-
Subtotal			-	-		-		4.303		-		4.303	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA - Engineering and Technical Support Services (FFRDC)	C/CPFF	MITRE : Hanscom, MA	-	0.150	Jan 2017	0.200	Mar 2018	-		-		-	Continuing	Continuing	-
PMA Acquisition Support	Various	Various : San Antonio, TX	-	0.068	Jan 2017	0.234	Mar 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	0.218		0.434		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i>	Project (Number/Name) 670374 / <i>Electronic Combat Spt, C3 Protection/Multi-Mission, Technology and Spt</i>
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
No PMA expenses prior to FY17. PMA support begins in FY17.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	4.123	4.899	4.303	-	4.303	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i>	Project (Number/Name) 670374 / <i>Electronic Combat Spt, C3 Protection/Multi-Mission, Technology and Spt</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>Rapid Cyber Acquisition</i>																												
RCA HW/SW Development																												
RCA HW/SW (SWIC/NetCDS) C3MS																												
RCA HW/SW (Deployed Access) CVA/H																												
RCA HW/SW (LOGAN) Development ACTD																												
RCA HW/SW (Mission Oriented Mapping) CVA/H																												
RCA HW Integraton																												
RCA HW/SW (Architecture Development)																												
<i>Cyber Capability Support Office</i>																												
CCSO Technical Direction																												
Internal Development Cell																												
Due Diligence Research & Analysis																												
Cyber Capability & Design Team																												
Joint Information Operations Range Development Environment																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i>	Project (Number/Name) 670374 / <i>Electronic Combat Spt, C3 Protection/Multi-Mission, Technology and Spt</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Rapid Cyber Acquisition</i>				
RCA HW/SW Development	1	2018	4	2018
RCA HW/SW (SWIC/NetCDS) C3MS	2	2017	2	2017
RCA HW/SW (Deployed Access) CVA/H	3	2017	3	2017
RCA HW/SW (LOGAN) Development ACTD	3	2017	3	2018
RCA HW/SW (Mission Oriented Mapping) CVA/H	1	2017	1	2018
RCA HW Integraton	2	2018	4	2018
RCA HW/SW (Architecture Development)	1	2018	4	2018
<i>Cyber Capability Support Office</i>				
CCSO Technical Direction	1	2019	4	2023
Internal Development Cell	1	2019	4	2023
Due Diligence Research & Analysis	1	2019	4	2023
Cyber Capability & Design Team	1	2019	4	2023
Joint Information Operations Range Development Environment	1	2019	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305906F / NCMC - TW/AA System
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	4.951	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.951
67A051: <i>Space Superiority - Advanced Intelligence Systems</i>	-	4.951	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.951
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2018, PE 0305906F, NCMC - TW/AA System efforts were transferred to PE 1203906F NCMC - TW/AA System due to the creation of a new Major Force Program for Space. FY2017 funding is now documented in the exhibits for PE 1203906F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	4.951	0.000	0.000	0.000	0.000
Current President's Budget	4.951	0.000	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

Change Summary Explanation

FY17: Funding added to complete an Analysis of Alternatives for the Integrated Tactical Warning and Attack Assessment (ITW/AA) Command and Control (C2) system.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: N/A	4.951	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305906F / NCMC - TW/AA System
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: N/A FY 2018 Plans: N/A FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: N/A					
Accomplishments/Planned Programs Subtotals	4.951	0.000	0.000	0.000	0.000

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

Remarks

E. Acquisition Strategy
 N/A

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305906F / NCMC - TW/AA System	Project (Number/Name) 67A051 / Space Superiority - Advanced Intelligence Systems

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

No project title.	
ITW/AA Analysis of Alternatives	██████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305906F / NCMC - TW/AA System	Project (Number/Name) 67A051 / Space Superiority - Advanced Intelligence Systems

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
ITW/AA Analysis of Alternatives	3	2017	2	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305913F / <i>NUDET Detection System (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	21.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
672808: <i>Nuc Detonation Det Sys (sensors)</i>	-	21.093	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

In FY2018, PE 0305913F, NUDET Detection System efforts were transferred to PE 1203913F, NUDET Detection System, due to the creation of a new Major Force Program for Space. FY2017 funding is documented in the exhibits for PE 1203913F.

B. Program Change Summary (\$ in Millions)

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	21.093	0.000	0.000	0.000	0.000
Current President's Budget	21.093	0.000	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305940F / <i>Space Situation Awareness Operations</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	92.482	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
670004: <i>Other STRATCOM Activities</i>	-	71.118	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A017: <i>Sensor Service Life Extension Program</i>	-	21.364	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 0305940F, Space Situational Awareness Operations efforts were transferred to PE 1203940F, Space Situational Awareness Operations, due to the creation of a new Major Force Program for Space. FY2017 funding is documented in the exhibits for PE 1203940F.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	93.802	0.000	0.000	0.000	0.000
Current President's Budget	92.482	0.000	0.000	0.000	0.000
Total Adjustments	-1.320	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	1.907	0.000			
• SBIR/STTR Transfer	-3.227	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305940F / <i>Space Situation Awareness Operations</i>				Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
670004: <i>Other STRATCOM Activities</i>	-	71.118	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.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
<i>67A017: Sensor Service Life Extension Program</i>	-	21.364	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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305984F / <i>Personnel Recovery Command & Ctrl (PRC2)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	2.445	2.466	0.000	2.466	2.512	2.556	2.609	2.656	Continuing	Continuing
675221: <i>Personnel Recovery Command and Control (PRC2)</i>	-	0.000	2.445	2.466	0.000	2.466	2.512	2.556	2.609	2.656	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds operational development necessary to acquire, modify, and sustain a segment of Air Force's C2 capabilities and services associated with Personnel Recovery (PR). The Personnel Recovery Command and Control (PRC2) program develops and delivers tools and services for planning, collaborating and managing search and rescue efforts, as well as disseminating related information to all personnel recovery mission coordinators across the PR network. PRC2 provides an adaptive and networked system, delivering timely situational awareness information supporting personnel accountability and recovery mission management worldwide. PRC2 delivers a globally accessible, collaborative, interoperable and integrated set of capabilities to prevent, prepare for and respond to joint/coalition military personnel recovery activities, and civilian rescue missions. The Joint Personnel Recovery (JPR) Initial Capability Document (ICD) (2012) articulates capabilities needed for PRC2.

The system collects, stores and delivers personnel/identity biometric data, emergency locator beacon registrations, isolated personnel reports, evasion plans of action, incident reports and other information management capabilities. The information is used for predictive, preventive and personnel vulnerability analysis and assessment in support of PR across the Department of Defense and other national and international entities.

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

This program element may include necessary civilian pay expenses required to manage, execute, and deliver PRC2 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force				Date: February 2018	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0305984F / <i>Personnel Recovery Command & Ctrl (PRC2)</i>			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	2.445	2.485	0.000	2.485
Current President's Budget	0.000	2.445	2.466	0.000	2.466
Total Adjustments	0.000	0.000	-0.019	0.000	-0.019
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.019	0.000	-0.019
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019		
Title: Personnel Recovery Command and Control (PRC2)	0.000	2.095	2.066		
Description: PRC2 is developing and delivering tools and services for planning and managing search and rescue efforts, and disseminating related information.					
FY 2018 Plans: - Began Fielding PRMM Version 2.0.0 (formerly PRC2 Inc 5 Build 5.0.0 MM Inc 2)					
FY 2019 Plans: - Begin development of PRMM 3.0.0 (formerly PRMM 3.0 Maintenance Release)					
FY 2018 to FY 2019 Increase/Decrease Statement: Cost decrease due to reduced development costs.					
Title: Test and Evaluation	0.000	0.350	0.400		
Description: Test and Evaluation					
FY 2018 Plans: - Continue to test PRMM 2.0.0 (formerly PRC2 Inc Build 5.0.0 MM Inc 2)					
- Test and evaluate PRMM version 3.0.0 (formerly PRMM version 3.0 maintenance release fielding)					
FY 2019 Plans: - Finalize testing of PRMM Version 3.0.0 (formerly PRMM version 3.0 maintenance release fielding)					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305984F / <i>Personnel Recovery Command & Ctrl (PRC2)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
- Begin Development of PRMM 4.0.0 (formerly PRC2 Inc 4 Build 4.0.0)			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Cost increase due to inflation.			
Accomplishments/Planned Programs Subtotals	0.000	2.445	2.466

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 834520: <i>Theater Battle Mgt C2 System</i>	1.252	1.286	1.301	-	1.301	1.323	1.347	1.372	1.396	Continuing	Continuing

Remarks

E. Acquisition Strategy

PRC2 product support is provided to the program office by the 517th Software Maintenance Squadron (517/SMXS), Hill AFB Utah, in accordance with a memorandum of agreement and on a fee for service basis. This strategy to utilize the 517 SMXS for agile product development and sustainment was reviewed and approved by the Air Force Program Executive Officer for Battle Management, and implemented in mid-FY 2014. The work done by the 517 SMXS includes, but is not limited to, modernization development, sustainment support services, and software maintenance of the PRC2 system.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305984F / <i>Personnel Recovery Command & Ctrl (PRC2)</i>	Project (Number/Name) 675221 / <i>Personnel Recovery Command and Control (PRC2)</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PRC2 Follow-on Development	PO	Ogden ALC : Hill AFB, UT	-	0.000		1.795	Dec 2017	1.766	Dec 2018	-		1.766	Continuing	Continuing	-
Subtotal			-	0.000		1.795		1.766		-		1.766	Continuing	Continuing	N/A

Remarks
 - FY 2017 and prior years budgeted in PE 0207410F
 - FY 2018 and future years budgeted in PE 0305984F

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test	PO	45th Test Squadron : Eglin AFB, FL	-	-		0.350	Oct 2017	0.400	Oct 2018	-		0.400	Continuing	Continuing	-
Subtotal			-	-		0.350		0.400		-		0.400	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	C/CPFF	Various : Hill AFB, UT	-	-		0.300	Dec 2017	0.300	Dec 2018	-		0.300	Continuing	Continuing	-
Subtotal			-	-		0.300		0.300		-		0.300	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	2.445	2.466	-	2.466	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305984F / <i>Personnel Recovery Command & Ctrl (PRC2)</i>	Project (Number/Name) 675221 / <i>Personnel Recovery Command and Control (PRC2)</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Personnel Recovery Command & Control (PRC2)	
Personnel Recovery Mission Manager (PRMM) Ver 2.0.0 Fielding (formerly PRC2 Inc 5 Build 5.0.0 MM Inc 2)	██████████
PRMM Ver 3.0.0 Development (formerly PRMM 3.0 Maintenance Release)	██████████
PRMM Ver 3.0.0 Testing (formerly PRMM 3.0 Maintenance Release Testing)	██
PRMM Ver 3.0.0 Fielding (formerly PRMM 3.0 Maintenance Release Fielding)	██
PRMM Ver 4.0.0 Development (formerly PRC2 Inc 4 Build 4.0.0)	██████████
PRMM Ver 4.0.0 Testing (formerly PRC2 Inc 4 Build 4.0.0)	██
PRMM Ver 4.0.0 Fielding (formerly PRC2 Inc 4 Build 4.0.0)	██
PRMM Ver 5.0.0 Development	██████████
PRMM Ver 5.0.0 Testing	██
PRMM Ver 5.0.0 Fielding	██
PRMM Ver 6.0.0 Development	██████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305984F / <i>Personnel Recovery Command & Ctrl (PRC2)</i>	Project (Number/Name) 675221 / <i>Personnel Recovery Command and Control (PRC2)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Personnel Recovery Command & Control (PRC2)</i>				
Personnel Recovery Mission Manager (PRMM) Ver 2.0.0 Fielding (formerly PRC2 Inc 5 Build 5.0.0 MM Inc 2)	1	2018	4	2018
PRMM Ver 3.0.0 Development (formerly PRMM 3.0 Maintenance Release)	1	2019	4	2019
PRMM Ver 3.0.0 Testing (formerly PRMM 3.0 Maintenance Release Testing)	1	2020	1	2020
PRMM Ver 3.0.0 Fielding (formerly PRMM 3.0 Maintenance Release Fielding)	2	2020	2	2020
PRMM Ver 4.0.0 Development (formerly PRC2 Inc 4 Build 4.0.0)	3	2020	2	2021
PRMM Ver 4.0.0 Testing (formerly PRC2 Inc 4 Build 4.0.0)	3	2021	3	2021
PRMM Ver 4.0.0 Fielding (formerly PRC2 Inc 4 Build 4.0.0)	4	2021	4	2021
PRMM Ver 5.0.0 Development	1	2022	4	2022
PRMM Ver 5.0.0 Testing	1	2023	1	2023
PRMM Ver 5.0.0 Fielding	2	2023	2	2023
PRMM Ver 6.0.0 Development	3	2023	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	8.684	4.117	0.000	4.117	2.033	1.260	1.285	1.308	Continuing	Continuing
675306: <i>Analysis Enterprise</i>	-	0.000	5.074	1.337	0.000	1.337	1.239	1.260	1.285	1.308	Continuing	Continuing
675307: <i>TARGETING ENTERPRISE RESEARCH</i>	-	0.000	3.610	2.780	0.000	2.780	0.794	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Intelligence Mission Data (IMD) encompasses several key intelligence data efforts used to support IMD-dependent programs, including the fifth generation aircraft capabilities. The term IMD encompasses Red (adversary military systems), White (commercial systems), Blue (U.S. military systems), and Grey (neutral military systems) Characteristics & Performance; Signatures; Geospatial Intelligence; Electronic Warfare systems and Operational Order of Battle mission data. The PE funds: Planning & direction, collection, processing & exploitation, analysis & production, and dissemination (PCPAD) to support IMD-dependent programs.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	8.684	4.148	0.000	4.148
Current President's Budget	0.000	8.684	4.117	0.000	4.117
Total Adjustments	0.000	0.000	-0.031	0.000	-0.031
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.031	0.000	-0.031

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	Project (Number/Name) 675306 / <i>Analysis Enterprise</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675306: <i>Analysis Enterprise</i>	-	0.000	5.074	1.337	0.000	1.337	1.239	1.260	1.285	1.308	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY 2018, PE 0207431F, Combat Air Intelligence Systems, Intelligence Mission Data efforts were transferred to new for 2018 PE 0307577F, Intelligence Mission Data (IMD), in order to provide better oversight of IMD research and development. (+\$5.074M)

Intelligence Mission Data efforts in BPAC 675306 fund RDT&E to enable Advanced Non-cooperative Target Recognition (NCTR) collection, Operational Reconnaissance and traditional ELINT capabilities, advanced all-source analysis and production of IMD across EWIR, C&P, and Signatures to enable combat ID and ensure survivability for air superiority and global strike platforms.

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

	FY 2017	FY 2018	FY 2019
Title: NCTR Collection and IMD Production Tools	-	5.074	1.337
Description: Development of MASINT collection systems, creation of automated tools to process ELINT data, and development of improved analysis, production, and dissemination tools to create IMD used for combat ID.			
FY 2018 Plans: - Develop 3 new collection sensors while upgrading current capabilities - Initiate first phase of development for new modeling tools to create Measurement and Signatures of emerging threats - Start development of automated tools to quickly process ELINT data for utilization in EWIR			
FY 2019 Plans: Continue development of automated tools to disseminate measurement and signatures information to EWIR, develop, document, deliver models of advanced threat systems.			
FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to projected completion of development of new sensors.			
Accomplishments/Planned Programs Subtotals	-	5.074	1.337

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	Project (Number/Name) 675306 / <i>Analysis Enterprise</i>

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2019</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• OPAF 07 030577F: <i>Intelligence Mission Data</i>	0.000	1.313	0.606	-	0.606	0.000	0.514	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	Project (Number/Name) 675306 / <i>Analysis Enterprise</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Not specified.	Various	NASIC : WPAFB, OH	-	0.000		5.074		1.337		0.000		1.337	Continuing	Continuing	-
Subtotal			-	0.000		5.074		1.337		0.000		1.337	Continuing	Continuing	N/A
Project Cost Totals			-	0.000		5.074		1.337		0.000		1.337	Continuing	Continuing	N/A

Remarks
Contract award is expected 90 days after budget authority for FY18. FY19 will be one year after FY18.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	Project (Number/Name) 675306 / <i>Analysis Enterprise</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>NCTR and IMD Tool Development</i>																												
NCTR sensor dev start																												
SIGINT/EWIR Tools Development																												
SIGNATURE Tool Development																												
C&P Tool Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	Project (Number/Name) 675306 / <i>Analysis Enterprise</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>NCTR and IMD Tool Development</i>				
NCTR sensor dev start	3	2018	3	2020
SIGINT/EWIR Tools Development	3	2019	3	2023
SIGNATURE Tool Development	3	2018	3	2023
C&P Tool Development	3	2019	3	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>				Project (Number/Name) 675307 / <i>TARGETING ENTERPRISE RESEARCH</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675307: <i>TARGETING ENTERPRISE RESEARCH</i>	-	0.000	3.610	2.780	0.000	2.780	0.794	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2018, PE 0207431F, Combat Air Intelligence Systems, Intelligence Mission Data efforts were transferred to the new PE 37577F for 2018, Intelligence Mission Data (IMD), in order to provide better oversight of IMD research and development.

A. Mission Description and Budget Item Justification

In FY 2018, PE 0207431F, Combat Air Intelligence Systems, Intelligence Mission Data efforts were transferred to new for 2018 PE 0307577F, Intelligence Mission Data (IMD), in order to provide better oversight of IMD research and development. (+\$5.074M)
 Intelligence Mission Data efforts in BPAC 675307, Targeting Enterprise Research, fund RDT&E for Operational Reconnaissance Electronic Warfare (EW) Capabilities; Tactical Data Recorder; Advanced Non-cooperative Target Recognition (NCTR) Collection.
 These tools enable the collection, storage, and dissemination of Electronic Warfare Data (EW Data) gathered during operational missions by currently fielded air platforms.
 In addition, the Advanced NCTR collection sensor supports CAF-wide requirements for improved ID capabilities.

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

	FY 2017	FY 2018	FY 2019
Title: Operational Reconnaissance Electronic Warfare Capabilities	-	3.610	2.780
Description: RDT&E efforts to develop recording, storage, and dissemination systems for EW Data gathered during operational missions.			
FY 2018 Plans: RDT&E efforts to develop recording, storage, and dissemination systems for EW Data gathered during operational missions. These include but are not limited to data off-boarding and radar warning receiver performance assessment.			
FY 2019 Plans: Will continue RDT&E efforts to develop recording, storage, and dissemination systems for EW Data gathered during operational missions. These include but are not limited to data off-boarding and radar warning receiver performance assessment.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	Project (Number/Name) 675307 / <i>TARGETING ENTERPRISE RESEARCH</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
FY 2019 decrease due to planned program activities.			
Accomplishments/Planned Programs Subtotals	-	3.610	2.780

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019	FY 2019	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPAF 03 Line Item 832070: <i>Intelligence Comm Equipment</i>	0.000	1.313	0.606	0.000	0.606	0.000	0.514	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy
Capabilities will be developed and integrated onto various platforms using an incremental acquisition approach. The projects will be executed, contracting with appropriate vendor(s) to deliver capability while encouraging competition where possible.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	Project (Number/Name) 675307 / <i>TARGETING ENTERPRISE RESEARCH</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Ops Recce Database Projects	Various	Not specified. : TBD	-	0.000		3.249	Oct 2017	2.502	Oct 2018	-		2.502	Continuing	Continuing	-
Not specified.	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.000		3.249		2.502		-		2.502	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA	Various	Not specified. : TBD	-	0.000		0.361	Oct 2017	0.278	Oct 2018	-		0.278	Continuing	Continuing	-
Subtotal			-	0.000		0.361		0.278		-		0.278	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	3.610	2.780	-	2.780	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	Project (Number/Name) 675307 / <i>TARGETING ENTERPRISE RESEARCH</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
Ops Recce Projects																												
Ops Recce Projects																												
Data Offboarding																												
Data Offboarding - Analysis																												
Data Offboarding Demo																												
Sensor Development																												
Sensor Development - SW Development																												
Sensor Development - Demo and Analysis																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	Project (Number/Name) 675307 / <i>TARGETING ENTERPRISE RESEARCH</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Ops Recce Projects</i>				
Ops Recce Projects	2	2018	4	2020
Data Offboarding	2	2018	4	2020
Data Offboarding - Analysis	2	2018	4	2020
Data Offboarding Demo	4	2019	4	2020
Sensor Development	2	2018	4	2020
Sensor Development - SW Development	2	2018	2	2020
Sensor Development - Demo and Analysis	2	2019	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0308699F / <i>Shared Early Warning (SEW)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	6.154	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.154
674838: <i>Shared Early Warning System</i>	-	6.154	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.154
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY 2018, PE 0308699F, Shared Early Warning (SEW) efforts were transferred to PE 1203699F, Shared Early Warning (SEW) due to the creation of a new Major Force Program for Space. FY 2017 funding is now documented in the exhibits for PE 1203699F.

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	6.366	0.000	0.000	0.000	0.000
Current President's Budget	6.154	0.000	0.000	0.000	0.000
Total Adjustments	-0.212	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	-0.212	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	0.000	15.599	10.219	105.988	0.000	105.988	127.778	112.673	33.507	0.595	0.000	406.359
675248: <i>C-130H Avionics Modernization Program (AMP) Increment 1</i>	0.000	8.421	1.965	5.864	0.000	5.864	0.015	0.000	0.000	0.000	0.000	16.265
675250: <i>C-130H Avionics Modernization Program (AMP) Increment 2</i>	0.000	7.178	8.254	100.124	0.000	100.124	127.763	112.673	33.507	0.595	0.000	390.094

A. Mission Description and Budget Item Justification

The FY19 funding was reduced by \$7.245M from "C-130H Avionics Modernization Program (AMP) Increment 1" to account for the availability of prior year execution balances.

The FY19 funding was reduced by \$20.475M from "C-130H Avionics Modernization Program (AMP) Increment 2" to account for the availability of prior year execution balances.

The C-130H is a medium sized tactical transport aircraft providing multi-purpose theater support throughout the globe. The C-130H fleet supports several diverse Air Force roles, including but not limited to tactical and inter-theater airlift and airdrop support, Arctic resupply, special operations support, aeromedical evacuation, aerial spraying, firefighting duties, and natural disaster and humanitarian relief missions.

C-130H AMP Increment 1 addresses modifications to meet airspace compliance mandates and safety requirements. RDT&E efforts cover design, integration, developmental and operational test, trial kit buy and installation, spares and peculiar support equipment in support of trial kit installs, type 1 training and C-130H aircrew and maintenance training systems and courseware development efforts.

C-130H AMP Increment 2 includes digital avionics upgrades (e.g. Flight Management System, improved navigation), cockpit modernization (e.g. glass/engine flight displays) and resolves select obsolescence and Diminishing Manufacturing Source (DMS) issues. RDT&E efforts will cover software development, design, integration, developmental and operational test, trial kit buy and installation, technical order development validation and verification, spares and peculiar support equipment in support of trial kit installs, Systems Integrated Lab (SIL) development, type 1 training and C-130H aircrew and maintenance training systems and courseware development efforts.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401115F / <i>C-130 Airlift Squadron</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-130H weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	15.599	10.219	133.708	0.000	133.708
Current President's Budget	15.599	10.219	105.988	0.000	105.988
Total Adjustments	0.000	0.000	-27.720	0.000	-27.720
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-27.720	0.000	-27.720

Change Summary Explanation

FY19 includes a reduction of \$7.245M from "C-130H AMP Increment 1" to account for availability of prior year execution balances.

FY19 includes a reduction of \$20.475M from "C-130H AMP Increment 2" to account for availability of prior year execution balances.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron				Project (Number/Name) 675248 / C-130H Avionics Modernization Program (AMP) Increment 1			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675248: C-130H Avionics Modernization Program (AMP) Increment 1	0.000	8.421	1.965	5.864	0.000	5.864	0.015	0.000	0.000	0.000	0.000	16.265
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The C-130H AMP Increment 1 program performs modifications to meet airspace compliance and safety mandates; the mod includes automatic dependent surveillance-broadcast (ADS-B) Out, enhanced Mode S, 8.33 kHz radios, and cockpit voice recorder/digital flight data recorder (CVR/DFDR).

RDT&E efforts include but are not limited to, design, integration, development and operational test, trial kit buy and installation, spares and peculiar support equipment in support of trial kit installs, type 1 training and C-130H aircrew and maintenance training systems and courseware development efforts (including Mode 5 effort for the trainers). Obsolescence and Diminishing Manufacturing Sources (DMS) issues will be resolved with solutions that may include life of type buys or bridge buys. DMS efforts to include removal of end-of-life software/hardware within simulator systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

The C-130H AMP Increment 1 program currently modifies 176 aircraft (166x C-130Hs and 10x LC-130Hs) consisting of H3s, H2.5s, H2s and H1s; and includes 131 Air National Guard aircraft, and 45 Air Force Reserve aircraft. The modification effort will have 4 prototype aircraft representative of variations in the mission designs and required for accomplishment of the Engineering and Manufacturing Development (EMD) phase with the remaining 172 aircraft modified in the production phase.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-130H weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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

	FY 2017	FY 2018	FY 2019
Title: C-130H AMP Increment 1	8.421	1.965	5.864
Description: Executing Engineering and Manufacturing Development (EMD) phase activities.			
FY 2018 Plans: Continuation of EMD activities including design & integration, trial kit assembly and installations on test aircraft, peculiar support equipment and spares buy, technical order development and validation/verification, development and operational testing.			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675248 / C-130H Avionics Modernization Program (AMP) Increment 1

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Complete development portion of Weapon System Trainers (WST).			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funding increased \$3.899M (see above for details)			
Accomplishments/Planned Programs Subtotals	8.421	1.965	5.864

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item C13000: C-130	-	15.500	7.637	-	7.637	7.338	3.846	-	-	0.000	34.321
• APAF 06 Line Item 000999: <i>Initial Spares/Repair Parts</i>	-	2.814	0.616	-	0.616	-	-	-	-	0.000	3.430

Remarks
C-130H AMP Increment 1 Procurement funding begins in FY18.

D. Acquisition Strategy
C-130H AMP Increment 1 acquisition strategy (30 Sept 2015) was to conduct a competitive small business set aside source selection for ADS-B Out and Enhanced Mode S followed by a Federal Acquisition Regulation (FAR) Part 15 contract award. The EMD contract was awarded in 2nd quarter FY17. Preliminary Design Review (PDR) completed 3rd quarter FY17 and Critical Design Review (CDR) completed 4th quarter FY17. Current efforts continue to focus on the execution of Engineering and Manufacturing Development (EMD).

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675248 / C-130H Avionics Modernization Program (AMP) Increment 1
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C-130H AMP Increment 1 EMD Contract	Various	TBD : TBD	-	0.290	Mar 2017	-		-		-		-	0.000	0.290	0.290
C-130H AMP Increment 1 Trainers/Training	TBD	TBD : TBD	-	-		-		5.500	Jan 2019	-		5.500	0.000	5.500	5.500
Subtotal			-	0.290		-		5.500		-		5.500	0.000	5.790	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C-130H AMP Increment 1 Development Flight Test	Various	413 Flight Test Squadron : FL	-	1.057	Jul 2017	0.965	Feb 2018	-		-		-	0.000	2.022	2.022
Subtotal			-	1.057		0.965		-		-		-	0.000	2.022	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C-130H AMP Increment 1 PMA Contractor Services	Various	Not Specified : TBD	-	1.382	Oct 2017	1.000	Mar 2018	0.364	Mar 2019	-		0.364	Continuing	Continuing	2.806
C-130H AMP Increment 1 PMA Government Cost	Various	Not specified. : TBD	-	5.692	Oct 2017	-		-		-		-	0.000	5.692	2.699
Subtotal			-	7.074		1.000		0.364		-		0.364	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	8.421	1.965	5.864	-	5.864	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675248 / C-130H Avionics Modernization Program (AMP) Increment 1

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

C-130H AMP Increment 1																												
Milestone B		■																										
EMD Contract Awards		■																										
Design/Integration				■	■	■	■																					
Preliminary Design Review			■	■																								
Critical Design Review				■	■																							
Developmental Testing						■	■	■																				
Functional Configuration Audit																					■	■						
Milestone C																						■	■					
Force Development Evaluation (FDE)																												
Physical Configuration Audit (PCA)																												
Trainers & Training																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675248 / C-130H Avionics Modernization Program (AMP) Increment 1

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
C-130H AMP Increment 1				
Milestone B	2	2017	2	2017
EMD Contract Awards	2	2017	2	2017
Design/Integration	3	2017	3	2018
Preliminary Design Review	3	2017	3	2017
Critical Design Review	4	2017	4	2017
Developmental Testing	2	2018	3	2018
Functional Configuration Audit	4	2018	4	2018
Milestone C	4	2018	4	2018
Force Development Evaluation (FDE)	3	2018	4	2018
Physical Configuration Audit (PCA)	4	2018	4	2018
Trainers & Training	2	2019	1	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron				Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675250: C-130H Avionics Modernization Program (AMP) Increment 2	0.000	7.178	8.254	100.124	0.000	100.124	127.763	112.673	33.507	0.595	0.000	390.094
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The C-130H AMP Increment 2 upgrades the C-130H fleet with comprehensive avionics and cockpit modernization which replaces aging unreliable equipment and adds combat capability enhancements. It also addresses select obsolescence and Diminishing Manufacturing Sources (DMS) issues with solutions that may include life of type buys or bridge buys. DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards(SCARS)initiative.

RDT&E efforts include but are not limited to software development, design, integration, development and operational test, trial kit buy and installation, technical order development validation and verification, peculiar support equipment and spares in support of trial kit installs, SIL development, type 1 training, and C-130H aircrew and maintenance training systems and courseware development efforts.

The C-130H AMP Increment 2 program currently modifies 176 aircraft (166x C-130Hs and 10x LC-130Hs) consisting of H3s, H2.5s, H2s and H1s; and includes 131 Air National Guard aircraft, and 45 Air Force Reserve aircraft. The modification effort will have 4 prototype aircraft representative of variations in the mission designs and required for accomplishment of the Engineering and Manufacturing Development (EMD) phase with the remaining 172 aircraft modified in the production phase.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-130H weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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

	FY 2017	FY 2018	FY 2019
Title: C-130H Avionics Modernization Program (AMP) Increment 2	7.178	8.254	100.124
Description: Refined and completed the requirements definition phase of the program, followed by integration planning and the Engineering and Manufacturing Development (EMD) phase activities.			
FY 2018 Plans: Continuation of EMD activities to include Source Selection and Milestone B activities.			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Milestone B, contract award and execution of EMD.			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funding increased \$91.870M (see above for details)			
Accomplishments/Planned Programs Subtotals	7.178	8.254	100.124

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item C13000: C-130	-	-	-	-	-	-	61.297	164.524	229.971	Continuing	Continuing
• APAF 06 Line Item 000999: <i>Initial Spares/Repair Parts</i>	-	-	-	-	-	-	6.500	14.827	15.096	Continuing	Continuing

Remarks
The C-130H Avionics Modernization Program (AMP) Increment 2 procurement funding begins in FY21.

D. Acquisition Strategy
C-130H AMP Increment 2 acquisition strategy intends to conduct a full and open competitive source selection followed by contract award. Current efforts are primarily focused on preparation for the Engineering and Manufacturing Development (EMD) source selection. The current schedule reflects EMD contract award in 1st quarter FY19.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0401115F / C-130 Airlift Squadron				675250 / C-130H Avionics Modernization Program (AMP) Increment 2							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C-130H AMP Increment 2 EMD Contract	C/Various	TBD : TBD	-	-		-		95.696	Dec 2018	-		95.696	Continuing	Continuing	358.025
Subtotal			-	-		-		95.696		-		95.696	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C-130H AMP Increment 2 Development Testing	PO	TBD : TBD	-	-		1.100	Sep 2017	0.699	Mar 2019	-		0.699	Continuing	Continuing	22.600
Subtotal			-	-		1.100		0.699		-		0.699	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C-130H AMP Increment 2 PMA Contractor Services	Various	Not Specified : TBD	-	7.078	Feb 2017	7.054	Mar 2018	3.629		-		3.629	Continuing	Continuing	31.700
C-130H AMP Increment 2 PMA - Government Cost	Various	Not Specified : TBD	-	0.100	Oct 2016	0.100	Oct 2017	0.100	Nov 2018	-		0.100	0.000	0.300	0.300
Subtotal			-	7.178		7.154		3.729		-		3.729	Continuing	Continuing	N/A
Project Cost Totals			-	7.178		8.254		100.124		-		100.124	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

C-130H AMP Increment 2																												
Milestone B																												
EMD Contract Award																												
Design/Integration																												
Preliminary Design Review																												
Critical Design Review																												
Design/Integration Training Development																												
Development Testing																												
Functional Configuration Audit																												
Milestone C																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
C-130H AMP Increment 2				
Milestone B	1	2019	1	2019
EMD Contract Award	1	2019	1	2019
Design/Integration	1	2019	3	2021
Preliminary Design Review	3	2019	3	2019
Critical Design Review	4	2019	4	2019
Design/Integration Training Development	2	2019	3	2021
Development Testing	3	2020	1	2023
Functional Configuration Audit	3	2021	3	2021
Milestone C	3	2021	3	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	65.057	22.758	25.071	0.000	25.071	0.000	0.000	0.000	0.000	0.000	112.886
675358: <i>C-5 Mission Computer-Mission Sys Equip-Weather Radar</i>	-	11.642	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.642
675359: <i>C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)</i>	-	53.415	22.758	25.071	0.000	25.071	0.000	0.000	0.000	0.000	0.000	101.244

A. Mission Description and Budget Item Justification

C-5 communication, navigation, surveillance/air traffic management (CNS/ATM) program is a comprehensive effort to ensure appropriate CNS/ATM system design architectures are developed and equipment is installed on the C-5 to allow aircraft operation in accordance with civil airspace access mandates for both the US national airspace system (NAS) and international civil airspace. Also, the program will add equipment to meet outstanding National Security Agency mandates for encryption of voice communications. The C-5 CNS/ATM program ensures system standardization and interoperability with other DoD systems to the maximum extent possible and directly supports airworthiness certification of the C-5. CNS/ATM requirements include, but are not limited to, capabilities such as automatic dependence surveillance-broadcast out (ADS-B Out), identification friend or foe (IFF) mode 5, satellite communication equipment replacement, and beyond line-of-sight voice radio replacement. It is anticipated equipment will be predominately commercial off-the-shelf or non-developmental items.

The current ARC-210 radio for VHF voice communications is facing diminishing manufacturing source (DMS) supply issues and additionally will no longer be capable of providing secure voice communications due to the development of new crypto algorithms. Addition of next generation ARC-210 radios and associated cryptologic equipment will enable the C-5 to meet NSA mandates for secure communications and allow aircrews to continue to communicate securely over VHF, UHF, HF, or MILSATCOM.

The current generation of satellites that support services used on the C-5 to provide oceanic controller/pilot data link communications (CPDLCs) to air traffic control and aircraft communications addressing and reporting system (ACARS) beyond-line-of-sight command and control messages will no longer be functional after 2016. The next generation of satellites will accommodate legacy C-5 SATCOM equipment for an interim period of time to allow for integration of upgraded SATCOM equipment compatible with this satellite constellation. Without this modification, the C-5 will be unable to fly oceanic tracks and will not be able to meet aircraft separation distance requirements for civil airspace access.

Automatic Dependent Surveillance-Broadcast Out (ADS-B Out) is a next generation surveillance technology that transitions key aspects of air traffic control from terrestrial based technologies to satellite enabled technologies to provide controllers a more accurate picture of aircraft positioning. ADS-B Out will allow aircraft to provide continuous broadcast of aircraft position to both controllers and other aircraft equipped with ADS-B In capable avionics. International mandates for ADS-B Out for civil airspace access call for equipage by 2020.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-5 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	66.146	22.758	21.803	0.000	21.803
Current President's Budget	65.057	22.758	25.071	0.000	25.071
Total Adjustments	-1.089	0.000	3.268	0.000	3.268
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-1.089	0.000	3.268	0.000	3.268

Change Summary Explanation

FY17: \$1.089M due to Small Business Innovation Resource (SIBR)

FY19: \$3.268M due to an increase to CNS/ATM requirements

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)				Project (Number/Name) 675358 / C-5 Mission Computer-Mission Sys Equip-Weather Radar			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675358: C-5 Mission Computer-Mission Sys Equip-Weather Radar	-	11.642	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.642
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The C-5 core mission computer (CMC)/weather radar (WxRdr) program is a comprehensive sustainment modification to mitigate the obsolescence of the current CMC and WxRdr. This effort centers around modifying the current mission computer to obtain sufficient capacity/capability to support integration of new system capabilities with margin for growth by upgrading module cards and correcting any mission essential deficiencies identified during development. Also, the effort includes replacement of the weather radar with a commercial off-the-shelf weather radar. Mission systems equipment includes, but is not limited to, a redesign of the C-5 lavatory system. Examples of other mission systems equipment include troop seats, crew entry door and ladder, and interior trim.

The current C-5 CMC has reached maximum capacity and cannot integrate required aircraft systems and capabilities to include the weather radar; flight management system (FMS); and communication, navigation, surveillance (CNS)/air traffic management (ATM) requirements. These requirements include capabilities such as the automatic dependent surveillance-broadcast out (ADS-B Out), and identification, friend or foe (IFF) mode 5. The new CMC will allow for current and future throughput growth of additional processing requirements to meet calendar year 2020 CNS/ATM mandates.

The modification helps to maintain aircraft availability as the new weather radar replaces the current APS-133 weather radar system, which is experiencing severe diminishing manufacturing source (DMS) issues. Failure to upgrade the CMC to support calendar year 2020 CNS/ATM mandates and a new weather radar will create a significant operational impact. DMS issues will be resolved to support continued production and installation of requirements for the C-5 fleet. Further, DMS issues will be resolved to support continued operations through studies, bridge buys, life-of-type buys, development, and redesign efforts.

The C-5 mission systems equipment (MSE) program updates the lavatory system. The current lavatory system suffers inoperability and leakage of liquid sodium hypochlorite causing severe corrosion and burnt wires in the landing gear control panels. A redesign of the MSE will increase safety, mitigate risk, and reduce man-hours required to repair extensive damage.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: C-5 Mission Computer / Weather Radar Program	11.642	0.000	0.000	0.000	0.000
Description: Core mission computer modification and weather radar replacement will enable the C-5 to achieve wartime mission requirements by maintaining fleet availability (mission capable rate) and program management administration (PMA).					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)	Project (Number/Name) 675358 / C-5 Mission Computer-Mission Sys Equip-Weather Radar

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: Program complete.					
FY 2019 Base Plans: Program complete.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Program complete.					
Accomplishments/Planned Programs Subtotals	11.642	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item C00500: C-5	20.860	30.463	38.289	0.000	38.289	36.406	5.040	7.603	0.840	0.000	139.501
• APAF 06 Line Item 000999: Initial Spares	1.438	2.172	1.966	0.000	1.966	0.813	0.000	0.000	0.000	0.000	6.389
• APAF 07 Line Item 000075: Other Production	0.602	5.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.669

Remarks

D. Acquisition Strategy
 The acquisition strategy for this project considered every opportunity to use commercial components to modernize the C-5 core mission computer and weather radar and maintain aircraft availability in support of mobility missions worldwide. The strategy is for the prime contractor, Lockheed Martin Aero (LMA), to procure the core mission computer cards and weather radar, integrate and test those components, and install on two (2) EMD aircraft. The sole-source contract is predominately CPIF (Cost Plus Incentive Fee) with some FFP (Firm Fixed Price) elements.

Mission Systems Equipment program: The mission systems equipment redesign requires RDT&E funding for commercial off-the-shelf (COTS) proofing. Funds are required for validation and verification of the lavatory design and installation. The Mission Systems Equipment contract method was competitive through the Defense Technical Information Center (DTIC). Wyle Science, Technical, and Engineering Group was the selected source, and the contract type is Cost Plus Fixed Fee (CPFF).

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i>	Project (Number/Name) 675358 / <i>C-5 Mission Computer-Mission Sys Equip-Weather Radar</i>

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0401119F / C-5 Airlift Squadrons (IF)				675358 / C-5 Mission Computer-Mission Sys Equip-Weather Radar							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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-5 Core Mission Computer / Weather Radar Program Hardware/ Software Design, Development, Integration, Data Management, Technical Data Rights, Systems Engineering, and Program Management	SS/ Various	Lockheed Martin Aero : Marietta, GA	-	5.389	May 2017	0.000		0.000		0.000		0.000	Continuing	Continuing	82.189
Subtotal			-	5.389		0.000		0.000		0.000		0.000	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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-5 Core Mission Computer / Weather Radar Program Trainers & Simulators	SS/ Various	Lockheed Martin Aero : Marietta, GA	-	4.506	May 2017	0.000		0.000		0.000		0.000	Continuing	Continuing	0.000
C-5 Core Mission Computer / Weather Radar Program Other Govt Costs (OGC)	Various	Various : TBD	-	0.459	Aug 2017	0.000		0.000		0.000		0.000	Continuing	Continuing	15.099
Subtotal			-	4.965		0.000		0.000		0.000		0.000	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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-5 Core Mission Computer / Weather Radar Program Developmental	Various	Various : NV	-	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	7.452

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)	Project (Number/Name) 675358 / C-5 Mission Computer-Mission Sys Equip-Weather Radar
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Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
and Operational Test and Evaluation															
Subtotal			-	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C-5 Core Mission Computer / Weather Radar Program PMA Government Costs	Various	AFLCMC/WLS : Dayton, OH	-	1.288	Jun 2017	0.000		0.000		0.000		0.000	Continuing	Continuing	9.571
Subtotal			-	1.288		0.000		0.000		0.000		0.000	Continuing	Continuing	N/A

			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	11.642		0.000		0.000		0.000		0.000	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force			Date: February 2018					
Appropriation/Budget Activity 3600 / 7			R-1 Program Element (Number/Name) PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i>			Project (Number/Name) 675358 / <i>C-5 Mission Computer-Mission Sys Equip-Weather Radar</i>		

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>No project title.</i>																												
Training Development																												
Milestone C																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)	Project (Number/Name) 675358 / C-5 Mission Computer-Mission Sys Equip-Weather Radar

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
Training Development	1	2017	2	2019
Milestone C	1	2019	1	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)	Project (Number/Name) 675359 / C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675359: C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)	-	53.415	22.758	25.071	0.000	25.071	0.000	0.000	0.000	0.000	0.000	101.244
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

C-5 communication, navigation, surveillance/air traffic management (CNS/ATM) program is a comprehensive effort to ensure appropriate CNS/ATM system design architectures are developed and equipment is installed on the C-5 to allow aircraft operation in accordance with civil airspace access mandates for both the US national airspace system (NAS) and international civil airspace. Also, the program will add equipment to meet outstanding National Security Agency mandates for encryption of voice communications. The C-5 CNS/ATM program ensures system standardization and interoperability with other DoD systems to the maximum extent possible and directly supports airworthiness certification of the C-5. CNS/ATM requirements include, but are not limited to, capabilities such as automatic dependence surveillance-broadcast out (ADS-B Out), identification friend or foe (IFF) mode 5, satellite communication equipment replacement, and beyond line-of-sight voice radio replacement. It is anticipated equipment will be predominately commercial off-the-shelf or non-developmental items.

The current ARC-210 radio for VHF voice communications is facing diminishing manufacturing source (DMS) supply issues and additionally will no longer be capable of providing secure voice communications due to the development of new crypto algorithms. Addition of next generation ARC-210 radios and associated cryptologic equipment will enable the C-5 to meet NSA mandates for secure communications and allow aircrews to continue to communicate securely over VHF, UHF, HF, or MILSATCOM.

The current generation of satellites that support services used on the C-5 to provide oceanic controller/pilot data link communications (CPDLCs) to air traffic control and aircraft communications addressing and reporting system (ACARS) beyond-line-of-sight command and control messages will no longer be functional after 2016. The next generation of satellites will accommodate legacy C-5 SATCOM equipment for an interim period of time to allow for integration of upgraded SATCOM equipment compatible with this satellite constellation. Without this modification, the C-5 will be unable to fly oceanic tracks and will not be able to meet aircraft separation distance requirements for civil airspace access.

Automatic Dependent Surveillance-Broadcast Out (ADS-B Out) is a next generation surveillance technology that transitions key aspects of air traffic control from terrestrial based technologies to satellite enabled technologies to provide controllers a more accurate picture of aircraft positioning. ADS-B Out will allow aircraft to provide continuous broadcast of aircraft position to both controllers and other aircraft equipped with ADS-B In capable avionics. International mandates for ADS-B Out for civil airspace access call for equipage by 2020.

Available funds in this modification are used for program management administration, change orders, and other government costs such as travel, directorate support, government furnished equipment (GFE), and over and above costs.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)	Project (Number/Name) 675359 / C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: CNS/ATM</p> <p>Description: C-5 CNS/ATM program will install multiple aircraft avionics equipment pieces to enable the C-5 to meet multiple NSA encryption and international/national airspace access mandates while mitigating diminishing manufacturing source issues.</p> <p>FY 2018 Plans: CNS/ATM system design supports incorporation of ARC-210 Gen V radios, SATCOM replacement equipment, ADS-B Out, and IFF mode 5 into the C-5. Efforts will include software design as well as hardware analysis for compatibility with existing C-5 system architecture. Ensure test cases are prepared and ready to support the start of qualification testing.</p> <p>FY18 funding supports formal qualification testing, software integration, equipment installation, and functional check of hardware.</p> <p>FY 2019 Base Plans: CNS/ATM system design supports incorporation of ARC-210 Gen V radios, SATCOM replacement equipment, ADS-B Out, and IFF mode 5 into the C-5. Efforts will include software design as well as hardware analysis for compatibility with existing C-5 system architecture. Ensure test cases are prepared and ready to support the start of qualification testing.</p> <p>FY19 funding supports completion of Development Test & Evaluation (DT&E), Operational Test & Evaluation (OT&E), and delivery of Tech Data Package (TDP).</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY19: Increase from prior year due to additional CNS/ATM requirements needed in FY19.</p>	53.415	22.758	25.071	-	25.071
Accomplishments/Planned Programs Subtotals	53.415	22.758	25.071	-	25.071

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

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item C00500: C-5	0.000	0.000	28.613	0.000	28.613	26.090	20.269	23.377	35.897	0.000	134.246

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)	Project (Number/Name) 675359 / C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)

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

Line Item	FY 2017	FY 2018	FY 2019	FY 2019	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Cost To	Total Cost
			Base	OCO	Total					Complete	
• APAF 06 Line Item 000999: <i>Initial Spares</i>	0.558	0.000	0.789	0.000	0.789	0.754	7.979	0.000	0.000	0.000	10.080
• APAF 07 Line Item 000075: <i>Other Production</i>	0.000	0.000	0.000	0.000	0.000	3.028	3.076	3.179	3.237	0.000	12.520

Remarks

D. Acquisition Strategy

CNS/ATM program: Engineering and Manufacturing Development (EMD) for incorporation of the ARC-210 Gen V radio, SATCOM replacement equipment, ADS-B Out, and IFF mode 5 into the C-5 began in Dec 2016. The acquisition strategy for this program will consider every opportunity to use commercial components to modernize the C-5 CNS/ATM equipment to meet CY2020 mandates for global civil airspace access. The strategy is for the prime contractor, Lockheed Martin Aero (LMA), to procure CNS/ATM equipment, develop software, test and integrate those components, and install on two (2) EMD aircraft. The equipment integration will require RDT&E funding for commercial off-the-shelf and non-developmental item proofing.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)					Project (Number/Name) 675359 / C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)				

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CNS/ATM hardware/ software design, development, integration, data management, technical data rights, systems engineering, program management, and spares	Various	Lockheed Martin Aero : Marietta, GA	-	43.911	Dec 2016	14.993	Feb 2018	17.976	Dec 2018	0.000		17.976	Continuing	Continuing	90.648
Subtotal			-	43.911		14.993		17.976		0.000		17.976	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CNS/ATM Other Government Cost	Various	AFLCMC/WLS : Dayton, OH	-	0.950	Feb 2017	4.315	Dec 2017	4.586	Feb 2019	0.000		4.586	Continuing	Continuing	4.078
CNS/ATM Training	Various	Lockheed Martin Aero : Marietta, GA	-	0.059	Aug 2017	0.052	Feb 2018	0.039	Dec 2018	0.000		0.039	Continuing	Continuing	0.300
CNS/ATM Peculiar Support Equipment	Various	Lockheed Martin Aero : Marietta, GA	-	-		0.000	Feb 2018	0.009	Feb 2019	0.000		0.009	Continuing	Continuing	0.018
CNS/ATM Trainers & Simulators	Various	Various : Various	-	1.901	Dec 2016	0.576	Feb 2018	0.457	Dec 2018	0.000		0.457	Continuing	Continuing	3.221
Subtotal			-	2.910		4.943		5.091		0.000		5.091	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CNS/ATM System Test/ Qual/SIL	Various	Lockheed Martin Aero : Marietta, GA	-	5.938	Dec 2016	0.617	Feb 2018	0.483	Dec 2018	0.000		0.483	Continuing	Continuing	8.662

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force	Date: February 2018	
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)	Project (Number/Name) 675359 / C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CNS/ATM System Test - Government	Various	Edwards AFB : CA	-	0.295	Feb 2017	2.000	Feb 2018	1.304	Dec 2018	0.000		1.304	Continuing	Continuing	4.250
Subtotal			-	6.233		2.617		1.787		0.000		1.787	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CNS/ATM Program Management Administration	Various	AFLCMC/WLS : Dayton, OH	-	0.099	Aug 2017	0.041	Jun 2018	0.041	Jun 2019	0.000		0.041	Continuing	Continuing	0.949
CNS/ATM Travel	Various	AFLCMC/WLS : Dayton, OH	-	0.262	Oct 2016	0.164	Oct 2017	0.176	Oct 2018	0.000		0.176	Continuing	Continuing	1.213
Subtotal			-	0.361		0.205		0.217		0.000		0.217	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
	Project Cost Totals		-	53.415	22.758	25.071	0.000	25.071	Continuing	Continuing

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)	Project (Number/Name) 675359 / C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

No project title.	
Engineering, Manufacturing, and Development (EMD)	
EMD Contract Awards	
Preliminary Design Review	
Critical Design Review	
Development Test and Evaluation	
Operational Test and Evaluation	
Milestone C	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF)	Project (Number/Name) 675359 / C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
No project title.				
Engineering, Manufacturing, and Development (EMD)	1	2017	4	2019
EMD Contract Awards	1	2017	1	2017
Preliminary Design Review	4	2017	4	2017
Critical Design Review	4	2017	4	2017
Development Test and Evaluation	4	2018	3	2019
Operational Test and Evaluation	4	2019	4	2019
Milestone C	3	2019	3	2019

Note

CNS/ATM will support completion of formal qualification testing, installation and functional check of hardware, design and development of aircrew and maintenance training system modification, and developmental test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	12.021	34.287	48.299	0.000	48.299	10.505	7.266	9.631	25.632	Continuing	Continuing
672569: <i>C-17A Aircraft</i>	-	12.021	34.287	48.299	0.000	48.299	10.505	7.266	9.631	25.632	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The C-17 can perform the entire spectrum of airlift missions and is specifically designed to operate effectively and efficiently in both strategic and theater environments. Airlift provides essential flexibility when responding to contingencies on short notice anywhere in the world. It is a major element of America's national security strategy and constitutes the most responsive means of meeting mobility requirements. Specific tasks associated with the airlift mission include deployment, employment, sustaining support, retrograde, and combat redeployment. Not only can the C-17 deliver outsize cargo to austere tactical environments, but it also reduces ground time during air/land operations. The C-17 will perform its airlift mission well into this century.

C-17 RDT&E funding efforts support, but are not limited to: Aircraft performance improvements and airspace access mandates (i.e., Communications/Navigation Improvements); flight test activities and facilities; development of solutions for obsolescence and safety of flight issues; systems engineering/program management administration support; support for avionics laboratories; software development, test and integration; block development/change management; proposal preparation for new projects; cost estimating and engineering/acquisition studies not related to requirements generation.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-17 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

In FY19 the efforts are: Roll-On Conference Capsule (ROCC), Fire Filter Mitigation, Beyond Line of Sight (BLOS), Real Time In Cockpit (RTIC), and Fixed Installation Satellite Antenna (FISA), which will be covered in more detail on subsequent pages.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401130F / C-17 Aircraft (IF)
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	12.430	34.287	49.547	0.000	49.547
Current President's Budget	12.021	34.287	48.299	0.000	48.299
Total Adjustments	-0.409	0.000	-1.248	0.000	-1.248
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.409	0.000			
• Other Adjustments	0.000	0.000	-1.248	0.000	-1.248

Change Summary Explanation

The FY19 reduction is due to program execution and inflation adjustments.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
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<p>Title: Replacement Heads-up Display</p> <p>Description: The RHUD project develops, integrates and installs a new HUD providing supportability/improved reliability & maintainability while providing growth to support future planned capability improvements. RHUD was removed from the Common Configuration (CC) major thrust to allow management greater program visibility and oversight.</p> <p>FY 2018 Plans: Completes RHUD RDT&E effort. FY18 funds are for risk reduction support for second flight test and associated engineering design adjustments. Support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall program cost.</p> <p>FY 2019 Plans: RDT&E portion of the program completed in FY18</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to RDT&E portion of the program being completed in FY18.</p>	5.492	4.370	0.000
<p>Title: Filter Fire Mitigation (formerly referred to as Onboard Inert Gas Generation System II Filter Fire)</p>	-	-	0.862

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Description: Filter Fire Mitigation is a program that redesigns the OBIGGS II shutoff valve and makes software changes to the Warning and Caution Computer (WCC). It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p> <p>FY 2019 Plans: Filter Fire program will be performing flight test in FY 2019.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to the development effort for Filter Fire being accomplished using FY 2016 funding. There was no FY 2017 or FY 2018 funding for this program and the FY 2019 funding is for flight test.</p>				
<p>Title: Beyond Line of Sight</p> <p>Description: Beyond Line-Of-Sight (BLOS) modernization modification is a development, integration, and retrofit program for C-17 communications. BLOS modifies and improves hardware and software for voice and data communications on the C-17. The program will modify both integrated aircraft avionics as well as back-end mission communications and could utilize both military and commercial satellite systems to extend communication ranges. The current efforts include but are not limited to Aero-I/Aero-H modernizations and Comm Mod. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p> <p>FY 2018 Plans: BLOS efforts will include work on: Satellite communications; both Aero-I/Aero-H multi-channel voice and data upgrades; next-generation military GPS receiver (M-Code); upgrades for Ku/Ka band satellite communications; and upgrades to the ARC-210 radio. It will include support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p> <p>FY 2019 Plans: In FY 2019, BLOS will be in the middle of development for the Aero I/H portion of the program and adding development for the Comm Mod portion.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to an updated bottoms up estimate that took into account changes to the acquisition schedule and updated pricing data.</p>		6.529	16.592	38.750
<p>Title: Roll-On Conference Capsule</p> <p>Description: ROCC is a program to replace current Silver Bullet Capsules and includes development/design. Effort will allow US Government senior leaders and staff to work, communicate, and rest in airworthy capsules during long range missions into threat</p>		-	13.000	8.362

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>areas, with the protection of the C-17A Globemaster III's defensive systems capability. Specifically, the development phase of the ROCC, (formerly referred to as the Silver Bullet Replacement (SBR) program) will require non-recurring engineering, manufacture of the first article and testing. Support for flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall cost.</p> <p>FY 2018 Plans: ROCC development/design begins in FY18 and completes in FY20. It will include flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p> <p>FY 2019 Plans: Continue development and testing for the ROCC program.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to more up-front funding being needed given projected small business award.</p>				
<p>Title: Real Time In Cockpit (RTIC)</p> <p>Description: RTIC Development of a Link-16 capability (air to air data transfer) and implementation/integration of upgraded ARC-210 radios. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p> <p>FY 2018 Plans: RTIC Development of a Link-16 capability (air to air data transfer) and implementation/integration of upgraded ARC-210 radios. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p> <p>FY 2019 Plans: Begin RTIC development effort including support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p>		-	0.125	0.125
<p>Title: Fixed Installation Satellite Antenna (FISA)</p> <p>Description: FISA includes a SATCOM system which enables high bandwidth satellite communications, allowing for greater in flight situational awareness. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p> <p>FY 2018 Plans:</p>		-	0.200	0.200

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401130F / C-17 Aircraft (IF)
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Begin second-generation FISA development effort including support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.			
FY 2019 Plans: Continue second-generation FISA development effort including support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.			
Accomplishments/Planned Programs Subtotals	12.021	34.287	48.299

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item C01700: C-17A	17.455	152.372	102.121	-	102.121	129.637	99.740	96.030	97.775	Continuing	Continuing
• APAF 07 Line Item C01700: C-17A	83.859	12.028	10.114	-	10.114	0.000	0.000	0.001	0.000	0.000	106.002
• APAF 06 Line Item 000999: <i>Initial Spares/Repair Parts</i>	20.400	73.248	12.850	-	12.850	15.831	19.547	20.185	20.552	0.000	182.613
• APAF 03 Line Item 834070: <i>Mobility Command and Control</i>	-	-	-	-	-	10.817	-	-	-	0.000	10.817

Remarks

E. Acquisition Strategy

The C-17 Acquisition Strategy is based on several separate contracts to support the entire scope of the C-17 weapon system. Globemaster Operational Enhancement (GLOBE) is an indefinite delivery, indefinite quantity (IDIQ) contract used to purchase services and research articles (through delivery orders) to support all RDT&E with our prime contractor. In addition, purchase orders are used to support flight test activities within the projects at Edwards AFB. Additional contract vehicles could be utilized as required.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401130F / C-17 Aircraft (IF)	Project (Number/Name) 672569 / C-17A Aircraft
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C-17 RHUD- Replacement Heads Up Display	Various	Boeing : Long Beach, CA	-	5.492	Nov 2016	4.370	Nov 2017	-		-		-	Continuing	Continuing	23.983
C-17 Filter Fire Mitigation- (formerly referred to as Onboard Inert Gas Generating System II Filter Fire)	Various	Boeing : Long Beach, CA	-	-		-		0.862	May 2019	-		0.862	Continuing	Continuing	0.878
C-17 BLOS- Beyond Line of Sight	Various	Boeing : Long Beach, CA	-	6.529	Jul 2017	16.592	Aug 2018	22.282	Dec 2018	-		22.282	Continuing	Continuing	-
C-17 BLOS- Comm Mod	Various	Boeing : Long Beach, CA	-	-		-		16.468	Dec 2018	-		16.468	Continuing	Continuing	-
C-17 ROCC- Roll -On Conference Capsule (Formerly referred to as Silver Bullet Replacement)	C/FFP	Small Business : TBD	-	-		13.000	Nov 2018	8.362	Jun 2019	-		8.362	Continuing	Continuing	-
C-17 Real Time In Cockpit (RTIC)	C/TBD	TBD : TBD	-	-		0.125	Jun 2018	0.125	Jun 2019	-		0.125	Continuing	Continuing	-
C-17 Common Configuration- Fixed Installation Satellite Antenna (FISA)	Various	Boeing : Long Beach, CA	-	-		0.200	Jun 2018	0.200	Jun 2019	-		0.200	Continuing	Continuing	-
Subtotal			-	12.021		34.287		48.299		-		48.299	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	12.021	34.287	48.299	-	48.299	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401130F / C-17 Aircraft (IF)	Project (Number/Name) 672569 / C-17A Aircraft
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C-17																												
Beyond Line Of Sight (BLOS) (ACAT III)																												
- Aero-I/Aero-H																												
- Comm Mod																												
Filter Fire Mitigation (ACAT III) (formerly referred to as OBIGGS II Filter Fire- HW Fix)																												
RHUD (ACAT III)																												
Roll-On Conference Capsules (ROCC) (formerly referred to as Silver Bullet Replacement)																												
Real Time In Cockpit (RTIC)																												
Fixed Installation Satellite Antenna (FISA)																												
Studies and Modifications																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401130F / C-17 Aircraft (IF)	Project (Number/Name) 672569 / C-17A Aircraft
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
C-17				
Beyond Line Of Sight (BLOS) (ACAT III)	4	2018	4	2021
- Aero-I/Aero-H	4	2018	4	2021
- Comm Mod	4	2018	4	2021
Filter Fire Mitigation (ACAT III) (formerly referred to as OBIGGS II Filter Fire- HW Fix)	2	2017	3	2019
RHUD (ACAT III)	1	2017	3	2018
Roll-On Conference Capsules (ROCC) (formerly referred to as Silver Bullet Replacement)	4	2018	4	2020
Real Time In Cockpit (RTIC)	3	2018	3	2019
Fixed Installation Satellite Antenna (FISA)	3	2018	3	2019
Studies and Modifications	1	2022	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401132F / C-130J Program
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	273.710	16.199	26.821	15.409	0.000	15.409	2.640	0.666	0.679	0.691	29.700	366.515
675061: C-130J	273.710	16.199	26.821	15.409	0.000	15.409	2.640	0.666	0.679	0.691	29.700	366.515
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 220

A. Mission Description and Budget Item Justification

The C-130J is a medium-sized transport aircraft capable of performing a variety of combat delivery (tactical airlift) operations across a broad range of mission environments. The C-130J aircraft, with its extended (by 15 feet) fuselage, provides additional cargo carrying capacity for the USAF combat delivery mission compared with legacy C-130E/H and the C-130J (short). Special mission variants of the C-130J conduct airborne psychological operations (EC-130J), weather reconnaissance (WC-130J), search and rescue (HC-130J), and special operations (MC-130J and AC-130J). All aircraft variants must be capable of worldwide operations.

This project provides RDT&E funding for required capabilities that are grouped as "Block" upgrades or "Capability" updates. Content/requirements for block modifications is documented in International Program Directives (IPDs) as determined in the Cooperative Systems and Software Upgrade Requirements Management (COSSURM) process. This project will integrate the common-core capabilities developed under this program into the HC-130J, MC-130J and AC-130J.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-130J weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401132F / C-130J Program
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	16.776	26.821	10.825	0.000	10.825
Current President's Budget	16.199	26.821	15.409	0.000	15.409
Total Adjustments	-0.577	0.000	4.584	0.000	4.584
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.577	0.000			
• Other Adjustments	0.000	0.000	4.584	0.000	4.584

Change Summary Explanation

The FY 2019 funding request was increased by \$4.584 million to fund the non-recurring engineering required to meet the January 2020 ADS-B Out mandate.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Cooperative Systems and Software Upgrade Requirements Management (COSSURM)	0.280	0.200	0.260
Description: COSSURM - Collects potential requirements for inclusion into a Block Upgrade or Capability Management Update.			
FY 2018 Plans: Continuation of CMU COSSURM requirements review and analysis.			
FY 2019 Plans: Continuation of COSSURM requirements review and analysis.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY18 requirement funded jointly by USAF and Navy. FY19 requirement will be funded by USAF only.			
Title: Block 8.1	14.112	24.890	12.859
Description: BLOCK 8.1 Adds Identification Friend or Foe (IFF) Mode 5, Civil Data Link, Automatic Dependent Surveillance - Broadcast (ADS-B), Air Traffic Services (ATS)/Airline Operational Control (AOC) Data Link for Line of Sight (LOS) and Beyond Line of Sight (BLOS) communication, enhanced covert lighting, improved Public Address(PA) System, and Approach Procedure with Vertical guidance (APV)/ Localizer Performance with Vertical guidance (LPV) approach capability. Several avionics platforms are impacted that include Flight Management System Software, Mission Computer Software, Bus Interface Unit software, and Maintenance Management System.			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0401132F / C-130J Program		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>FY 2018 Plans: Continue the development of the Block 8.1 ADS-B Out.</p> <p>FY 2019 Plans: Continue development of the Block 8.1 ADS-B Out to meet the FY2020 FAA Mandate</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY18 requirement is higher than FY19 due to the phasing of the effort. Effort is expected to ramp down in FY19 toward conclusion.</p>				
<p>Title: Test & Evaluation</p> <p>Description: Test and evaluation planning, conduct, and support for developmental, and operational testing.</p> <p>FY 2018 Plans: Continuation of test planning and support for follow on TKIs.</p> <p>FY 2019 Plans: There are currently no new testing requirements for FY19.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Currently there are no new requirements for testing in FY19.</p>		0.950	0.436	0.000
<p>Title: Capability Management Update (CMU)</p> <p>Description: CMU's refine Block upgrade modifications that improve operational effectiveness, satisfy emerging operational needs, and enhance human machine interface (HMI) to allow a workload that meets human factors standards and maintains the present crew complement. Avionics software impacted includes Flight Management System (FMS) Software, Mission Computer (MC) Software, Bus Interface Unit (BIU) software, and Maintenance Management System.</p> <p>FY 2018 Plans: Continuation of Common Core development.</p> <p>FY 2019 Plans: Continuation of Common Core Development, correcting deficiencies and developing enhancements.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increase in requirement for FY19 based on identified deficiencies.</p>		0.283	0.385	1.563
<p>Title: Other AMC Initiatives</p>		0.574	0.910	0.727

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401132F / C-130J Program
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>Description: C-130J initiatives/studies.</p> <p>FY 2018 Plans: Complete Wheel/Brake System Improvement (WBSI) Brake Energy/Takeoff Landing Data (TOLD) Data Collection. Mission Planning software studies and updates continue.</p> <p>FY 2019 Plans: Mission Planning software and updates continue.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY18 requirement is higher than FY19 due to the phasing of the effort. Effort is expected to ramp down in FY19 toward conclusion.</p>			
Accomplishments/Planned Programs Subtotals	16.199	26.821	15.409

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item C1300J: C-130J Mods	89.424	171.230	132.045	-	132.045	144.028	114.338	164.002	166.983	946.882	1,928.932
• APAF 05 Line Item C130J0: C-130J	0.000	10.727	10.831	-	10.831	12.158	12.392	12.667	12.897	0.000	71.672
• APAF 02 Line Item C130J0: C-130J	378.654	159.708	35.858	-	35.858	39.335	37.182	8.593	38.671	1,612.013	2,310.014

Remarks

E. Acquisition Strategy
 The C-130J aircraft will be modified using a "block upgrade" strategy. The CNS/ATM, navigation safety requirement will initially, be met in three block upgrades. Block 6.0 development was funded from FY03-07. Block 7.0 started in FY07, and Block 8.1 which began in FY12. Subsequently, C-130J modifications will be grouped into smaller CNS/ATM updates known as Capability Management Updates (CMU). Other AMC initiatives are upgrades to hardware and software that have arisen after the formation of the block upgrades and CMUs.

In order to better manage the fleet and to avoid having to simultaneously support three separate aircraft configurations (Block 6, Block 7 and Block 8.1) the USAF has decided to combine the Block 7 and Block 8.1 mods. This will allow the aircraft and trainers to only have to be modified one time.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force Date: February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401132F / C-130J Program
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The proportion of CNS/ATM and navigation safety requirements allocated to Blocks 6.0 through 8.1 was determined via a design trade study conducted by Lockheed Martin (the C-130J prime contractor) and verified by the C-130J system program office and AMC. The development costs are being shared via a global Project Arrangement (PA) by the United States (USAF, USMC, USCG), the United Kingdom, Italy, Australia, Denmark, Canada, and Norway. An international program office (IPO), with USAF lead (Wright Patterson AFB, OH), manages the block upgrades development and CMU efforts. Retrofit of a Block on the aircraft is the responsibility of each nation.

In order to meet the Federal Aviation Administration 2020 mandate the USAF will install the Block 8.1 ADS-B Out/Mode V IFF solution on all C-130J variants not scheduled to receive Block 8.1 by January 2020. This is Mod #8649, ADS-B Out Acceleration. All C-130Js will still require Block 8.1.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401132F / C-130J Program	Project (Number/Name) 675061 / C-130J
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C-130J Block 7.0, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH	SS/CPAF	Lockheed Martin Aeronautics : Marietta, GA	130.251	-		-		-		-		-	0.000	130.251	129.503
C-130J Block 8.1, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH	SS/CPAF	Lockheed Martin Information Sysyems : Marietta, GA	68.512	12.107	Apr 2017	23.016	Apr 2018	11.070	Feb 2019	-		11.070	17.076	131.781	180.030
C-130J Capability Management Upgrades (CMU), Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH	SS/CPAF	Lockheed Martin Aero : Marietta, GA	0.220	0.283	May 2017	0.385	May 2018	1.563	Jan 2019	-		1.563	10.706	13.157	6.480
C-130J AMC-Initiatives, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH	SS/CPAF	Lockheed Martin Aero : Marietta, GA	50.451	0.574	Feb 2017	0.910	Feb 2018	0.727	Feb 2019	-		0.727	4.629	57.291	14.730
Subtotal			249.434	12.964		24.311		13.360		-		13.360	32.411	332.480	N/A

Remarks
C-130J Block 8.1 Total Cost is below Target Value of Contract to account for the expected cost reduction initiatives on this Cost Plus Award Fee Contract.

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C-130J Block 8.1 DT and E	PO	EGLIN AFB : Eglin, FL	0.500	0.950	Nov 2016	0.436	Jan 2018	-		-		-	0.000	1.886	7.490
Subtotal			0.500	0.950		0.436		-		-		-	0.000	1.886	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C-130J IPO Support	TBD	N/A : NV	7.908	2.005	Nov 2016	1.874	Nov 2017	1.789	Oct 2018	-		1.789	0.000	13.576	5.014
C-130J COSSURM	TBD	RAF : NV	15.868	0.280	Jan 2017	0.200	Jan 2018	0.260	Jan 2019	-		0.260	0.000	16.608	2.443

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401132F / C-130J Program	Project (Number/Name) 675061 / C-130J
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			23.776	2.285		2.074		2.049		-		2.049	0.000	30.184	N/A

Remarks
The COSSURM contract is managed by the United Kingdom Royal Air Force (RAF)

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	273.710	16.199	26.821	15.409	-	15.409	32.411	364.550	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401132F / C-130J Program	Project (Number/Name) 675061 / C-130J
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C-130J																												
Block 8.1 Development																												
Block 8.1 Development Test & Evaluation																												
Block 8.1 FCA/ PCA (Functional & Physical Configuration Audit)																												
Block 7.0/ 8.1 Trial Kit Installation (TKI) 2 - 7																												
CMU																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401132F / C-130J Program	Project (Number/Name) 675061 / C-130J
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
C-130J				
Block 8.1 Development	1	2017	4	2020
Block 8.1 Development Test & Evaluation	1	2017	1	2018
Block 8.1 FCA/ PCA (Functional & Physical Configuration Audit)	1	2017	2	2017
Block 7.0/ 8.1 Trial Kit Installation (TKI) 2 - 7	1	2017	1	2019
CMU	1	2017	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	5.011	5.283	4.334	0.000	4.334	5.424	5.518	5.633	5.735	Continuing	Continuing
674942: <i>Large Aircraft Infrared Counter Measures (LAIRCM)</i>	-	5.011	5.283	4.334	0.000	4.334	5.424	5.518	5.633	5.735	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Large Aircraft Infrared Countermeasures (LAIRCM) system is an evolutionary acquisition program that provides significantly improved defensive systems capability for DoD aircraft to counter the infrared (IR) man-portable air-defense systems (MANPADS) missile threat. The current LAIRCM system configuration [AN/AAQ-24V] consists of missile warning sensors (MWS), a laser transmitter assembly, control interface unit and processors to detect, track, jam and counter incoming IR missiles. The number of sensors and transmitter assemblies per aircraft is determined by the size and signature of the aircraft. The system is fully automatic following system power-up. LAIRCM requirements are documented in the multi-command Operational Requirements Document (ORD) LAIRCM ORD 314-92, validated on 03 Aug 98. The system is currently installed on 54+ aircraft types and over 1200 aircraft.

The baseline program development is complete. Follow-on efforts are addressing integration onto new aircraft types, design changes to address Reliability Maintainability & Availability and system improvements to counter new and emerging threats.

LAIRCM upgrades include, but are not limited to hardware and software upgrades and testing of the LAIRCM system to maintain defensive capability against new and emerging threats.

Current and future efforts include Threat Analysis; Modeling, Simulation and Emulation Test; Hardware, Software and Firmware Upgrades; Virtual System Integration Lab (SIL) Development; and Studies and Analysis.

Threat Analysis: Threat analysis encompasses the activities to support threat exploitation analysis of a variety of threats (both known and emerging) against the current LAIRCM jam code with the intent of determining if jam code updates are required. Typical threat analysis activities include: Threat seeker characterization; model development for advanced threat IR seekers; development and testing of new infrared countermeasures concepts, techniques, and hardware; new technology assessment for potential incorporation into the LAIRCM system, and the evaluation/exploitation of new threats and threat characteristics relative to IRCM.

Modeling, Simulation, and Emulation Testing: Modeling, simulation, and emulation activities verify and validate the information obtained from the threat analysis activities. These activities include: Evaluation of infrared countermeasures (IRCM) techniques used in defeating real threat hardware; developing and evaluating jam code; validating and verifying integration of LAIRCM system components to newly developed jam codes, software or hardware; evaluating system effectiveness; performing platform integration support tests; and conducting predictive risk reduction tests prior to Live Missile Fire Test (LMFT) or on aircraft flight testing.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>	
<p>Hardware, Software, and Firmware Upgrades: Includes changes of any kind to any LAIRCM hardware components/ support equipment with the purpose of adding capability, features, and enhancements which do not presently exist to ensure the LAIRCM system remains viable against current and emerging threats.</p> <p>-----Hardware upgrade activities include engineering tasks required to design, develop, test and produce new capabilities, features, and enhancements, and changes of any kind to any portion of LAIRCM hardware with the purpose of adding capability, features and enhancements which do not presently exist.</p> <p>-----Software upgrade activities include engineering tasks required to design, develop, and test the new or modified code that result in new capabilities, features, and enhancements and changes of any kind to any portion of LAIRCM software with the purpose of adding capability, features and enhancements which do not presently exist. Software upgrades can occur in any of the Line Replaceable Unit (LRU) Operation Flight Programs as well as any of the software residing in other LAIRCM associated components including those systems which support development and test or the LAIRCM support equipment.</p> <p>-----Firmware upgrade activities include engineering tasks required to design, develop, and test the upgrades and those changes resulting from hardware and software updates/modifications as well as firmware upgrades which add new features.</p> <p>Virtual SIL Development: Incrementally design, develop, integrate, and test software code and purchase associated infrastructure (i.e., computers, servers, commercial off-the-shelf (COTS) software, etc.) necessary to develop and implement a virtual SIL providing a critical capability for testing the LAIRCM system to ensure continued effectiveness against current and emerging threats.</p> <p>Studies and Analysis: Includes logistics, programmatic, and engineering studies and analysis activities to ensure continued system viability and sustainability and compliance with acquisition directives. These activities may include the evaluation of low cost/high payback opportunities to reduce software development/ implementation cost, enhance production efficiency, and improve life cycle costs through increased reliability and reduced repair and return cost.</p> <p>The FY 2019 funding request was reduced by \$1.033 million to account for the availability of prior year execution balances.</p> <p>Program management and administration efforts consist of, but are not limited to, contract services and government costs. This program element may include necessary civilian pay expenses required to manage, execute, and deliver Aircraft Survivability weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F, and 0605833F.</p> <p>This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0401134F / Large Aircraft IR Countermeasures (LAIRCM)
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	5.166	5.283	5.367	0.000	5.367
Current President's Budget	5.011	5.283	4.334	0.000	4.334
Total Adjustments	-0.155	0.000	-1.033	0.000	-1.033
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.155	0.000			
• Other Adjustments	0.000	0.000	-1.033	0.000	-1.033

Change Summary Explanation

The FY 2019 funding request was reduced by \$1.033 million to account for the availability of prior year execution balances

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: LAIRCM Threat Analysis</p> <p>Description: Encompasses the activities to support threat exploitation analysis of a variety of threats against the current LAIRCM jam code with the intent of determining if jam code updates are required.</p> <p>FY 2018 Plans: Continue to work on Threat analysis in the GWEF, to include purchase of assets, and DIME Lab.</p> <p>FY 2019 Base Plans: Continue to work on Threat analysis in the GWEF, to include purchase of assets, and DIME Lab.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased for additional analysis planned for FY19.</p>	2.012	1.850	2.410	-	2.410
<p>Title: LAIRCM Modeling, Simulation and Emulation Testing</p> <p>Description: Activities that verify and validate the information obtained from threat analysis activities.</p> <p>FY 2018 Plans:</p>	0.502	0.787	0.758	-	0.758

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>			
C. Accomplishments/Planned Programs (\$ in Millions)					
Will continue to work in Modeling, Simulation and Emulation Tests. This is a continued effort from LAIRCM Development in previous years.					
FY 2019 Base Plans: Will continue to work in Modeling, Simulation and Emulation Tests. This is a continued effort from LAIRCM Development in previous years.					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to inflation adjustments.					
Title: LAIRCM Hardware/Software/Firmware Upgrades					
Description: Hardware/Software/Firmware Upgrades include changes of any kind to any LAIRCM hardware components/support equipment with the purpose of adding capability, features, and enhancements which do not presently exist to ensure the LAIRCM system remains viable against current and emerging threats.					
FY 2018 Plans: LAIRCM will continue to make changes to LAIRCM hardware and software components/support equipment as necessary for the purpose of adding capability and feature enhancements which do not presently exist to ensure the LAIRCM system remains viable against current and emerging threats.					
FY 2019 Base Plans: LAIRCM will continue to make changes to LAIRCM hardware and software components/support equipment as necessary for the purpose of adding capability and feature enhancements which do not presently exist to ensure the LAIRCM system remains viable against current and emerging threats.					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased to provide for increased software evaluation.					
Title: LAIRCM Virtual SIL Development					
Description: VSIL incrementally designs, develops, integrates, and tests software code and purchases associated infrastructure (i.e., computers, servers, COTS software, etc.) necessary to develop and implement a virtual SIL providing a critical capability for testing the LAIRCM system to ensure continued effectiveness against current and emerging threats.					
FY 2018 Plans:					
	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
	0.000	0.250	0.649	-	0.649
	1.070	1.507	0.267	-	0.267

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Will continue to design, develop, integrate, and test software code and purchase associated infrastructure (i.e., computers, servers, COTS software, etc.) necessary to develop and implement a virtual SIL providing a critical capability for testing the LAIRCM system to ensure continued effectiveness against current and emerging threats.</p> <p>FY 2019 Base Plans: Will continue to design, develop, integrate, and test software code and purchase associated infrastructure (i.e., computers, servers, COTS software, etc.) necessary to develop and implement a virtual SIL providing a critical capability for testing the LAIRCM system to ensure continued effectiveness against current and emerging threats.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding for this effort is incremental in nature and follows a "bell curve" approach to fund the contractor in real time.</p>					
<p>Title: LAIRCM Studies and Analysis</p> <p>Description: Includes logistics, programmatic, and engineering studies and analysis activities to ensure continued system viability and sustainability and compliance with acquisition directives. These activities may include the evaluation of low cost/high payback opportunities to reduce software development/implementation cost, enhance production efficiency, and improve life cycle costs through increased reliability and reduced repair and return cost.</p> <p>FY 2018 Plans: Will initiate studies to address and/or assess various planned suggested efforts and projects to continue strategies that enhance and/or update LAIRCM activities</p> <p>FY 2019 Base Plans: Will initiate an engineering focused LAIRCM system Critical Program Information (CPI) Assessment and Review Study.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased for reduced studies planned for FY19.</p>	1.427	0.889	0.250	-	0.250
Accomplishments/Planned Programs Subtotals	5.011	5.283	4.334	-	4.334

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item LAIRCM: <i>Large Aircraft Infrared Countermeasures</i>	135.801	4.046	0.000	149.778	149.778	-	-	-	-	0.000	289.625

Remarks

E. Acquisition Strategy

Efforts awarded on an annual basis, exercising existing contract options, support threat analysis and system effectiveness. The LAIRCM program office partners with the Air Force Research Laboratory (AFRL) and the 782d Test Squadron to conduct threat analysis research and Modeling, Simulation, and Emulation Testing. AFRL contracts with the Guided Weapon Evaluation Facility (GWEF) to provide hardware-in-the-loop developmental test simulation capability on a level-of-effort (LOE) basis. AFRL's Dynamic Infrared Missile Evaluation (DIME) Laboratory performs threat analysis. The existing LAIRCM contract may be used to award the various study efforts.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401134F / Large Aircraft IR Countermeasures (LAIRCM)	Project (Number/Name) 674942 / Large Aircraft Infrared Counter Measures (LAIRCM)
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LAIRCM ETA Hardware/ Software/Firmware Upgrades	SS/TBD	NGC : Rolling Meadows, IL	-	-		0.250	Apr 2018	0.260	Apr 2019	-		0.260	Continuing	Continuing	-
LAIRCM ETA Virtual SIL Development	SS/TBD	NGC : Rolling Meadows, IL	-	0.481	Nov 2017	1.896	Feb 2018	0.623	Feb 2019	-		0.623	Continuing	Continuing	-
LAIRCM ETA Studies and Analysis	Various	Various : Various, NV	-	1.966	Mar 2017	0.500	Mar 2018	0.250	Mar 2019	-		0.250	Continuing	Continuing	-
Subtotal			-	2.447		2.646		1.133		-		1.133	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LAIRCM ETA Threat Analysis/Guided Weapon Evaluation Facility	PO	GWEF : Eglin AFB, FL	-	0.060	Jan 2017	0.450	Jan 2018	0.912	Jan 2019	-		0.912	Continuing	Continuing	-
LAIRCM ETA Modeling, Simulation and Emulation Test	MIPR	AFRL/Ryf-Omni Sentinel : WPAFB, OH	-	0.140	Apr 2017	0.627	Nov 2017	0.629	Apr 2019	-		0.629	Continuing	Continuing	-
LAIRCM ETA Threat Analysis/Dynamic Infrared Missile Evaluation (DIME)	MIPR	AFRL/Ryf-DIME : WPAFB, OH	-	1.851	Jan 2017	1.100	Jan 2018	1.100	Jan 2019	-		1.100	Continuing	Continuing	-
LAIRCM ETA Threat Analysis/ MSIC	MIPR	United States Army : Huntsville, AL	-	0.101	Mar 2017	-		-		-		-	Continuing	Continuing	-
LAIRCM ETA Treat Analysis/ Asset Buys	MIPR	TBD : TBD	-	-		0.300	Jan 2018	0.400	Jan 2019	-		0.400	Continuing	Continuing	-
Subtotal			-	2.152		2.477		3.041		-		3.041	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401134F / Large Aircraft IR Countermeasures (LAIRCM)	Project (Number/Name) 674942 / Large Aircraft Infrared Counter Measures (LAIRCM)
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LAIRCM ETA Government Travel	Various	Government Employees : WPAFB, OH	-	0.160		0.160		0.160		-		0.160	Continuing	Continuing	-
LAIRCM ETA A&AS	SS/CPFF	COLSA Corp. : Warner Robins, GA	-	0.252	Mar 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.412		0.160		0.160		-		0.160	Continuing	Continuing	N/A

Remarks
LAIRCM ETA A&AS: FY17 and FY18 A&AS support is being funded by APAF, LAIRCM: Large Aircraft Infrared Countermeasures.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	5.011	5.283	4.334	-	4.334	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401134F / Large Aircraft IR Countermeasures (LAIRCM)	Project (Number/Name) 674942 / Large Aircraft Infrared Counter Measures (LAIRCM)

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

LAIRCM																												
Threat Analysis																												
Modeling , Simulation, and Emulation Testing																												
Virtual SIL Development																												
Studies and Analysis																												
Hardware/Software/Firmware Upgrades																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>	Project (Number/Name) 674942 / <i>Large Aircraft Infrared Counter Measures (LAIRCM)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
LAIRCM				
Threat Analysis	1	2017	4	2023
Modeling , Simulation, and Emulation Testing	1	2017	4	2023
Virtual SIL Development	1	2017	4	2023
Studies and Analysis	1	2017	4	2023
Hardware/Software/Firmware Upgrades	1	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401218F / KC-135s
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	9.942	3.493	0.000	3.493	0.000	0.000	0.000	0.000	Continuing	Continuing
675261: <i>KC-135 Upgrades</i>	-	0.000	9.942	3.493	0.000	3.493	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The program will replace the obsolete Inmarsat Aero-I system with an Iridium system. Inmarsat's existing third generation satellites (I-3) which provide Aero-I services will no longer be functional after 2023. Aero-I services are used to provide oceanic Controller/Pilot Data Link Communications (CPDLC) to Air Traffic Control and Aircraft Communications Addressing and Reporting System (ACARS) Beyond Line of Sight (BLOS) Command and Control (C2) messages to 618th Tactical Air Control Center (TACC) Global Decision Support System. The procurement effort modifies 359 C/KC-135s and 19 Simulators. Funding may be used to address DMS issues.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver KC-135 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	9.942	3.519	0.000	3.519
Current President's Budget	0.000	9.942	3.493	0.000	3.493
Total Adjustments	0.000	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	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.026	0.000	-0.026

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

	FY 2017	FY 2018	FY 2019
Title: KC-135 Aero-I SATCOM	-	9.942	3.493

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401218F / KC-135s
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>Description: Development and Test of Iridium Aero-I. Aero-I services are used to provide oceanic Controller/Pilot Data Link Communications (CPDLC) to Air Traffic Control and Aircraft Communications Addressing and Reporting System (ACARS) Beyond Line of Sight (BLOS) Command and Control (C2) messages to 618th Tactical Air Control Center (TACC) Global Decision Support System.</p> <p>FY 2018 Plans: Development and Test of Iridium Aero-I SATCOM.</p> <p>FY 2019 Plans: Continued Development and Test of Iridium Aero-I SATCOM.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to inflation adjustments and is appropriate for continued Development and Test of Iridium Aero-I SATCOM.</p>			
Accomplishments/Planned Programs Subtotals	-	9.942	3.493

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item C13500: C-135	64.161	69.428	113.076	-	113.076	124.491	104.383	108.192	110.159	Continuing	Continuing

Remarks

E. 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: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401218F / KC-135s	Project (Number/Name) 675261 / KC-135 Upgrades
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Aero-I SATCOM replacement development	TBD	Not specified. : NV	-	-		9.442	Jun 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	-		9.442		-		-		-	Continuing	Continuing	N/A

Remarks
This project will develop an Iridium SATCOM solution for the KC-135.

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AERO-I SATCOM Test	TBD	Not specified. : NV	-	-		-		3.493	Mar 2019	-		3.493	Continuing	Continuing	-
Subtotal			-	-		-		3.493		-		3.493	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AERO-I SATCOM Management Services	TBD	Not specified. : NV	-	-		0.500	Jun 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	-		0.500		-		-		-	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-	9.942	3.493	-	3.493	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401218F / KC-135s	Project (Number/Name) 675261 / KC-135 Upgrades
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>KC-135 Aero-I Satcom replacement</i>	
Contract Award	█
EMD	██████████
Test	█

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401218F / KC-135s	Project (Number/Name) 675261 / KC-135 Upgrades
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>KC-135 Aero-I Satcom replacement</i>				
Contract Award	3	2018	3	2018
EMD	3	2018	1	2019
Test	2	2019	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401219F / KC-10s
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	3.500	7.933	6.569	0.000	6.569	0.020	0.000	0.000	0.000	Continuing	Continuing
675195: <i>Aircraft Modernization Program (AMP)</i>	-	3.500	7.933	6.569	0.000	6.569	0.020	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	1	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The KC-10 is an aerial refueling asset built on the commercial DC-10 airframe. This aircraft creates an air bridge enabling rapid global mobility and global strike missions. There are 59 KC-10A aircraft in the USAF tanker fleet. KC-10 has a divestiture strategy that is to be completed in 2024.

Mode 5 program is a FAA mandated upgrade to the USAF Identification Friend or Foe (IFF) system, the primary means of command and control aircraft identification. Mode 5 increases anti-spoofing capabilities and lowers the possibility of aircraft/aircrew loss due to misidentification of friendly aircraft. The KC-10 modification program includes a Mode 5 capable APX-119 transponder, a new KIV-77 crypto applique and integration/control through the CDU-7000F flight management computer.

An FAA mandated Automatic Dependent Surveillance-Broadcast (ADS-B) upgrade to the KC-10 is also included as part of Mode 5 to meet DO-260B requirements set by the FAA. Both Identification Friend or Foe (IFF) Mode 5 and Automatic Dependent Surveillance - Broadcast (ADS-B) Out are mandated programs (JROCM 047-07 and FAA Advisory Circular 20-165B) that have a required incorporation NLT 1 Jan 2020 (ADS-B) and 1 July 2020 (Mode 5). Both modifications are accomplished by modification of the APX-119 Line Replaceable Unit (LRU) and can easily be accomplished at the same time and at a significant cost savings to the USAF.

The program includes a Technology Maturation Risk Reduction Study (TMRR), Formal EMD, Procurement and Installation on KC-10 aircraft.

BA Justification: Mode 5 and ADS-B Out are mandated are JROCM (047-07) and FAA (AC 20-165B) mandated programs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver KC-10 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401219F / KC-10s
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	7.933	6.618	0.000	6.618
Current President's Budget	3.500	7.933	6.569	0.000	6.569
Total Adjustments	3.500	0.000	-0.049	0.000	-0.049
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	3.500	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	-0.049	0.000	-0.049

Change Summary Explanation

Change in FY17 funding resulted from congressional add to accelerate the program schedule to meet FAA mandate (1 Jan 2020).

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: KC-10 Mode 5 IFF	3.500	7.933	6.569
Description: FAA mandated upgrade to the IFF system to increase anti-spoofing and exploitation capabilities and lower the possibility of aircraft/aircrew loss due to misidentification of friendly aircraft.			
FY 2018 Plans: Engineering design and analysis effort (EMD) will include upgrading the APX-119 transponder with Mode 5 capability, replacing the KIV-119 with a KIV-77 and integration/control through the CDU-7000B.			
FY 2019 Plans: Continuation of engineering design and analysis effort (EMD).			
FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased to appropriate level to complete EMD, which is projected to end around 3QFY19.			
Accomplishments/Planned Programs Subtotals	3.500	7.933	6.569

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401219F / KC-10s
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item C01000: <i>KC-10A (ATCA) - All Programs</i>	4.570	4.243	11.104	-	11.104	5.108	3.959	3.443	3.505	0.000	35.932

Remarks

E. Acquisition Strategy

The acquisition strategy will be a sole source RDT&E effort followed by procurement of kits and modification of KC-10 aircraft.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401219F / KC-10s	Project (Number/Name) 675195 / Aircraft Modernization Program (AMP)
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
KC-10 Mode 5: TMRR/ TMRR Extension	SS/ Various	Rockwell Collins : Cedar Rapids, IA	-	3.460	Aug 2017	-		-		-		-	Continuing	Continuing	7.549
KC-10 Mode 5: EMD	SS/CPFF	Rockwell Collins : Cedar Rapids, IA	-	-		7.549	Nov 2017	5.719	Oct 2018	-		5.719	Continuing	Continuing	-
Subtotal			-	3.460		7.549		5.719		-		5.719	Continuing	Continuing	N/A

Remarks
22 Mar 17: TMRR Study contract awarded to RCI to further develop ADS-B out from CNS/ATM developed DO260A to updated DO260B requirement with integration of IFF Mode 5.

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
KC-10 Mode 5: Govt Travel	Reqn	KC-10 PO : Tinker AFB, OK	-	0.040	Oct 2016	0.100	Oct 2017	0.050	Oct 2018	-		0.050	Continuing	Continuing	0.120
Subtotal			-	0.040		0.100		0.050		-		0.050	Continuing	Continuing	N/A

Remarks
Funds program office travel.

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
KC-10 Mode 5: Test and Eval	SS/FPIF	Rockwell Collins : Cedar Rapids, IA	-	-		0.074	Jul 2018	0.150	Oct 2018	-		0.150	Continuing	Continuing	0.740
Subtotal			-	-		0.074		0.150		-		0.150	Continuing	Continuing	N/A

Remarks
Funds initial test planning.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0401219F / KC-10s					Project (Number/Name) 675195 / Aircraft Modernization Program (AMP)				

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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-10 Mode 5: Mgmt Support	C/FFP	EPASS : Dayton, OH	-	-		0.210	Feb 2018	0.650	Oct 2018	-		0.650	Continuing	Continuing	0.630
Subtotal			-	-		0.210		0.650		-		0.650	Continuing	Continuing	N/A

Remarks
Funding for A&AS support contractors.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	3.500	7.933	6.569	-	6.569	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401219F / KC-10s	Project (Number/Name) 675195 / Aircraft Modernization Program (AMP)

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

KC-10 Mode 5	
KC-10 Mode 5: TMRR (contract MOD awarded 22 Mar 17)	██████████
KC-10 Mode 5: EMD (contract awarded 16 Nov 17)	██
KC-10 Mode 5: Production of Kits	██
KC-10 Mode 5: Kit Installation	██

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401219F / KC-10s	Project (Number/Name) 675195 / Aircraft Modernization Program (AMP)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
KC-10 Mode 5				
KC-10 Mode 5: TMRR (contract MOD awarded 22 Mar 17)	2	2017	4	2017
KC-10 Mode 5: EMD (contract awarded 16 Nov 17)	1	2018	3	2019
KC-10 Mode 5: Production of Kits	1	2019	4	2019
KC-10 Mode 5: Kit Installation	4	2019	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0401314F I Operational Support Airlift
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	0.000	13.332	6.681	3.172	0.000	3.172	0.000	0.000	0.000	0.000	0.000	23.185
676024: VC-25 Avionics Modernization Program	0.000	13.332	6.681	3.172	0.000	3.172	0.000	0.000	0.000	0.000	0.000	23.185
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

VC-25A Avionics Modernization Program (AMP) assures unrestricted global access to civilian and military airspace to support the President of the United States as Head of State, Chief Executive, and Commander in Chief. AMP upgrades use a systems approach to aid pilot awareness and alleviate task saturation enhancing safety in a high technology concentrated airspace environment. VC-25A AMP is a required modification to ensure the viability of the Presidential support airlift fleet until the VC-25B Presidential Aircraft Recapitalization program is fielded.

AMP complies with mandates for civil Automatic Dependent Surveillance-Broadcast (ADS-B) Out and Identification Friend or Foe (IFF) Mode 5 and provides an improved Advisory Vertical Navigation (VNAV) capability. It will incorporate multiple subsystems, to include, but not limited to, maneuver camera system, large cockpit displays, and navigation radios to increase the utility and safety of the VC-25A. Provisions for the military ADS-B Out will also be provided. Installations are aligned with the aircraft heavy maintenance schedule.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	13.817	6.681	0.000	0.000	0.000
Current President's Budget	13.332	6.681	3.172	0.000	3.172
Total Adjustments	-0.485	0.000	3.172	0.000	3.172
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.485	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	3.172	0.000	3.172

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401314F / <i>Operational Support Airlift</i>
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Change Summary Explanation

Funding reduction due to program restructure and to continue funding to completion.

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

	FY 2017	FY 2018	FY 2019
Title: Design and Test	13.332	6.681	3.172
Description: Design and Test efforts included stand-up of a Systems Integration Laboratory (SIL), non-recurring engineering, material buys for the SIL, as well as design, test and evaluation, and installation of the avionics systems. All modifications to be performed on the aircraft must be proven on the ground prior to installation.			
FY 2018 Plans: Funding will be used for Installation, Ground Test and Flight Test.			
FY 2019 Plans: Program restructure requires continued funding to completion.			
FY 2018 to FY 2019 Increase/Decrease Statement: Funding reduction due to program restructure and to continue funding to completion.			
Accomplishments/Planned Programs Subtotals	13.332	6.681	3.172

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

N/A

Remarks

E. Acquisition Strategy

VC-25A AMP is accomplished by developmental integration of commercial off-the-shelf systems, hardware procurement and installation is accomplished to align with heavy maintenance depot schedules. An Undefinitized Contract Action (UCA) was issued in Jun 12. The UCA was definitized with a Cost Plus Incentive Fee (CPIF) type contract April 2014. The CPIF contract covers the engineering RDT&E effort through Critical Design Review in FY15. The remaining RDT&E effort including the first kit, install and flight test was awarded in FY15 and concludes in FY18 with delivery of the first aircraft.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force													Date: February 2018		
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0401314F / Operational Support Airlift				676024 / VC-25 Avionics Modernization Program							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
VC-25 AMP Engineering	SS/CPIF	Oklahoma City : Tinker, AFB, OK	-	12.332	Feb 2017	6.681	Jan 2018	3.172	Mar 2018	-		3.172	0.000	22.185	-
Subtotal			-	12.332		6.681		3.172		-		3.172	0.000	22.185	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
VC-25 AMP Program Management Activities	SS/CPIF	OC-ALC : Oklahoma City, OK	-	1.000	Jan 2017	-		-		-		-	0.000	1.000	-
Subtotal			-	1.000		-		-		-		-	0.000	1.000	N/A
Project Cost Totals			-	13.332		6.681		3.172		-		3.172	0.000	23.185	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401314F / <i>Operational Support Airlift</i>	Project (Number/Name) 676024 / <i>VC-25 Avionics Modernization Program</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AMP																												
PMA																												
ADS-B Out NRE																												
EGPWS																												
Test and Evaluation 1																												
NRE																												
OGC/PMA 1																												
UFH Control																												
Test and Evaluation 2																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401314F / <i>Operational Support Airlift</i>	Project (Number/Name) 676024 / <i>VC-25 Avionics Modernization Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AMP				
PMA	4	2017	4	2018
ADS-B Out NRE	4	2017	4	2017
EGPWS	4	2017	4	2018
Test and Evaluation 1	2	2018	4	2018
NRE	2	2018	3	2018
OGC/PMA 1	4	2018	4	2019
UFH Control	1	2019	4	2021
Test and Evaluation 2	2	2019	4	2019

Note
AMP contract award March 2012, followed by systems integration laboratory engineering.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401318F / CV-22
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	64.519	27.704	22.519	18.502	0.000	18.502	16.606	14.873	15.183	15.459	41.970	237.335
676033: <i>CV-22 RDT&E POST PRODUCTION</i>	64.519	27.704	22.519	18.502	0.000	18.502	16.606	14.873	15.183	15.459	41.970	237.335
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 212
Project MDAP/MAIS Code(s): N42

A. Mission Description and Budget Item Justification

The CV-22 is the Air Force Special Operations Forces (SOF) variant of the joint multi-mission V-22 tilt rotor aircraft. The CV-22 provides long-range, high-speed infiltration, exfiltration, and resupply to Special Forces teams in hostile, denied, and politically sensitive areas. The Navy is the lead service for the Joint V-22 program. The Joint Program Manager is responsible for managing all variants of the V-22. Department of the Navy (DoN) funds the development of the MV-22 and CMV-22. The Air Force funds the service common portion of the CV-22 while United States Special Operations Command (USSOCOM) funds the development and procurement of SOF peculiar systems. CV-22 RDT&E funding provides for the development, integration, and testing of mission critical aircraft modifications to improve operational effectiveness, platform survivability, and aircraft availability.

Enhanced Self-Deployment: RDT&E funding provides for the design, development, and testing of aircraft modifications to improve aircraft self-deployment capabilities (e.g., operating range, global response time) to evaluate emerging threats to the aircraft and mission accomplishment, and to identify and assess emerging air vehicle, propulsion system, avionics architecture, electronic warfare, situational awareness, and weapon system capability requirements for potential solutions to satisfy these requirements.

Nacelle Improvements: Funds the design and development of the CV-22 nacelle to reduce ingestion of sand/dust and other particulate matter into the engine, increase engine time on wing and overall aircraft readiness/availability rates, and reduce operations and support costs. This is Air Force Special Operations Command's #1 priority for the CV-22 weapon system.

Other/Future Capabilities: The CV-22 aircraft funds improved operational safety, suitability, cyber security, and mission effectiveness. Funding also provides for future modification planning, and for aircraft engineering changes/upgrades to address diminishing manufacturing source (DMS) and component obsolescence issues adversely affecting aircraft readiness and operational availability rates.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver CV-22 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401318F / CV-22
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This program is in Budget Activity 7, Operational Systems Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	28.702	22.519	16.641	0.000	16.641
Current President's Budget	27.704	22.519	18.502	0.000	18.502
Total Adjustments	-0.998	0.000	1.861	0.000	1.861
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.998	0.000			
• Other Adjustments	0.000	0.000	1.861	0.000	1.861

Change Summary Explanation

\$1.861M increase for Enhance Self-deployment

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Enhanced Self-Deployment Capabilities	14.182	5.548	8.361
Description: Incrementally develops capabilities to enhance self-deployment capabilities, such as improved ice protection, engine performance, navigation, communications, and battle space awareness/networking capabilities; situational awareness; electronic warfare; weapons systems; defensive avionics systems and architecture; weight reduction initiatives; modular avionics/cyber security implementation; airborne networking, and changes to the underlying aircraft systems necessary to enable these capabilities.			
FY 2018 Plans: Conduct risk reduction and assessment of emerging and existing technologies. Continue design and development activities to integrate the Intelligence Broadcast Receiver (IBR) upgrade.			
FY 2019 Plans: Continue design and development activities to enhance situational awareness, modular avionics/cyber security implementation, and begin development of electronic warfare integration.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401318F / CV-22
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Funding increased due to continued design and beginning of electronic warfare integration.			
Title: Nacelle Improvements Description: Funds provided for design, development, and testing of V-22 Nacelle Improvements; Infrared Suppressor (IRS), Electric Power System Upgrade, Generator Control Unit (GCU); nacelle wiring, heat exchanger, engine health monitoring, nacelle structure, and performance buyback. Common nacelle improvements for both the CV-22 and MV-22 fleets will increase overall aircraft readiness/availability, reduce platform operating life cycle costs, and mitigate impacts to aircraft performance and survivability. These improvements will be integrated, tested, and fielded as a single modification to minimize cost and impact on fleet operations and readiness. FY 2018 Plans: Improved Inlet Solution (IIS): Complete DT&E, analyze DT&E results, correct deficiencies found during DT&E, begin OT&E. GCU: Begin EMD of GCU redesign/relocate. Competitively select redesigned GCU. IRS: Begin EMD of new IRS solution, begin OT&E planning. FY 2019 Plans: Continue test, design, and development of Nacelle Improvements, Electrical Power System upgrade, and IRS redesign. IIS: Complete closeout of Inlet Barrier Filter DT&E effort. Initiate alternative method of increasing engine air particle separation efficiency. GCU: Continue EMD efforts to improve reliability, reparability, and maintainability IRS: Continue EMD efforts by developing and analyzing data to improve reliability; select from candidate solutions. FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased as a result of effort maturity.	13.522	16.971	10.141
Accomplishments/Planned Programs Subtotals	27.704	22.519	18.502

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 07 PE 1160403BB: <i>Special Operations, Aviation Systems</i>	1.549	14.259	22.533	-	22.533	28.461	8.500	8.000	18.000	0.000	101.302
• APAF 02 Line Item Special Operation: <i>CV-22 Modification</i>	47.786	42.178	32.529	-	32.529	33.594	31.285	56.535	50.918	314.225	609.050

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401318F / CV-22
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D. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 04 Line Item V022A0: CV-22 (MYP)	97.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	97.000
• APAF 05 Line Item V02200: CV-22 Mods	63.395	60.990	60.416	-	60.416	61.548	63.933	121.147	66.661	518.104	1,016.194
• APAF 06 Line Item 000999: CV-22 Initial Spares/Repair Parts	0.882	0.241	0.000	-	0.000	0.000	1.983	6.346	0.000	0.000	9.452
• APAF 07 Line Item C0V220: CV-22 Post-Production Support	0.000	4.500	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.500
• RDTE 05 PE 0604262N: V-22A Navy	149.113	171.386	135.522	-	135.522	134.939	93.363	117.119	119.461	184.398	1,105.301

Remarks

In addition to the funding identified in the table above, prior year funding includes \$520.411 in RDT&E, DW, BA07, PE 1160421BB: Special Operations, CV-22 Development, and \$413.235M in RDT&E, AF, BA05, PE 0401318F: CV-22

E. Acquisition Strategy

The V-22 Joint Program Office (Naval Air Systems Command (NAVAIRSYSCOM), PMA-275) is developing new capabilities for the V-22 in block increments.

--Nacelle Improvements: NAVAIRSYSCOM plans to award a cost plus fixed fee contract for Nacelle Improvements by QTR3 FY2018. IRS and GCU will utilize some combination of sole source and competitive contracts.

--Enhanced Self-Deployment Capabilities: The Army Technology Applications Program Office at Ft Eustis awarded a FFP contract in June 2016 for LRU-1 Ethernet design (IBR). The FY2018 plan is to add incremental funding for LRU-1 Ethernet (IBR) design to the existing contract.

Development activities for the V-22 program to date have been primarily performed by the prime contractor, Bell-Boeing, on a sole-source basis. Bell-Boeing is a strategic partnership between Bell Helicopter and Boeing Integrated Defense Systems. Efforts are underway to increase competition where feasible, depending primarily on the level of platform integration required.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0401318F / CV-22					Project (Number/Name) 676033 / CV-22 RDT&E POST PRODUCTION				

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CV-22 Osprey Block 20 Development	SS/CPFF	Bell Boeing : Amarillo, TX	8.047	0.000		-		-		-		-	0.000	8.047	163.825
CV-22 Osprey Enhanced Self-deployment Capability	Various	Various : Various	30.702	11.000	Jun 2017	3.460	Mar 2018	7.361	Mar 2018	-		7.361	60.160	112.683	0.000
V-22 Osprey Nacelle Improvements	Various	Various : Various	15.895	13.522	Nov 2016	16.971	Dec 2017	8.945	Jul 2018	-		8.945	24.466	79.799	69.990
Subtotal			54.644	24.522		20.431		16.306		-		16.306	84.626	200.529	N/A

Remarks
 Block 20 Development Target Value of Contract differs from total cost because most of the Block 20 development cost was funded in PE 0401318F, BA05. In addition, the SOF peculiar development efforts were funded by USSOCOM MFP-11 funding.

Nacelle Improvements Development Target Value of Contract differs from total cost because this is a joint development funded by Navy and Air Force.

Prior Years funding (\$322.656M) was executed in PE 0401318F, BA05.

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CV-22 Osprey Engineering Technical Support and Studies	Various	Various : Various	2.764	1.835	Mar 2017	1.000	Mar 2018	1.000	Mar 2019	-		1.000	9.721	16.320	0.000
Subtotal			2.764	1.835		1.000		1.000		-		1.000	9.721	16.320	N/A

Remarks
 Prior Years Funding \$40.454M was executed in PE 0401318F (BA05).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 676033 / CV-22 RDT&E POST PRODUCTION
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Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CV-22 Osprey Test & Evaluation Technical Support	Various	Various : Various	6.694	1.115	Jan 2017	0.900	Dec 2016	1.000	Dec 2018	-		1.000	7.323	17.032	0.000
Subtotal			6.694	1.115		0.900		1.000		-		1.000	7.323	17.032	N/A

Remarks
Prior Years Funding \$46.764M was executed in PE 0401318F (BA05).

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CV-22 Osprey Program Support	Allot	AFLCMC/WIV : Patuxent River, MD	0.417	0.232	Nov 2016	0.188	Nov 2017	0.196	Nov 2018	-		0.196	1.896	2.929	-
Subtotal			0.417	0.232		0.188		0.196		-		0.196	1.896	2.929	N/A

Remarks
Prior Years Funding \$3.361M was executed in PE 0401318F (BA05).

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	64.519	27.704	22.519	18.502	-	18.502	103.566	236.810	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 676033 / CV-22 RDT&E POST PRODUCTION

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

CV-22	
Enhanced Self Deployment	[REDACTED]
-- Risk Reduction Analysis (Multiple current and future development initiatives)	[REDACTED]
-- ATW development and testing (JUON)	[REDACTED]
-- ATW development and testing (AF Common configuration)	[REDACTED]
-- IBR design and development	[REDACTED]
---- LRU-1 Ethernet Design Phase 1 (ending with PDR)	[REDACTED]
---- LRU-1 Ethernet Design Phase 2 (ending with CDR)	[REDACTED]
---- LRU-1 Ethernet Integration and Testing Phase III (ending with PRR)	[REDACTED]
---- ENTR V4 Dock Design	[REDACTED]
Nacelle Improvements	[REDACTED]
-- IIS Development and Test	[REDACTED]
-- Common Nacelle Design	[REDACTED]
-- Electric Power System Upgrade	[REDACTED]
---- Generator Control Unit (GCU) Requirements Analysis	[REDACTED]
---- Generator Control Unit (GCU) Development and Test	[REDACTED]
-- Infrared Suppressor (IRS) Redesign (Analysis of Alternatives)	[REDACTED]
-- Infrared Suppressor (IRS) Redesign (EMD)	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 676033 / CV-22 RDT&E POST PRODUCTION

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CV-22				
Enhanced Self Deployment	1	2017	4	2023
-- Risk Reduction Analysis (Multiple current and future development initiatives)	1	2017	4	2023
-- ATW development and testing (JUON)	1	2017	4	2017
-- ATW development and testing (AF Common configuration)	3	2019	4	2022
-- IBR design and development	3	2017	1	2020
---- LRU-1 Ethernet Design Phase 1 (ending with PDR)	3	2017	4	2017
---- LRU-1 Ethernet Design Phase 2 (ending with CDR)	4	2017	2	2019
---- LRU-1 Ethernet Integration and Testing Phase III (ending with PRR)	2	2019	3	2020
---- ENTR V4 Dock Design	1	2017	4	2018
Nacelle Improvements	1	2017	2	2021
-- IIS Development and Test	1	2017	4	2022
-- Common Nacelle Design	2	2018	2	2021
-- Electric Power System Upgrade	2	2017	4	2019
---- Generator Control Unit (GCU) Requirements Analysis	2	2017	4	2018
---- Generator Control Unit (GCU) Development and Test	1	2019	4	2021
-- Infrared Suppressor (IRS) Redesign (Analysis of Alternatives)	1	2017	4	2018
-- Infrared Suppressor (IRS) Redesign (EMD)	2	2019	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401840F / <i>AMC Command and Control System</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	3.510	1.688	0.000	1.688	0.000	0.000	0.000	0.000	Continuing	Continuing
674879: <i>Camps</i>	-	0.000	3.510	1.688	0.000	1.688	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 In CY 18 Consolidated Air Mobility Planning System (CAMPS) Increment 1 was a new start. CAMPS development is planned to be completed by the end of FY19.

A. Mission Description and Budget Item Justification

A. Mission Description and Budget Item Justification

Consolidated Air Mobility Planning System (CAMPS) Increment 1.

The CAMPS Increment I program is the primary critical joint requirements management system for Special Assignment Air Mission (SAAM), Air Refueling (AR) scheduling, and Intra-theater air movement requests. It is also the primary USTRANSCOM and Air Mobility Command Command and Control (AMC C2) planning and scheduling tool enabling Mobility Air Force (MAF) resources to support peacetime, contingency, humanitarian, and wartime operations. In the Air Refueling Management System (ARMS), CAMPS provides the ability to request, manage and validate requests for air refueling. Force-level CAMPS users include the USTRANSCOM Fusion Center, 618th Air Operations Center (AOC) Tanker Airlift Control Center (TACC), and other AOC Air Mobility Divisions (AMDs). Several web-based applications also support movement and air refueling requests for globally distributed Joint, Service, and Wing/Unit level users.

The 618th AOC (TACC) is a global air operations center responsible for planning and executing airlift and air refueling missions in support of the Joint Deployment and Distribution Enterprise (JDDE). Although primarily used by the 618th AOC (TACC), CAMPS also supports validation, planning, and scheduling activities found at AMD and USTRANSCOM. CAMPS airlift and air refueling requirement management applications are available for all globally distributed Joint, Service, and Wing/Unit level users that need to request airlift or air refueling.

The current CAMPS AR scheduling capability does not have access to all data sources necessary to maintain visibility of and support for all potential re-planning requirements and therefore can have 'blind spots' which hinder its ability to provide robust support for planning and re-planning across the entire "initial through final" planning phase. This CAMPS Increment I (modernization) effort will build on the existing technology transitioned from RDT&E initiatives.

FY19 continues funding for Air Refueling scheduling capability development and testing to provide planners an integrated human-in-the-loop and machine-based cooperative system which provides the ability to rapidly generate and evaluate multiple potential solution candidates to satisfy requirements. This will increase the effectiveness and efficiency with which Air Refueling assets are employed and support increased operational agility through more, rapid, effective and efficient re-planning while minimizing the impact on currently planned mission sets. The AR scheduling metrics component enables on-going improvement of the AR scheduling system and can be developed after extensive analysis and iterations with the constituent user sets and command authorities.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401840F / <i>AMC Command and Control System</i>
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This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production, and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	3.510	1.701	0.000	1.701
Current President's Budget	0.000	3.510	1.688	0.000	1.688
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 2017	FY 2018	FY 2019
Title: CAMPS Increment 1 Dvelopment	-	3.510	1.688
Description: Continue development of Consolidated Air Mobility Planning System (CAMPS) Increment one, Air Refueling scheduling planning capability			
FY 2018 Plans: Development of Consolidated Air Mobility Planning System (CAMPS) Increment one, Air Refueling scheduling planning capability			
FY 2019 Plans: Continue development of Consolidated Air Mobility Planning System (CAMPS) Increment one, Air Refueling scheduling planning capability.			
FY 2018 to FY 2019 Increase/Decrease Statement: Completing development and test.			
Accomplishments/Planned Programs Subtotals			
	-	3.510	1.688

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401840F / <i>AMC Command and Control System</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 834070: <i>AMC Command and Control System</i>	9.814	10.083	10.192	-	10.192	10.369	10.557	10.745	10.937	Continuing	Continuing

Remarks

E. Acquisition Strategy

This effort is being developed, demonstrated, and documented in a way that supports rapid and low cost acquisition and sustainment.

CAMPS Increment 1 is being executed under USTRANSCOM Acquisition Authority, and shall be acquired using the DODI 5000.02 Model 3 approach for Incrementally Deployed Software Intensive Program.

F. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401840F / AMC Command and Control System	Project (Number/Name) 674879 / Camps

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

CAMPS	
CAMPS Air Refueling Development	██████████
CAMPS Air Refueling Integration	██████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401840F / <i>AMC Command and Control System</i>	Project (Number/Name) 674879 / <i>Camps</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CAMPS				
CAMPS Air Refueling Development	3	2018	2	2019
CAMPS Air Refueling Integration	1	2019	4	2019

Note

- 3Q/FY18 Begin CAMPS Air Refueling Development
- 2Q/FY19 Complete CAMPS Air Refueling Development
- 1Q/FY19 Begin CAMPS Air Refueling Integration
- 4Q/FY19 Complete CAMPS Air Refueling Integration

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	6.902	8.090	2.541	0.000	2.541	6.203	6.142	5.720	6.191	Continuing	Continuing
675138: <i>ST System Development</i>	-	6.902	8.090	2.541	0.000	2.541	6.203	6.142	5.720	6.191	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Special Tactics (ST) System Development project focuses on modernization development for the Battlefield Air Operations (BAO) Kit. This program is part of the overarching Battlefield Airmen Modernization (BA-Mod) Program. BAO Kit will develop, test, train, and modernize the existing and future Family of Systems (FoS) that provide a state-of-the-art Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) capability. It also provides a suite of systems for all Air Force Specialty Codes supporting the ST community within the Air Force Special Operations Command's (AFSOC's) Battlefield Airmen. Efforts in ST System Development focus on reducing the risk of fratricide and substantially reducing size and weight of the equipment carried through three core capabilities, which are not limited to: Human Machine Interface (HMI), Line of Sight (LOS) targeting, and Machine-to-Machine (M2M) C4ISR System and all other ST capability needs.

This program will develop and enhance technologies for Battlefield Airmen ST operators to recognize, identify, range, nominate, and designate targets during both day and night operations. BAO Kit will also significantly reduce the time required to find, track, fix targets, and engage the enemy by providing highly accurate target grid coordinates in three dimensions, generating target imagery both pre- and post-strike, and transmitting target data to Command and Control centers. BAO Kit systems are light, compact, and portable for use by dismounted Battlefield Airmen. FY19 BAO Kit funding will provide significant improvements in operational capability, situational awareness, and precision lethality in the battle space while continuing to build and enhance the BAO Kit family of systems. This may be conducted through industry technology demonstrations, prototypes, and associated engineering support to posture the BAO Kit for technology insertion. These efforts will deliver enhanced capability for the dismounted soldier in terms of dramatic weight reduction and increase mission effectiveness across the conflict spectrum. BAO also supports AFSOC Tactical Command and Control (TAC C2) programs to develop and enhance communications systems and equipment essential for ST combat controllers, pararescue, combat weather operators, and tactical air controller parties within AFSOC to perform their mission. The ST operators use this equipment to gather and transmit assault zone suitability and weather data and to perform tactical airfield/assault landing/drop zone operations. Due to the rapidly changing threat environment, the acquisition program manager has the authority to redirect funding as necessary to meet current slated and emerging requirements. The above efforts may change based on the need to support current Air Force mission requirements.

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

The Special Tactics (ST) System Development activities also include studies and analysis to support both current and future program planning and execution.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>
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This is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	7.164	8.090	8.119	0.000	8.119
Current President's Budget	6.902	8.090	2.541	0.000	2.541
Total Adjustments	-0.262	0.000	-5.578	0.000	-5.578
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.262	0.000			
• Other Adjustments	0.000	0.000	-5.578	0.000	-5.578

Change Summary Explanation

FY19 funding decreased due to higher Air Force priorities.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Human Machine Interface (HMI)	0.918	1.891	0.340	-	0.340
Description: HMI is a system of systems that provides integrated operator interface between all the machine components by using unified visual and auditory displays and controls, such as head-mounted displays, tactical earplug connectivity with man pack or handheld communications, integrated tactical computing solution, and power generation and management systems.					
FY 2018 Plans:					
- Continue to focus on Handheld Link-16 receiver/transmitter for the dismounted operator and interaction with next generation aircraft. Capability will support digitally aided combat air support operations. Plan to develop and operate tests for full spectrum certification (Joint Interoperable Test Command (JITC), Air Force System Interoperability Test (AFSIT), and Authority to Operate (ATO)).					
- Continue to explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime.					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force				Date: February 2018						
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>								
C. Accomplishments/Planned Programs (\$ in Millions)										
<ul style="list-style-type: none"> - Continue communications development: HMI efforts which reduced the Size, Weight, and Power (SWAP) required to be carried by the Special Tactics Community. Specifically includes wireless technology. - Continue required maturation of available technology for future dismounted communication contract in order to meet the requirements of the user. <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Capability will support digitally aided combat air support operations. Plan to develop and operate tests for full spectrum certification (Joint Interoperable Test Command (JITC), Air Force System Interoperability Test (AFSIT), and Authority to Operate (ATO)). - Will continue to explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime. - Will continue communications development: will upgrade HMI efforts which reduced the Size, Weight, and Power (SWAP) required to be carried by the Special Tactics Community. Specifically includes wireless technology. - Will require maturation of available technology for future dismounted communication contract in order to meet the requirements of the user. - Due to the rapidly changing threat environment, the acquisition program manager has the authority to redirect funding as necessary to meet current slated and emerging requirements. The above efforts may change based on the need to support current Air Force mission requirements. <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to higher Air Force priorities.</p>						FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Line of Sight</p> <p>Description: Line of Sight (LOS) targeting enables the ST Battlefield Airmen to find, fix, track, target and, engage the enemy at close range during day or night operations by providing highly accurate target coordinates in three dimensions. LOS generates vital imagery both pre and post-strike at a fraction of the weight and is more efficient than legacy equipment carried by the operator. Non Line of sight (XLOS) targeting device exploration and development will help capture future capabilities to the Special Tactics community. XLOS devices allow for a remote expendable reporting environmental sensor that enhances AFSOC Special Operation Weather Team's (SOWT) ability to provide timely, accurate, and critical deep battle space weather reconnaissance and intelligence.</p> <p>FY 2018 Plans:</p>						0.250	0.273	0.001	-	0.001

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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<ul style="list-style-type: none"> - Continue to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community. - Continue to explore additional development of the Microweather Sensor (MWS). Look to further upgrade acoustic sensor and Chemical Biological Radiological Nuclear Explosive (CBRNE) detectors. <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Will continue to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community. - Will continue to explore additional development of the Microweather Sensor (MWS). - Due to the rapidly changing threat environment, the acquisition program manager has the authority to redirect funding as necessary to meet current slated and emerging requirements. The above efforts may change based on the need to support current Air Force mission requirements. <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to higher Air Force priorities.</p>					
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<p>Title: Machine-to-Machine (M2M) Software Development</p> <p>Description: A suite of map-centric software applications that enables M2M transfer of precision targeting, information management, C4ISR (Command, Control Communications, Computers, Intelligence, Surveillance, and Reconnaissance), and Situational Awareness (SA) information. Provides the ST Battlefield Airmen the ability to find, fix, track, target, and engage the enemy which greatly reduces the kill chain and drastically decreases the possibility of fratricide by enhancing the operator's SA on the battlefield.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue to improve development and test material prototypes to include market survey of M2M graphical user interfaces (GUI) for C4ISR. - Continue to perform DoD Mandatory Windows 10 upgrades, for Digital Air Strike Suite (DASS) system. - Continue to support requirements for DASS & Small Bomb Diameter (SBD) II net enabled weapon. <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Will begin to explore requirements to include future FoS capability gap. - Will continue research and developmental efforts to support requirements in BAO FoS CDD, which includes but is not limited to Assault Zones, Fires, Weather, Personnel Recovery, and Enabling Capabilities. 	5.734	5.926	2.200	-	2.200
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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Due to the rapidly changing threat environment, the acquisition program manager has the authority to redirect funding as necessary to meet current slated and emerging requirements. The above efforts may change based on the need to support current Air Force mission requirements. <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funding decreased due to higher Air Force priorities.					
Accomplishments/Planned Programs Subtotals	6.902	8.090	2.541	-	2.541

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 837100: <i>Tactical C-E Equipment</i>	43.833	15.524	36.389	25.000	61.389	52.094	44.269	66.330	19.315	Continuing	Continuing
• OPAF 04 Line Item 842990: <i>Personal Safety and Rescue Equipment</i>	4.285	6.584	6.118	4.000	10.118	6.299	2.506	2.330	2.371	Continuing	Continuing

Remarks

E. Acquisition Strategy
 BAO Kit awarded a contract in FY16 to complete M2M software development. This effort will include system engineering, design, integration, and fielding support for M2M software. Due to the rapidly changing threat environment, the acquisition program manager has the authority to redirect funding as necessary to meet current slated and emerging requirements. The above efforts may change based on the need to support current Air Force mission requirements. Wright Patterson AFB, OH manages the contract effort.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>	Project (Number/Name) 675138 / <i>ST System Development</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Human Machine Interface (HMI)	C/Various	Various : Various	-	0.918	Oct 2016	1.891	Oct 2017	0.303	Oct 2018	-		0.303	Continuing	Continuing	-
Line of Sight	SS/ Various	Physical Optics Corporation : Torrance, CA	-	0.250	Nov 2016	0.273	Nov 2017	0.001	Nov 2018	-		0.001	Continuing	Continuing	-
Machine-To-Machine (M2M) Software Development	C/CPFF	Systems Research & Applications Corp : Dayton, OH	-	5.138	Feb 2017	5.277	Mar 2018	1.831	Feb 2019	-		1.831	Continuing	Continuing	-
Subtotal			-	6.306		7.441		2.135		-		2.135	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Agency Support	Various	46 TS : Eglin AFB, FL	-	0.253	Oct 2016	0.266	Oct 2017	0.205	Oct 2018	-		0.205	Continuing	Continuing	-
Subtotal			-	0.253		0.266		0.205		-		0.205	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Various, NV	-	0.343	Oct 2016	0.383	Oct 2017	0.201	Oct 2018	-		0.201	Continuing	Continuing	-
Subtotal			-	0.343		0.383		0.201		-		0.201	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		-	6.902	8.090	2.541	-	2.541	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>	Project (Number/Name) 675138 / <i>ST System Development</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	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>ST System Development</i>	
Human Machine Interface (HMI)	
Line of Sight	
Machine-To-Machine Software Development	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>	Project (Number/Name) 675138 / <i>ST System Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>ST System Development</i>				
Human Machine Interface (HMI)	1	2017	4	2023
Line of Sight	1	2017	4	2023
Machine-To-Machine Software Development	1	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0702207F / <i>Depot Maintenance (Non-IF)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	1.507	1.528	1.897	0.000	1.897	1.936	1.974	2.017	2.087	Continuing	Continuing
673326: <i>Precision Measurement & Calibration</i>	-	1.507	1.528	1.897	0.000	1.897	1.936	1.974	2.017	2.087	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program develops, tests, and evaluates national and Air Force measurement standards (hardware) and calibration equipment in support of all Air Force programs and activities, including Precision Measurement Equipment Laboratories (PMELs) worldwide. Metrology research and development provides technology to support systems in all phases of development and acquisition, as well as Air Force R&D laboratories, test ranges, ground test facilities, and operational weapons systems support. Rapidly changing technology requires continuing research and development of measurement standards and calibration equipment to ensure modern weapon systems meet Air Force readiness objectives. This program addresses all metrology disciplines and includes the technology areas of laser, infrared, microwave, millimeter wave, optical, physical, mechanical, electrical, electronic, and ionizing radiation measurements. Metrology is a technical discipline devoted to the science of measurements and to the study and improvement of measurement technology. Measurements are the foundation of military system development, quality assurance, hardware conformance testing and system readiness tests. The integrity of these tests is assured through calibration and traceability assurance schemes. The capability to measure and calibrate must parallel the emergence of new technology, new ranges, and new capabilities of military systems. Lack of new measurement capability impedes or blocks the successful exploitation of new technologies, especially in the movement from development laboratory to production to deployment. R&D efforts are essential within the DoD to pace these requirements, otherwise, these same new systems will suffer time delays, excessive cost, and increased risk due to unreliable test results in all phases of development, production, deployment and operation.

This program element may include necessary civilian pay expenses required to manage, execute and deliver 0702207F. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

Program is managed by Air Force Materiel Command, Agile Combat Support Directorate, Air Force Metrology Division (WNM).

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0702207F I Depot Maintenance (Non-IF)
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	1.518	1.528	1.499	0.000	1.499
Current President's Budget	1.507	1.528	1.897	0.000	1.897
Total Adjustments	-0.011	0.000	0.398	0.000	0.398
• Congressional General Reductions	-0.011	0.000			
• Congressional Directed Reductions	0.000	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	0.398	0.000	0.398

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Weapons Systems Measurement Standards</p> <p>Description: Continue development of national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment.</p> <p>FY 2018 Plans: Project development continues on infrared/laser/electro-optical weapons system support.</p> <p>N/A</p> <p>FY 2019 Base Plans: Project development continues.</p> <p>FY 2019 OCO Plans: N/A</p>	0.558	0.568	0.568	0.000	0.568
<p>Title: Electrical Measurements</p> <p>Description: Continue development of standards for electrical measurements to support high accuracy electronic test equipment.</p> <p>FY 2018 Plans:</p>	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force			Date: February 2018			
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0702207F / <i>Depot Maintenance (Non-IF)</i>				
C. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A						
<p>FY 2019 Base Plans: Continue development of standards for electrical measurements to support high accuracy electronic test equipment.</p> <p>FY 2019 OCO Plans: N/A</p>						
<p>Title: Radar Support/Communications</p> <p>Description: Continue development of standards for radar support, RF communication systems, and radar cross section range measurements.</p> <p>FY 2018 Plans: Development of radar support standards, RF communication systems and radar cross section range will continue through development process.</p> <p>FY 2019 Base Plans: Continue development.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increased development.</p>		0.300	0.300	0.712	-	0.712
<p>Title: Calibration</p> <p>Description: Continue the development of improved calibration standards to support physical, mechanical, and electro-mechanical support equipment.</p> <p>FY 2018 Plans: Calibration standards which support physical, mechanical and electro-mechanical support equipment will continue to be developed to meet ever changing technology.</p> <p>FY 2019 Base Plans: Continue development</p>		0.560	0.560	0.560	-	0.560
<p>Title: Analytical Metrology</p>		0.089	0.100	0.057	-	0.057

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0702207F / <i>Depot Maintenance (Non-IF)</i>	

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: Continue development of standards, models, and procedures to support analytical metrology applications.					
FY 2018 Plans: Continue development of standards, models, and procedures to support analytical metrology applications.					
FY 2019 Base Plans: Continue development					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease.					
Accomplishments/Planned Programs Subtotals	1.507	1.528	1.897	0.000	1.897
Other Service Funding Adjustment	0.000	0.000	0.000	0.000	0.000
Air Force Subtotals	1.507	1.528	1.897	0.000	1.897

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

N/A

Remarks

E. Acquisition Strategy

Primarily accomplished through intergovernmental transfer between the Department of Defense and other Federal Departments.

F. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0702207F / <i>Depot Maintenance (Non-IF)</i>	Project (Number/Name) 673326 / <i>Precision Measurement & Calibration</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	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>Standards Development</i>	
Standards Development	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0702207F / <i>Depot Maintenance (Non-IF)</i>	Project (Number/Name) 673326 / <i>Precision Measurement & Calibration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Standards Development</i>				
Standards Development	1	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	31.677	50.933	0.000	50.933	37.625	34.561	22.027	0.000	0.000	176.823
675207: <i>Maintenance Repair and Overhaul</i>	0.000	0.000	31.677	50.933	0.000	50.933	37.625	34.561	22.027	0.000	0.000	176.823
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 523

Note

In FY 2018 PE 0708610F, Project 675207, MROi efforts were transferred to PE 0708055F, Maintenance, Repair & Overhaul System, Project 675207, Maintenance Repair and Overhaul, in order to improve transparency of this ACAT I acquisition program.

Prior Years Funding \$23.741M was executed in PE 0708610F.

A. Mission Description and Budget Item Justification

Maintenance, Repair and Overhaul is an enterprise resource planning IT system that provides an integrated capability for planning, scheduling, and executing organic depot maintenance to support agile planning, optimized workload assignment and resource allocation.

MROi creates an integrated capability that plans, schedules, and executes organic depot maintenance support functions critical to agile planning, optimized workload assignment, resource allocation and throughput, thereby increasing depot maintenance support to the warfighter.

FY 2019 funding will support the development and integration of MROi, leading to a planned Full Deployment Decision/Full Deployment ATP (Authority to Proceed). The MROi implementer will continue to configure the Oracle suite; configure associated Commercial-Off-The-Shelf (COTS) support software; develop Reports, Interfaces, Conversions and Extensions (RICE) software; and develop training materials. Development Testing (DT) activities will begin.

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	31.677	45.117	0.000	45.117
Current President's Budget	0.000	31.677	50.933	0.000	50.933
Total Adjustments	0.000	0.000	5.816	0.000	5.816
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	5.816	0.000	5.816

Change Summary Explanation

5.816M budget increased due to emerging program office requirements

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Maintenance, Repair and Overhaul Initiative (MROi)	0.000	31.677	50.933
Description: The MROi transformation effort will create an integrated capability for planning, scheduling, executing organic depot maintenance to support agile planning, optimizing workload assignment and resource allocation.			
FY 2018 Plans:			
* FY18 funding supports the development and integration leading to planned Full Deployment capabilities.			
* The MROi implementer begins to configure the Oracle suite; configure associated COTS support software; and develop Reports, Interfaces, Conversions and Extensions (RICE) software for planned releases.			
FY 2019 Plans:			
* FY19 funding will support the development and integration of MROi planned releases, leading to a planned Full Deployment Decision/Full Deployment ATP.			
* The MROi implementer will continue to configure the Oracle suite; configure associated Commercial-Off-The-Shelf (COTS) support software; develop Reports, Interfaces, Conversions and Extensions (RICE) software; and develop training materials.			
* Development Testing (DT) activities will begin.			
FY 2018 to FY 2019 Increase/Decrease Statement:			
Funding increase from FY 2018 to FY 2019 due to ramp up of development, integration and testing activities.			
Accomplishments/Planned Programs Subtotals			
	0.000	31.677	50.933

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 834480: <i>Maintenance, Repair and Overhaul Initiative</i>	-	-	12.207	-	12.207	1.912	0.000	0.000	-	0.000	14.119

Remarks

E. Acquisition Strategy

MROi will use an incremental build-release acquisition strategy to deliver capability. The program is using a competitive, best value strategy to select a system implementer utilizing the existing NETCENTS-2 Small Business Application Services contract. Hosting infrastructure will be provided through agreements with DISA.

- Development Contract Strategy
- Directed use of NETCENTS II Small Business Application Services IDIQ
- Limited competition to preselected group of small businesses
- Competitive, Best Value Full Trade-off procedures -CPIF (Labor), CPFF (Training, Sustainment); CR (Travel, ODCs); FFP (Level 2 & 3 Support)
- CPIF contract type with cost, schedule, and performance incentives
- Own technical baseline
- Sustainment Contract 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: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708055F / Maintenance, Repair & Overhaul System	Project (Number/Name) 675207 / Maintenance Repair and Overhaul
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Maintenance, Repair and Overhaul Initiative: Configuration System Implementer	C/Variou	NETCENTS-2 : WPAFB, OH	-	-		9.733	Feb 2018	20.294	Feb 2019	-		20.294	94.213	124.240	56.000
Maintenance, Repair and Overhaul Initiative: Software Development	Variou	Various : WPAFB, OH	-	-		0.638	May 2018	0.599	Jan 2019	-		0.599	0.000	1.237	-
Maintenance, Repair and Overhaul Initiative: Hosting Environment Support	MIPR	DISA : St. Louis, MO	-	-		3.172	Mar 2018	5.922	Jan 2019	-		5.922	0.000	9.094	-
Maintenance, Repair and Overhaul Initiative: Capabilities Integration Environment (CIE)	MIPR	AFLCMC/HNII : Gunter Annex, AL	-	-		0.054	Feb 2018	1.364	Feb 2019	-		1.364	0.000	1.418	-
Maintenance, Repair and Overhaul Initiative: Legacy Systems Interface Development	C/CPAF	Various : WPAFB, OH	-	-		2.722	Aug 2018	6.881	Jan 2019	-		6.881	0.000	9.603	-
Subtotal			-	-		16.319		35.060		-		35.060	94.213	145.592	N/A

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 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Maintenance, Repair and Overhaul Initiative: ISP Support	C/CPFF	Copper River : Gunter Annex, AL	-	-		0.265	Mar 2018	0.474	Mar 2019	-		0.474	0.000	0.739	-
Maintenance, Repair and Overhaul Initiative: FFRDC Support	SS/FFP	MITRE : WPAFB, OH	-	-		1.466	Mar 2018	1.439	Mar 2019	-		1.439	0.000	2.905	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i>	Project (Number/Name) 675207 / <i>Maintenance Repair and Overhaul</i>
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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Maintenance, Repair and Overhaul Initiative: Oracle Support	C/Variou	Oracle : WPAFB, OH	-	-		-		3.292	Jan 2019	-		3.292	0.000	3.292	-
Maintenance, Repair and Overhaul Initiative: Common Computing Environment	C/Variou	Leidos : WPAFB, OH	-	-		5.932	Jan 2018	1.688	Jan 2019	-		1.688	0.000	7.620	-
Maintenance, Repair and Overhaul Initiative: PMO Oracle Support - DDC	SS/CPAF	Oracle : WPAFB, OH	-	-		1.662	Mar 2018	1.411	Jan 2019	-		1.411	0.000	3.073	-
Maintenance, Repair and Overhaul Initiative: Field Assistance Service (FAS)	TBD	Not specified. : WPAFB, OH	-	-		-		0.179	Feb 2019	-		0.179	0.000	0.179	-
Subtotal			-	-		9.325		8.483		-		8.483	0.000	17.808	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Maintenance, Repair and Overhaul Initiative: Test Support	MIPR	DISA : St. Louis, MO	-	-		0.260	Mar 2018	0.324	Dec 2018	-		0.324	0.000	0.584	-
Maintenance, Repair and Overhaul Initiative: Joint Interoperability Test Command (JITC) Support	MIPR	GSA : WPAFB, OH	-	-		0.025	Mar 2018	0.022	Mar 2019	-		0.022	0.000	0.047	-
Maintenance, Repair and Overhaul Initiative: LDTO Test Support (Cybersecurity)	MIPR	DISA : St. Louis, MO	-	-		-		0.088	Jan 2019	-		0.088	0.000	0.088	-
Maintenance, Repair and Overhaul Initiative: Test Support Hosting Environment	MIPR	DISA : St. Louis, MO	-	-		2.860	Mar 2018	3.011	Mar 2019	-		3.011	0.000	5.871	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708055F / Maintenance, Repair & Overhaul System	Project (Number/Name) 675207 / Maintenance Repair and Overhaul
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Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		3.145		3.445		-		3.445	0.000	6.590	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Maintenance, Repair and Overhaul Initiative: ETASS Support	C/CPFF	OASIS : WPAFB, OH	-	-		0.966	Mar 2018	1.966	Mar 2019	-		1.966	0.000	2.932	-
Maintenance, Repair and Overhaul Initiative: PASS Support	C/Various	BTAS : WPAFB, OH	-	-		0.611	Feb 2018	-		-		-	0.000	0.611	-
Maintenance, Repair and Overhaul Initiative: EPASS	C/CPFF	Various : WPAFB, OH	-	-		0.523	Jun 2018	1.279	Jun 2019	-		1.279	0.000	1.802	-
Maintenance, Repair and Overhaul Initiative: PMA	C/CPFF	Various : WPAFB, OH	0.000	-		0.788	Sep 2018	0.700	Sep 2019	-		0.700	0.000	1.488	-
Subtotal			0.000	-		2.888		3.945		-		3.945	0.000	6.833	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-	31.677	50.933	-	50.933	94.213	176.823	N/A

Remarks
Prior Years Funding \$23.741M was executed in PE 0708610F.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i>	Project (Number/Name) 675207 / <i>Maintenance Repair and Overhaul</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Maintenance, Repair and Overhaul Initiative																												
MILESTONE B (Jan 2018)																												
Contract Award (Feb 2018)																												
Release 1 Development and Deployment																												
Release 1 Full Deployment/Limited Deployment ATP (Jan 2020)																												
IOC (June 2020)																												
Release 2 Development and Deployment																												
Release 1 - 4 Full Deployment/Limited Deployment ATP (Oct 2020)																												
Release 3 Development and Deployment																												
Release 4 Development and Deployment																												
Full Deployment Decision/Full Deployment ATP (June 2021)																												
Release 1 Deployment Limited Deployment Site																												
Release 1 - 4 Deployment Limited Development Sites																												
Release 1 - 4 Deployment Full Deployment Sites																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i>	Project (Number/Name) 675207 / <i>Maintenance Repair and Overhaul</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Maintenance, Repair and Overhaul Initiative</i>				
MILESTONE B (Jan 2018)	2	2018	2	2018
Contract Award (Feb 2018)	2	2018	2	2018
Release 1 Development and Deployment	3	2018	1	2020
Release 1 Full Deployment/Limited Deployment ATP (Jan 2020)	2	2020	2	2020
IOC (June 2020)	3	2020	4	2020
Release 2 Development and Deployment	1	2019	2	2020
Release 1 - 4 Full Deployment/Limited Deployment ATP (Oct 2020)	1	2021	1	2021
Release 3 Development and Deployment	2	2019	1	2020
Release 4 Development and Deployment	4	2019	4	2020
Full Deployment Decision/Full Deployment ATP (June 2021)	3	2021	3	2021
Release 1 Deployment Limited Deployment Site	3	2020	4	2020
Release 1 - 4 Deployment Limited Development Sites	1	2021	3	2021
Release 1 - 4 Deployment Full Deployment Sites	4	2021	3	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	0.000	53.369	33.344	13.787	0.000	13.787	27.623	42.305	51.346	47.188	Continuing	Continuing
675207: <i>Logistics IT System Modernization</i>	0.000	53.369	33.344	13.787	0.000	13.787	27.623	42.305	51.346	47.188	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The AF requires an integrated logistics capability that provides timely, accurate and reliable information to decision makers at all levels of command and across the full range of military operations.

FIAR and Software Upgrades:

The remediation and modification of core logistics systems is necessary for the AF to meet statutory Financial Improvement Audit Readiness (FIAR) and align with the Joint Chiefs of Staff J-4 Concept for Logistics, and the AF Logistics Board's approved Enterprise Logistics Strategy (ELS). The AF must sustain and modernize these systems through FIAR Remediation, to address the most immediate gaps in meeting FIAR by the statutory deadline, and software upgrades, to reduce high operating costs, implement statutory compliance requirements and improve near term system performance, and system consolidation efforts.

Systems contained in these business areas include, but are not limited to, the Combat Ammunitions System (CAS), Integrated Logistics System-Supply (ILS-S), AF Equipment Management System (AFEMS), Enhanced Technical Information Management System (ETIMS), Integrated Maintenance Data System (IMDS), Reliability and Maintainability Information System (REMIS), and Stock Control System (SCS).

Transformation:

The AF must transform its logistics business processes and transition away from using numerous stovepipe systems and process flows that execute the same tasks. Eliminating process redundancies across the logistics enterprise will enable the AF to execute more efficient, cost-effective and integrated logistics in the long term. The objective of transformation is to conduct Business Process Re-engineering (BPR) to identify and eliminate overlaps in our current processes and where appropriate, implement the use of new IT systems.

The AF Service Development and Delivery Process (SDDP) was applied as part of this BPR effort to apply discipline and focus to the task of process reengineering and requirements development in order to reduce risk and successfully transform logistics IT systems. In the SDDP, the requirements definition, architecture and design for an IT capability is a government-owned process. The SDDP ensured the AF end user and Sponsor consider all possible doctrine, organization, training, material, leadership, personnel and facility solutions to the end user's need/problem before a materiel solution is sought. The SDDP is a six-step process, each step with its own specific product outcomes that serve as the basis for downstream activities in the SDDP and facilitating enterprise-level analysis to maximize reuse of existing capabilities. Maximizing reuse will eliminate duplicate implementation actions across the AF and assure individual user problems or needs are not solved at the cost of

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	
<p>overall enterprise benefits. The outcome of using the SDDP is a well-described requirement which may include a materiel solution, in which case the SDDP details the acquisition and implementation activities to support delivery of the capability. Alternatively, success may be demonstrated by the resolution of the user's problem without a materiel solution.</p> <p>The AF logistics enterprise is comprised of multiple overarching functional areas, to include maintenance, repair and overhaul, end-to-end supply chain support, base supply inventories, and predictive analysis and forecasting. The AF will standardize its business processes within each major logistics functional area through Transformation CI. Transformation Capability Initiatives (CIs) include, but are not limited to: Maintenance, Repair and Overhaul (MROi), Supply Chain Management (SCM), and Product Lifecycle Management (PLM).</p> <p>Transformation Capability Initiatives</p> <ul style="list-style-type: none"> - Maintenance, Repair and Overhaul (MROi) will create an integrated capability that plans, schedules, and executes organic depot maintenance support functions critical to agile planning, optimized workload assignment, resource allocation and throughput, thereby increasing depot maintenance support to the warfighter. In FY 2018, PE 0708610F, Logistics Information Technology (LOGIT) Air Force, Project 675207, Logistics IT System Modernization, efforts were transferred to PE 0708055F, Maintenance Repair, and Overhaul (MRO), Project 675207, Logistics IT System Modernization, in order to bring greater visibility to the effort since it exceeded yearly funding thresholds and was therefore declared an ACAT I program. - SCM Item Master provides the capability to manage comprehensive, accurate, reliable item master data (e.g., accurate identification and authorization of owners and users of items). - SCM Field Maintenance will improve the AF field maintenance capabilities across Mission Generation Network (MGN) and Repair Network (RN) (e.g. propulsion, avionics, C2 enabler systems, cyber systems, communications-electronics & simulation, Precision Measurement Equipment Laboratory (PMEL), etc.) including the planning, scheduling, execution and oversight of functional deficiencies incurred over the past 10 years due to lack of prioritized funding and failure of the previous enterprise-wide modernization approach. - PLM enables AF engineering/logistics communities to define, track, protect and manage product data for AF weapon systems and equipment. The AF requires the ability to control configuration of the product throughout the life of the asset. Standardized configuration control will ensure validity, accuracy, reliability, currency, and security of the product information which will increase weapon system readiness by decreasing costs to manage, protect, store and deliver product information. <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver our integrated logistics capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 06065833F.</p> <p>Budget Activity 7 (BA 7) - This program is in BA 7, Operational System Development, because this budget activity includes developmental efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.</p>		

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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	61.676	33.344	26.408	0.000	26.408
Current President's Budget	53.369	33.344	13.787	0.000	13.787
Total Adjustments	-8.307	0.000	-12.621	0.000	-12.621
• Congressional General Reductions	-4.693	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-1.758	0.000			
• SBIR/STTR Transfer	-1.856	0.000			
• Other Adjustments	0.000	0.000	-12.621	0.000	-12.621

Change Summary Explanation

Logistics IT PE 0708610F realigned FY19 funding to support the logistics community's number one priority - Maintenance Repair and Overhaul Initiative PE 0708055F.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
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<p>Title: Combat Ammunition System Software Upgrade (CAS SUP)</p> <p>Description: - Modify CAS software to an object oriented/modular design, provide a more sustainable and scalable baseline, and improve operational performance. Modify CAS software to support FIAR.</p> <p>FY 2018 Plans: - Effort complete in FY 2017.</p> <p>FY 2019 Plans: - Effort completed in FY 2017.</p>	2.483	0.000	0.000
<p>Title: Integrated Logistics Systems-Supply Software Modification - Re-Platform (ILS-S RP)</p> <p>Description: - SW Modification Development: The ILS-S RP effort is to migrate the Standard Base Supply System (SBSS) source code and data from the current UNISYS mainframe Common Business-Oriented Language (COBOL) based SBSS environment to a mid-tier Java environment. This SW development effort also has a second component to it that is critical and essential to the full capability of Re-Platform. The Legacy Adapter portion of the Enterprise Solution Supply (ES-S) front end requires modification to communicate with the newly modified SBSS system. These modifications are integral for the Re-Platform effort to be successful.</p> <p>FY 2018 Plans:</p>	10.440	0.000	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
- Phased deployment finishes in FY 2017.				
FY 2019 Plans: - Phased deployment finished in FY 2017.				
Title: Integrated Logistics Support - Supply Enhancements		0.000	0.000	0.600
Description: - Modify ILS-S to meet existing and future compliance requirements. Support Logistics Application Rationalization. Modifications may include system changes to subsume functionality of other systems in support of terminating duplicate capability and systems, as well as enhancements to meet compliance requirements such as Item Unique Identification (IUID), Defense Logistics Marking Standards (DLMS), and enhancements for information technology modernization.				
FY 2018 Plans: N/A				
FY 2019 Plans: - Will begin subsumption activities and enhancements.				
FY 2018 to FY 2019 Increase/Decrease Statement: - The funding increase is due to subsumption activities and enhancements.				
Title: Purchase Request Process System Financial Improvement Audit Readiness (PRPS FIAR)		0.000	0.300	0.000
Description: - PRPS FIAR to perform multiple FIAR Congressional requirements activities to establish, document and test/ assess system audit readiness. Continue and accomplish all audit readiness activities to support future FIAR (FISCAM/Blue Book) requirements. These requirements must be accomplished and fully executed to not only ensure program success, but also mandated FIAR compliance.				
FY 2018 Plans: - Initiating any DFAS blue book FIAR modifications.				
FY 2019 Plans: - All FY19 FIAR directed requirements will be accomplished via Emerging FIAR efforts.				
FY 2018 to FY 2019 Increase/Decrease Statement: - Funding decreased because all FY19 FIAR directed requirements will be accomplished via Emerging FIAR efforts.				
Title: Air Force Equipment Management System Financial Improvement Audit Readiness (AFEMS FIAR)		2.955	8.881	1.200
Description: - AFEMS will satisfy multiple FIAR requirements activities to establish, document and test/assess system audit readiness. Continue all audit readiness activities to support future FIAR (FISCAM/Blue Book) requirements. These requirements				

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>must be accomplished and fully executed to not only ensure program success, but also to meet mandated FIAR compliance. Additionally, these requirements will be fielded with multiple SW releases, as identified on the R-4A schedule profile.</p> <p>FY 2018 Plans: - Continuing modification of AFEMS software to support additional FIAR requirements.</p> <p>FY 2019 Plans: - Continuing modification of AFEMS software to support additional FIAR requirements.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: - Effort completing in May 2019.</p>				
<p>Title: Enhanced Technical Information Management System Software Upgrade (ETIMS SUP)</p> <p>Description: - Modify ETIMS software to integrate additional enhancements satisfying requirements contained in the Functional Requirements Document(FRD). ETIMS requires modernization to incorporate enhancements into the AF Enterprise Technical Order (TO) Management System, and the current ETIMS release that is being worked falls into this category. ETIMS is a dev/mod effort that will satisfy the Management of Computer Program Identification Number (CPINs), archive digital TOs, interface System of record Time Compliance Technical Order (TCTO) data with REMIS, manage and track to change requests, and store and distribute Interactive Electronic Technical Manuals (IETMs).</p> <p>FY 2018 Plans: - Continuing enhancement activities, including a dev/mod effort that will satisfy the management of CPINs, archive digital TOs, interface system of record TCTO data with REMIS, manage and track to change requests, and store and distribute IETMs. - Modifying software to implement functional requirements and principle objectives that are documented in the TO Management FRD, which aligns with the TO Management Capability Development Document authorizing the acquisition of the ETIMS to provide the TO Management System capability.</p> <p>FY 2019 Plans: - Complete software modification effort and deploy software.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: - Effort completing in Feb 2019.</p>		5.085	6.300	0.800
<p>Title: Integrated Maintenance Data System - Central Database Software Upgrade Program Version 3.0 (IMDS CDB SUP)</p>		0.000	0.500	3.200

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Description: - Modify IMDS CDB SUP v3.0 and associated requirements to comply with statutory/regulatory technical improvements (Internet Protocol Version 6, Item Unique Identification, etc), and enable an infrastructure migration to significantly reduce annual operating costs of critical maintenance documentation system.</p> <p>FY 2018 Plans: - Developing acquisition documentation, Risk Management Plan and initiate Clinger-Cohen Act certification activities. - Initiating IMDS CDB software upgrade.</p> <p>- In FY18 Integrated Maintenance Data System - Central Database Software Upgrade Program Version 3.0 (IMDS CDB SUP) is a new start.</p> <p>FY 2019 Plans: - Award development contract for IMDS CDB SUP capabilities.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: - Funding increased because the prime contract is scheduled to award in FY19.</p>				
<p>Title: Integrated Maintenance Data System Central Database Maintenance Scheduling Application Tool Software Upgrade (IMDS CDB MSAT SUP)</p> <p>Description: - Modify IMDS Central Database (CDB) software to enable the subsumption of the Maintenance Scheduling Application Tool (MSAT) functionality into IMDS CDB, reducing the number of core logistics systems required to document field base level maintenance.</p> <p>FY 2018 Plans: - Continuing efforts toward early FY 2019 deployment.</p> <p>FY 2019 Plans: - Complete deployment.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased because efforts complete early FY 2019.</p>		3.881	1.901	0.700
<p>Title: Reliability and Maintainability Information System Software Upgrade (REMIS SUP)</p> <p>Description: - Complete development program (software upgrade and move into DISA or other common computing environment). Includes Upgrade (JAVA EE), and transition to DISA and common computing environment.</p> <p>FY 2018 Plans:</p>		7.172	3.500	1.100

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Continuing development program (move into DISA), by utilizing PMO support contractors while completing outstanding CCE environment actions. FY 2019 Plans: - Will complete development program (move into DISA), utilizing PMO support contractors while completing outstanding CCE environment actions. FY 2018 to FY 2019 Increase/Decrease Statement: - Funding decreased due to the completion of DISA migration and development early 3rd qtr FY 2019.				
Title: Reliability and Maintainability Information System Enhancements (REMIS Enhancements) Description: - Modify REMIS to meet existing and future compliance requirements. Support Logistics Application Rationalization. Modifications may include system changes to subsume functionality of other systems in support of terminating duplicate capability and systems, as well as enhancements to meet compliance requirements such as Item Unique Identification (IUID), Defense Logistics Marking Standards (DLMS), and enhancements for information technology modernization. FY 2018 Plans: - Initiating FIAR audit mandates, subsumption activities, and enhancements. - In FY18 REMIS Enhancements is a new start. FY 2019 Plans: - Continue subsumption activities and enhancements. FY 2018 to FY 2019 Increase/Decrease Statement: - Funding increased because slight enhancements forecasted in FY19.		0.000	0.500	0.600
Title: Stock Control System Financial Improvement and Audit Readiness (SCS FIAR) Description: - SCS FIAR PMO to perform multiple FIAR Congressional requirements activities to establish, document and test/ assess system audit readiness. Continue and sustain all audit readiness activities to support future FIAR (FISCAM/Blue Book) requirements. These requirements must be accomplished and fully executed to not only ensure program success, but also to meet mandated FIAR compliance. Additionally, these requirements will be fielded with multiple SW releases, as identified in Exhibit R-4, RDT&E Schedule Profile and R-4A, RDTE Schedule Details, for SCS FIAR. FY 2018 Plans:		3.272	2.332	0.150

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
- Continuing modification of SCS FIAR software to achieve FIAR compliance. FY 2019 Plans: - Completing modification of software to achieve FIAR compliance. FY 2018 to FY 2019 Increase/Decrease Statement: - Funding decreased due to early FY 2019 completion.				
Title: Transformation Capability Initiative - Supply Chain Management Item Master (SCM IM) Description: - Provides the capability to manage comprehensive, accurate and reliable item data. FY 2018 Plans: - Initiating activities that focus on preliminary system design to address Item Master Management and Item Support Processes. Continuing Commercial Technologies for Maintenance Activities (CTMA) 2.0 effort to validate capabilities and potential hosting scenarios. Planning for testing software in government hosted environment. FY 2019 Plans: - Will continue efforts to further increase Item Master capability and develop/test interfaces with increased legacy systems. FY 2018 to FY 2019 Increase/Decrease Statement: - Funding increased because of continued efforts to further increase Item Master capability and develop/test interfaces with increased legacy systems.		6.549	1.900	2.000
Title: Transformation Capability Initiative - Supply Chain Management - Field Maintenance Initiative (SCM Field MX) Description: - SCM Field Maintenance will improve the AF field maintenance capabilities across Mission Generation Network (MGN) and Repair Network (RN) (e.g. propulsion, avionics, C2 enabler systems, cyber systems, communications-electronics & simulation, Precision Measurement Equipment Laboratory (PMEL), etc.) including the planning, scheduling, execution and oversight of functional deficiencies incurred over the past 10 years due to lack of prioritized funding and failure of the previous enterprise-wide modernization approach. FY 2018 Plans: - Standing up program management office and conducting early risk reduction activities. - In FY18 Transformation Capability Initiative - Supply Chain Management - Field Maintenance Initiative (SCM Field MX) is a new start. FY 2019 Plans:		0.000	0.500	0.500

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
- Continuing risk reduction activities.				
<p>Title: Transformation Capability Initiative - Maintenance, Repair and Overhaul (MRO)</p> <p>Description: - The MRO transformation effort will create an integrated capability for planning, scheduling, executing organic depot maintenance to support agile planning, optimizing workload assignment and resource allocation.</p> <p>FY 2018 Plans: - MRO was transferred to PE 0708055F in FY2018.</p> <p>FY 2019 Plans: - MRO was transferred to PE 0708055F in FY2018.</p>		9.330	0.000	0.000
<p>Title: Transformation Capability Initiative - Product Lifecycle Management</p> <p>Description: - PLM will enable AF engineering/logistics communities to define, track, protect and manage product data for AF weapon systems and equipment. It will also enable collaboration by connecting field users with Center engineers, original equipment manufacturers with equipment specialists and internal/external stakeholders, and modernize the means used to manage PLM information from cradle to grave.</p> <p>FY 2018 Plans: - Closing out prototyping Commercial Technologies for Maintenance Activities (CTMA) project. - Continuing to perform program planning and definition, while developing acquisition strategy, enterprise infrastructure, schedule, estimates, IT compliance, Business Capability Acquisition Cycle (BCAC) documentation.</p> <p>FY 2019 Plans: - Will closeout PLM pre-production activities. - Will begin development activities.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: - Funding decreased because of completion of the Commercial Technologies for Maintenance Activities (CTMA) risk reduction efforts in FY 2018.</p>		2.202	3.406	1.287
<p>Title: Emerging Financial Improvement and Audit Readiness (Emerging FIAR)</p> <p>Description: - Modify operational Logistics software systems to incorporate emerging FIAR requirements. These requirements are the result of on-going analysis of the Defense Finance and Accounting Services(DFAS) Bluebook which publishes changes approximately two times each year. The results are identified and documented systems deficiencies that can only be satisfied via a material solution.</p>		0.000	2.124	0.450

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>FY 2018 Plans: - Initiating FIAR remediation efforts of those program with deficiencies documented as a result of on-going analyses of the latest DFAS Bluebook review.</p> <p>- In FY18 Emerging FIAR requirements is a new start.</p> <p>FY 2019 Plans: - Continuing FIAR remediation efforts of those program with deficiencies documented as a result of on-going analyses of the latest blue book review.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: - Funding decreased because the bulk of FISCAM/Blue Book requirements forecasted for FY 2018.</p>				
<p>Title: Logistics Strike Teams (Strike Teams)</p> <p>Description: - Rapidly transform the Logistics IT landscape and improve operational command and control by consolidating and collapsing 359 systems; enhancing logistics data analytics and forecasting with more accurate and timely data; and reducing costs by migrating applications to modern hosting environments with shared services, all while applying Agile methodologies to reduce risk and complexity, enable technology insertion and synthesize logistics information.</p> <p>FY 2018 Plans: - Initiating efforts to collapse 359 systems and enhance logistics analytics by applying more accurate methodologies that will 1) improve command and control, 2) enhance logistics data analytics and forecasting, and 3) eliminate redundancy and duplication. Enhance logistics data analytics environment with machine learning, predictive, and prognostic capabilities; incorporate automated tools for rapid consolidation of duplicative analytics capabilities.</p> <p>- In FY18 Logistics Strike Teams is a new start.</p> <p>FY 2019 Plans: - Continue to initiate and accomplish efforts to collapse 359 systems and enhance logistics analytics by applying more accurate methodologies that will 1) improve command and control, 2) enhance logistics data analytics and forecasting, and 3) eliminate redundancy and duplication. Enhance logistics data analytics environment with machine learning, predictive, and prognostic capabilities; incorporate automated tools for rapid consolidation of duplicative analytics capabilities.</p>		0.000	1.200	1.200
Accomplishments/Planned Programs Subtotals		53.369	33.344	13.787

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 834430: <i>Global Combat Support System-Air Force (GCSS-AF)</i>	0.924	1.964	0.481	-	0.481	0.491	4.992	8.057	-	Continuing	Continuing

Remarks

E. Acquisition Strategy

Air Force Program Executive Office - Business Enterprise Systems (AFPEO-BES) is evaluating systems under the DoDI 5000.75 to approve authorities to proceed (ATP) for each core logistics system remediation/modification project.

The Logistics IT program utilizes the Agile software development methodology in the acquisition of these projects. The projects will use Firm Fixed Price contracts to the maximum extent possible as the program establishes new contracts or task orders. To improve the efficiency of the contracting process and reduce contract cycle time, the core logistics system program offices plan to use the existing NETCENTS-2 contract vehicle utilizing Best Value acquisition methodology where possible.

Agile development practices transform IT acquisitions by delivering capabilities faster and responding more effectively to changes in operations, technology, and budgets. The four objectives of Agile software development are: 1. Focusing on small, frequent capability releases; 2. Valuing working software over comprehensive documentation; 3. Responding rapidly to changes in operations, technology, and budgets; 4. Actively involving users throughout development to ensure high operational value.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CAS SUP	C/CPFF	SI Sys Tech : Gunter Annex, AL	-	1.395	Jan 2017	-		-		-		-	Continuing	Continuing	-
REMIS SUP - ECP #3 DISA Production effort	SS/CPFF	NGIT : WPAFB, OH	-	2.712	Jul 2017	-		-		-		-	Continuing	Continuing	-
REMIS SUP - CFO FIAR Directed Tasking	SS/FFP	NGIT : WPAFB, OH	-	2.112	Sep 2017	-		-		-		-	Continuing	Continuing	-
MRO - Design/ Development	C/Various	NETCENTS-2 : WPAFB, OH	-	0.674	Nov 2017	-		-		-		-	Continuing	Continuing	-
MRO - Software	C/Various	Various : WPAFB, OH	-	0.136	Oct 2017	-		-		-		-	Continuing	Continuing	-
ETIMS SUP - Release v01.03	C/CPAF	DMI : WPAFB, OH	-	4.460	Mar 2017	5.259	Dec 2017	0.500	Jun 2019	-		0.500	Continuing	Continuing	-
AFEMS FIAR	SS/ Various	MacAuley Brown : WPAFB, OH	-	2.107	Sep 2017	6.706	Feb 2018	0.690	Feb 2019	-		0.690	Continuing	Continuing	-
SCM IM - Risk Reduction Effort	MIPR	NCMS : Bremerton, WA	-	6.550	Jun 2017	1.900	Jan 2018	-		-		-	Continuing	Continuing	-
SCM IM - Software Configuration and Production	TBD	TBD : TBD	-	-		-		2.000	Jan 2019	-		2.000	Continuing	Continuing	-
PLM - Software Configuration 1	MIPR	NCMS : Hill AFB, UT	-	1.000	Oct 2016	-		-		-		-	Continuing	Continuing	-
PLM - Software Configuration 2	MIPR	AFRL - Rome OTA : TBD	-	-		2.306	Aug 2018	-		-		-	Continuing	Continuing	-
PLM - Software Configuration Production	TBD	TBD : TBD	-	-		-		0.823	Jun 2019	-		0.823	Continuing	Continuing	-
IMDS CDB SUP - Developer	C/CPFF	NETCENTS-2 : Gunter Annex, AL	-	-		0.500	Jun 2018	2.247	Oct 2018	-		2.247	Continuing	Continuing	-
IMDS CDB MSAT SUP - Version 2.1	C/FFP	NETCENTS-2 : Gunter Annex, AL	-	2.518	Oct 2016	1.436	Oct 2017	0.535	Oct 2018	-		0.535	Continuing	Continuing	-
SCS FIAR - CSRD Work Contract	C/CPAF	NETCENTS-2 : WPAFB, OH	-	2.276	Sep 2017	1.719	Jun 2018	0.150	Oct 2018	-		0.150	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ILS-S RP - Supply Software Modification	C/CPFF	Array : Gunter Annex, AL	-	4.320	May 2017	-		-		-		-	Continuing	Continuing	-
ILS-S RP - Legacy Adapter	C/FFP	Array : Gunter Annex, AL	-	0.451	May 2017	-		-		-		-	Continuing	Continuing	-
ILS-S RP - COTS Software	C/FFP	Oracle : Gunter Annex, AL	-	0.927	Jan 2017	-		-		-		-	Continuing	Continuing	-
PRPS FIAR	C/CPFF	NETCENTS-2 : WPAFB, OH	-	-		0.200	Feb 2018	-		-		-	Continuing	Continuing	-
Emerging FIAR - Prime Contract	C/CPAF	TBD : Gunter Annex, AL	-	-		1.624	Jul 2018	0.450	Jan 2019	-		0.450	Continuing	Continuing	-
Strike Teams - Prime Contract	C/CPAF	TBD : Gunter Annex, AL	-	-		-		1.200	Jun 2019	-		1.200	Continuing	Continuing	-
Subtotal			-	31.638		21.650		8.595		-		8.595	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CAS SUP SME Support	C/FFP	DATUM : Gunter Annex, AL	-	0.437	Aug 2017	-		-		-		-	Continuing	Continuing	-
CAS SUP - ISP SUPPORT	C/FFP	COPPER RIVER : GUNTER ANNEX, AL	-	0.270	Apr 2017	-		-		-		-	Continuing	Continuing	-
REMIS SUP - SME Support	C/FFP	NETCENTS-2 : WPAFB, OH	-	0.793	Sep 2017	0.884	Aug 2018	0.425	Aug 2019	-		0.425	Continuing	Continuing	-
REMIS SUP - DISA Support	MIPR	DISA : Gunter Annex, AL	-	0.204	Jul 2017	-		-		-		-	Continuing	Continuing	-
REMIS SUP - DISA CDSP Support	MIPR	DISA : Gunter Annex, AL	-	-		-		0.075	Apr 2019	-		0.075	Continuing	Continuing	-
REMIS SUP - NGIS ODCs/Licenses	SS/CPFF	NGIS : WPAFB, OH	-	0.272	Jul 2017	1.570	Jul 2018	-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i>
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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
REMIS SUP - ISP Support	C/CPFF	Copper River : Gunter Annex, AL	-	0.150	Sep 2017	0.325	Jul 2018	0.075	Aug 2019	-		0.075	Continuing	Continuing	-
REMIS Enhance - ISP Support	C/CPAF	SNIM : WPAFB, OH	-	-		0.500	Nov 2017	-		-		-	Continuing	Continuing	-
MRO - ISP Support	C/CPFF	Copper River : Gunter Annex, AL	-	0.075	Sep 2017	-		-		-		-	Continuing	Continuing	-
MRO - Hosting Environment Support	MIPR	DISA : Gunter Annex, AL	-	1.969	Dec 2017	-		-		-		-	Continuing	Continuing	-
MRO - Mitre	SS/CPFF	Mitre : WPAFB, OH	-	1.367	Sep 2017	-		-		-		-	Continuing	Continuing	-
MRO - Oracle	C/Various	Oracle : WPAFB, OH	-	0.625	Oct 2017	-		-		-		-	Continuing	Continuing	-
MRO - Common Computing Environment (CCE)	C/Various	Leidos : WPAFB, OH	-	0.868	Nov 2017	-		-		-		-	Continuing	Continuing	-
MRO - Oracle Training	SS/CPAF	Oracle : WPAFB, OH	-	0.080	Nov 2017	-		-		-		-	Continuing	Continuing	-
ETIMS SUP - Support (SME)	C/FFP	Various : WPAFB, OH	-	0.580	Jan 2017	0.442	Nov 2017	0.300	Mar 2019	-		0.300	Continuing	Continuing	-
ETIMS SUP - Support (ISP)	MIPR	ISP : Gunter Annex, AL	-	-		0.075	Jan 2018	-		-		-	Continuing	Continuing	-
AFEMS FIAR - ISP Support	C/FFP	Copper River : WPAFB, OH	-	-		0.120	May 2018	0.055	Jan 2019	-		0.055	Continuing	Continuing	-
AFEMS FIAR - SME Support	C/FFP	Excellus/CACI : WPAFB, OH	-	0.569	Sep 2017	0.936	Feb 2018	0.225	Oct 2018	-		0.225	Continuing	Continuing	-
PLM - A&AS PASS/EPASS	C/FFP	Excellus/CACI : WPAFB, OH	-	1.202	Oct 2016	1.100	Oct 2017	0.464	Oct 2018	-		0.464	Continuing	Continuing	-
IMDS CDB SUP - Hosting Environment Support	MIPR	DISA : Gunter Annex, AL	-	-		-		0.338	Oct 2018	-		0.338	Continuing	Continuing	-
IMDS CDB MSAT SUP - Hosting Environment Support	MIPR	DISA : Gunter Annex, AL	-	1.045	Dec 2016	0.124	Oct 2017	0.045	Oct 2018	-		0.045	Continuing	Continuing	-
SCS FIAR - ISP Support	C/FFP	Copper River : WPAFB, OH	-	-		0.053	Mar 2018	-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>					Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i>				

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SCS FIAR - SME Support Contract	C/FFP	NETCENTS-2 : WPAFB, OH	-	0.812	Sep 2017	0.368	Jun 2018	-		-		-	Continuing	Continuing	-
SCS FIAR - Datacom Support	C/CPAF	NETCENTS-2 : WPAFB, OH	-	0.023	Mar 2017	0.022	Mar 2018	-		-		-	Continuing	Continuing	-
ILS-S RP - SME Support	C/FFP	DSD : Gunter Annex, AL	-	4.397	Apr 2017	-		-		-		-	Continuing	Continuing	-
PRPS FIAR - Support	C/Various	TBD : WPAFB, OH	-	-		0.075	Apr 2018	-		-		-	Continuing	Continuing	-
Emerging FIAR - SME Support	C/CPAF	TBD : Gunter Annex, AL	-	-		0.300	Apr 2018	-		-		-	Continuing	Continuing	-
ILS-S Enhancements - SME Support	C/FFP	TBD : Gunter Annex, AL	-	-		-		0.300	Oct 2018	-		0.300	Continuing	Continuing	-
Subtotal			-	15.738		6.894		2.302		-		2.302	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CAS SUP - CIE	MIPR	GSA : Gunter Annex, AL	-	0.055	Jan 2017	-		-		-		-	Continuing	Continuing	-
MRO - Test Support	MIPR	GSA : WPAFB, OH	-	0.236	Dec 2017	-		-		-		-	Continuing	Continuing	-
ETIMS SUP - OTO	C/TBD	TBD : WPAFB, OH	-	-		0.474	Apr 2018	-		-		-	Continuing	Continuing	-
REMIS SUP - Testing Support	C/Various	GSA : WPAFB, OH	-	0.078	Apr 2017	0.057	Apr 2018	0.025	Mar 2019	-		0.025	Continuing	Continuing	-
AFEMS FIAR - JITC	MIPR	GSA : WPAFB, OH	-	-		0.113	Jan 2018	0.035	Jan 2019	-		0.035	Continuing	Continuing	-
AFEMS FIAR - LDTO Support	C/CPAF	GSA : WPAFB, OH	-	-		0.446	Apr 2018	0.040	Apr 2019	-		0.040	Continuing	Continuing	-
IMDS CDB SUP - Test Support	MIPR	GSA : Gunter Annex, AL	-	-		-		0.174	Oct 2018	-		0.174	Continuing	Continuing	-
IMDS CDB MSAT SUP - Test Support	MIPR	GSA : Gunter Annex, AL	-	0.040	Jan 2018	0.100	Oct 2017	0.040	Oct 2018	-		0.040	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i>
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Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ILS-S RP - JITC	C/FFP	GSA : Gunter Annex, AL	-	0.179	Mar 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.588		1.190		0.314		-		0.314	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CAS SUP - PMA	C/Various	BTAS/Jacobs/FIAR : Gunter Annex, AL	-	0.325	Aug 2017	-		-		-		-	Continuing	Continuing	-
REMIS SUP - A&AS	C/Various	BTAS : WPAFB, OH	-	0.022	Aug 2017	0.078	Feb 2018	0.025	Feb 2019	-		0.025	Continuing	Continuing	-
REMIS SUP - Architecture & IA support	C/FFP	Copper River : WPAFB, OH	-	0.743	Jun 2017	0.506	May 2018	0.450	Apr 2019	-		0.450	Continuing	Continuing	-
REMIS SUP - ETASS	C/CPFF	OASIS : WPAFB, OH	-	0.078	Apr 2017	0.080	Apr 2018	0.025	Feb 2019	-		0.025	Continuing	Continuing	-
REMIS SUP - PMO Organic Travel	Various	PMO : WPAFB, OH	-	0.008	Jul 2017	-		-		-		-	Continuing	Continuing	-
MRO - ETASS	C/CPFF	Oasis : WPAFB, OH	-	0.992	Apr 2017	-		-		-		-	Continuing	Continuing	-
MRO - Int Support Branch ETASS	C/CPAF	Oasis : WPAFB, OH	-	0.308	Apr 2017	-		-		-		-	Continuing	Continuing	-
MRO - PASS	C/Various	BTAS : WPAFB, OH	-	0.278	Aug 2017	-		-		-		-	Continuing	Continuing	-
MRO - Cost Analyst Support	C/CPFF	BTAS : WPAFB, OH	-	0.305	Oct 2016	-		-		-		-	Continuing	Continuing	-
MRO - PMA	C/Various	Various : WPAFB, OH	-	0.479	Nov 2017	-		-		-		-	Continuing	Continuing	-
MRO - PMO Oracle Support - DDC	C/CPAF	DDC : WPAFB, OH	-	0.938	Sep 2017	-		-		-		-	Continuing	Continuing	-
ETIMS SUP - PMO Organic Travel	Various	PMO : WPAFB, OH	-	0.045	Aug 2017	0.050	Aug 2018	-		-		-	Continuing	Continuing	-
AFEMS FIAR - Wealth Management	C/CPAF	Wealth Mgt Partners LLC : Gunter Annex, AL	-	-		0.180	Sep 2018	0.025	Sep 2019	-		0.025	Continuing	Continuing	-

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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AFEMS FIAR - PASS	C/CPAF	BTAS : WPAFB, OH	-	0.279	Aug 2017	0.113	Feb 2018	0.080	Feb 2018	-		0.080	Continuing	Continuing	-
AFEMS FIAR - ETASS	C/CPAF	Oasis : WPAFB, OH	-	-		0.267	Apr 2018	0.050	Apr 2018	-		0.050	Continuing	Continuing	-
IMDS CDB SUP - PASS	C/FFP	BTAS : Gunter Annex, AL	-	-		-		0.408	Feb 2018	-		0.408	Continuing	Continuing	-
IMDS CDB SUP - Cost Support	C/CPFF	BTAS : Gunter Annex, AL	-	-		-		0.033	May 2019	-		0.033	Continuing	Continuing	-
IMDS CDB MSAT SUP - PMA (ADDED AGILE COACH)	C/Variou	BTAS/Oasis : Gunter Annex, AL	-	0.261	Jun 2017	0.241	Oct 2017	0.055	Oct 2018	-		0.055	Continuing	Continuing	-
IMDS CDB MSAT SUP - Cost Support	C/CPFF	BTAS : Gunter Annex, AL	-	0.017	Oct 2016	-		0.025	Apr 2019	-		0.025	Continuing	Continuing	-
SCS FIAR - ETASS	C/CPAF	Oasis : WPAFB, OH	-	0.068	Apr 2017	0.070	Apr 2018	-		-		-	Continuing	Continuing	-
SCS FIAR - PASS	C/CPAF	BTAS : WPAFB, OH	-	0.018	Aug 2017	0.040	Feb 2018	-		-		-	Continuing	Continuing	-
SCS FIAR - Wealth Managment	C/FFP	Wealth Mgt Partners LLC : WPAFB, OH	-	0.075	Sep 2017	0.060	Sep 2018	-		-		-	Continuing	Continuing	-
ILS-S RP - ETASS	C/CPAF	Oasis : Gunter Annex, AL	-	0.085	Apr 2017	-		-		-		-	Continuing	Continuing	-
ILS-S RP - Cost Support	C/CPAF	BTAS : Gunter Annex, AL	-	0.035	Oct 2016	-		-		-		-	Continuing	Continuing	-
ILS-S RP - PASS	C/CPAF	BTAS : Gunter Annex, AL	-	0.046	Aug 2017	-		-		-		-	Continuing	Continuing	-
PRPS FIAR - Advisory Services	C/CPAF	TBD : WPAFB, OH	-	-		0.025	Feb 2018	-		-		-	Continuing	Continuing	-
Field MX - PASS	C/CPAF	BTAS : WPAFB, OH	-	-		0.500	Feb 2018	0.500	Feb 2019	-		0.500	Continuing	Continuing	-
REMIS Enhance - PASS	C/CPAF	BTAS : WPAFB, OH	-	-		-		0.600	Feb 2019	-		0.600	Continuing	Continuing	-
ILS-S Enhance - PASS	C/CPAF	BTAS : WPAFB, OH	-	-		-		0.300	Feb 2019	-		0.300	Continuing	Continuing	-
Emerging FIAR - PASS	C/CPAF	BTAS : WPAFB, OH	-	-		0.200	Feb 2018	-		-		-	Continuing	Continuing	-
Strike Teams - PASS	C/CPAF	BTAS : WPAFB, OH	-	-		1.200	Feb 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	5.405		3.610		2.576		-		2.576	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force								Date: February 2018			
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>				Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i>			
	Prior Years	FY 2017	FY 2018		FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	-	53.369	33.344		13.787	-	13.787	Continuing	Continuing	N/A	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023									
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4						
CAS SUP																																		
CAS SUP - Development/Testing	██████████																																	
CAS SUP - Deployment ATP (Nov 17)					████																													
ILS-S RP																																		
ILS-S RP - Development/Testing	██████████																																	
ILS-S RP - Deployment ATP (Feb 18)					██████████																													
ILS-S Enhancements																																		
ILS-S Enhancements - Pre-Acquisition ATP Activities									██████████																									
ILS-S Enhancements - Development/Testing													██████████																					
ILS-S Enhancements - Deployment ATP (Aug 21)																	██████████																	
AFEMS FIAR																																		
AFEMS FIAR - Acquisition ATP (Jun 17)	████																																	
AFEMS FIAR - (1) - Development/Testing	██████████																																	
AFEMS FIAR - (1) - Deployment ATP (Jul 18)			████																															
AFEMS FIAR - (2) - Development/Testing			██████████																															
AFEMS FIAR - (2) - Deployment ATP (Jan 19)					████																													
AFEMS FIAR - (3) - Development/Testing	██████████																																	
AFEMS FIAR - (3) - Deployment ATP (Feb 20)							████																											
ETIMS SUP																																		
ETIMS SUP - Development/Testing	██████████																																	
ETIMS SUP - Deployment ATP (Feb 19)					████																													

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
IMDS CDB SUP																												
IMDS CDB SUP - Pre-Acquisition ATP Activities					██████████																							
IMDS CDB SUP - Acquisition ATP (Mar 19)													████															
IMDS CDB SUP - Development/Testing													████████████████████															
IMDS CDB MSAT SUP																												
IMDS CDB MSAT SUP - Development/Testing	██████████████████																											
IMDS CDB MSAT SUP - Deployment ATP (Aug 18)									██████																			
REMIS SUP																												
REMIS SUP - Development/Testing	██████████████████																											
REMIS SUP - Deployment ATP (Apr 19)													████															
REMIS Enhancements																												
REMIS Enhancements - Pre-Acquisition ATP Activities									██████████																			
REMIS Enhancements - Development/Testing													██████████████															
REMIS Enhancements - Deployment ATP																	██████											
SCS FIAR																												
SCS FIAR - (7) Development/Testing	██████████																											
SCS FIAR - (7) Deployment ATP (Nov 17)					██																							
SCS FIAR - (8) Development/Testing	██████████████																											
SCS FIAR - (8) Deployment ATP (Apr 18)					██																							
SCS FIAR - (9) Development/Testing	██████████████																											
SCS FIAR - (9) Deployment ATP (Sep 18)									██████																			
SCS FIAR - (10) Development/Testing	██████████████																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SCS FIAR - (10) Deployment ATP (Aug 19)																												
SCM IM																												
SCM IM - Pre-Acquisition ATP Activities																												
SCM IM - Acquisition ATP (Aug 18)																												
SCM IM - Development/Testing																												
SCM IM - Limited Deployment ATP (Jan 20)																												
SCM IM - Full Deployment ATP (Feb 21)																												
SCM IM - Capability Support ATP (Aug 21)																												
SCM Field MX																												
SCM Field MX - Pre-acquisition ATP Activities																												
SCM Field MX - Development/Testing																												
SCM Field MX - Deployment ATP																												
MRO																												
MRO - Pre-acquisition ATP Activities																												
MRO - Transfer to PE 0708055F																												
PLM																												
PLM - Pre-acquisition ATP Activities																												
PLM - Functional Requirements ATP (Jan 18)																												
PLM - Acquisition ATP (Jul 18)																												
PLM - Development/Testing																												
PLM - Limited Deployment ATP (May 20)																												
Emerging FIAR																												
Emerging FIAR - Pre-acquisition ATP Activities																												
Emerging FIAR - Development/Testing																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CAS SUP				
CAS SUP - Development/Testing	1	2017	1	2018
CAS SUP - Deployment ATP (Nov 17)	1	2018	1	2018
ILS-S RP				
ILS-S RP - Development/Testing	1	2017	2	2018
ILS-S RP - Deployment ATP (Feb 18)	3	2017	2	2018
ILS-S Enhancements				
ILS-S Enhancements - Pre-Acquisition ATP Activities	2	2019	2	2020
ILS-S Enhancements - Development/Testing	2	2020	3	2021
ILS-S Enhancements - Deployment ATP (Aug 21)	3	2021	1	2022
AFEMS FIAR				
AFEMS FIAR - Acquisition ATP (Jun 17)	3	2017	3	2017
AFEMS FIAR - (1) - Development/Testing	4	2017	4	2018
AFEMS FIAR - (1) - Deployment ATP (Jul 18)	4	2018	4	2018
AFEMS FIAR - (2) - Development/Testing	2	2018	2	2019
AFEMS FIAR - (2) - Deployment ATP (Jan 19)	2	2019	2	2019
AFEMS FIAR - (3) - Development/Testing	4	2017	2	2020
AFEMS FIAR - (3) - Deployment ATP (Feb 20)	2	2020	2	2020
ETIMS SUP				
ETIMS SUP - Development/Testing	1	2017	2	2019
ETIMS SUP - Deployment ATP (Feb 19)	2	2019	2	2019
IMDS CDB SUP				

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
IMDS CDB SUP - Pre-Acquisition ATP Activities	1	2018	3	2019
IMDS CDB SUP - Acquisition ATP (Mar 19)	3	2019	3	2019
IMDS CDB SUP - Development/Testing	3	2019	4	2023
IMDS CDB MSAT SUP				
IMDS CDB MSAT SUP - Development/Testing	1	2017	4	2018
IMDS CDB MSAT SUP - Deployment ATP (Aug 18)	4	2018	1	2019
REMIS SUP				
REMIS SUP - Development/Testing	1	2017	3	2019
REMIS SUP - Deployment ATP (Apr 19)	3	2019	3	2019
REMIS Enhancements				
REMIS Enhancements - Pre-Acquisition ATP Activities	4	2018	4	2019
REMIS Enhancements - Development/Testing	4	2019	4	2020
REMIS Enhancements - Deployment ATP	1	2021	2	2021
SCS FIAR				
SCS FIAR - (7) Development/Testing	2	2017	1	2018
SCS FIAR - (7) Deployment ATP (Nov 17)	1	2018	1	2018
SCS FIAR - (8) Development/Testing	1	2017	3	2018
SCS FIAR - (8) Deployment ATP (Apr 18)	2	2018	2	2018
SCS FIAR - (9) Development/Testing	2	2017	4	2018
SCS FIAR - (9) Deployment ATP (Sep 18)	4	2018	1	2019
SCS FIAR - (10) Development/Testing	4	2017	4	2019
SCS FIAR - (10) Deployment ATP (Aug 19)	4	2019	4	2019
SCM IM				
SCM IM - Pre-Acquisition ATP Activities	1	2017	4	2018
SCM IM - Acquisition ATP (Aug 18)	4	2018	4	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SCM IM - Development/Testing	4	2018	2	2021
SCM IM - Limited Deployment ATP (Jan 20)	2	2020	2	2020
SCM IM - Full Deployment ATP (Feb 21)	2	2021	2	2021
SCM IM - Capability Support ATP (Aug 21)	4	2021	4	2021
SCM Field MX				
SCM Field MX - Pre-acquisition ATP Activities	4	2018	4	2019
SCM Field MX - Development/Testing	4	2019	4	2020
SCM Field MX - Deployment ATP	4	2020	1	2021
MRO				
MRO - Pre-acquisition ATP Activities	1	2017	4	2017
MRO - Transfer to PE 0708055F	1	2018	4	2023
PLM				
PLM - Pre-acquisition ATP Activities	1	2017	4	2018
PLM - Functional Requirements ATP (Jan 18)	2	2018	2	2018
PLM - Acquisition ATP (Jul 18)	4	2018	4	2018
PLM - Development/Testing	4	2018	3	2020
PLM - Limited Deployment ATP (May 20)	3	2020	3	2020
Emerging FIAR				
Emerging FIAR - Pre-acquisition ATP Activities	2	2018	4	2018
Emerging FIAR - Development/Testing	4	2018	2	2019
Emerging FIAR - Deployment ATP	2	2019	3	2019
Strike Teams				
Strike Teams - Pre-acquisition ATP Activities	1	2018	3	2018
Strike Teams - Development/Testing	3	2018	3	2019
Strike Teams - Deployment ATP	3	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i>

Note
- REMIS Enhancements, ILS-S Enhancements, Logistics Strike Teams, and Emerging FIAR Requirements will be continuing to conduct pre-acquisition ATP activities. These activities include items such as risk reduction efforts, problem statements, and Clinger-Cohen Act documentation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	10.552	9.362	4.497	0.000	4.497	12.648	11.860	10.080	10.263	Continuing	Continuing
675042: <i>Log Application Logistics Integration (LALI)</i>	-	10.552	9.362	4.497	0.000	4.497	9.669	9.875	10.080	10.263	Continuing	Continuing
675044: <i>Logistics Systems Development (LSD)*</i>	-	0.000	0.000	0.000	0.000	0.000	2.979	1.985	0.000	0.000	Continuing	Continuing

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2019

Note

This program, BA 7, PE 0708611F, project 675042, LIMS-EV Version 3.0 - Business Capability Acquisition Cycle (BCAC) 3, is a new start.

A. Mission Description and Budget Item Justification

Logistics, Installations and Mission Support - Enterprise View (LIMS-EV) implements Business Intelligence (BI) and Decision Support (DS) solutions and includes transitioning to a common Information Technology (IT) hosting environment and development of mobile infrastructure. The AF must transform its logistics business processes and transition away from using numerous stovepipe systems and process flows that execute the same analysis and decision support tasks. Eliminating process redundancies across the logistics enterprise will enable the AF to execute more efficient, cost-effective and integrated logistics in the long term. Leveraging emerging technology to enhance existing capabilities and developing a mobile solution satisfies current and future needs of the enterprise. LIMS-EV funding supports BI and DS development capability used by senior leaders and war fighters to access integrated information from multiple authoritative logistics and operational source systems. LIMS-EV funding will extend current BI capabilities to provide configurable alerting, predictive/what-if analysis, mobile applications and further integration of functionality per high priority requirements as defined/approved by the Enterprise Logistics Information Technology (ELIT) authority including support equipment, vehicle, supply, commodities and components (engines, landing gears, fuel, etc.), weapons systems availability and Total Asset Visibility (TAV), and financial, Civil Engineering and Security Forces analytics. Enhances LIMS-EV functionality per migration from the retiring Global Combat Support System-Air Force (GCSS-AF) infrastructure to a an approved Joint Information Environment/Common Computing Environment.

BA7- This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	9.128	9.362	9.531	0.000	9.531
Current President's Budget	10.552	9.362	4.497	0.000	4.497
Total Adjustments	1.424	0.000	-5.034	0.000	-5.034
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	1.758	0.000			
• SBIR/STTR Transfer	-0.334	0.000			
• Other Adjustments	0.000	0.000	-5.034	0.000	-5.034

Change Summary Explanation

FY2017 Below Threshold Reprogramming increase of 1.758M was for LIMS-EV Enterprise Propulsion BI Tool (eP-BITS) development work in support of critical Engine Health Management prognostic and reporting requirements.

The FY 2019 funding request was reduced by 5.034 million to account for the availability of prior year execution balances (under execution).

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>				Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675042: <i>Log Application Logistics Integration (LALI)</i>	-	10.552	9.362	4.497	0.000	4.497	9.669	9.875	10.080	10.263	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0708611F, project 675042, LIMS-EV Version 3.0 - Business Capability Acquisition Cycle (BCAC) 3, is a new start.

A. Mission Description and Budget Item Justification

Logistics, Installations and Mission Support - Enterprise View (LIMS-EV) is the A4 Business Intelligence (BI) gateway providing a single, standardized data exploitation capability for reporting analytics across all A4 business areas; provides a single entry point on the Air Force Portal that hosts a variety of BI capabilities in a flexible, dynamic web based environment; supports various reporting and analysis requirements using scorecards, dashboards and predictive analysis ability for strategic, operational, and tactical-level users. It implements BI and Decision Support (DS) solutions; transforms AF/A4 business processes reducing numerous duplicative stovepipe systems/process flows; eliminates process redundancies across the logistics enterprise for more efficient, cost-effective and integrated logistics. LIMS-EV leverages emerging technology to enhance existing capabilities and future enterprise needs; includes transitioning to a common Information Technology IT hosting environment/development of mobile infrastructure. It supports BI and DS development capability used by senior leaders and war fighters to access integrated information from multiple authoritative logistics and operational source systems. Will provide configurable alerting, predictive/what-if analysis, mobile applications and further integration of functionality per high priority requirements as approved by the Enterprise Logistics Information Technology (ELIT) authority for equipment, vehicle, supply, commodities/components, weapons systems, financial, civil engineering and security forces.

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

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: LIMS-EV Weapons System Enterprise Review (WSER)	1.992	0.000	0.000	0.000	0.000
Description: Implement business analytics and reporting for the AF Chief of Staff WSER briefing					
FY 2018 Plans: N/A					
FY 2019 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: N/A					
Title: LIMS-EV Engine Health Management and Data Repository Center (EHM-DRC) Description: Implement business analysis, decision support and reporting of Engine Health Management into LIMS-EV FY 2018 Plans: N/A FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: N/A	2.436	0.000	0.000	0.000	0.000
Title: LIMS-EV Repair Network View (RNV) 5.0 Description: Enhance Repair Network View (RNV) with additional business analytics functionality FY 2018 Plans: - Update reference tables, add data and develop enhanced reports, queries, and views for RNV-related analysis, forecasting, and reporting FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement:	0.000	1.500	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force				Date: February 2018	
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funding decreased because development of LIMS-EV RNV 5.0 will be completed.					
Title: LIMS-EV Supply Chain Management (SCM) 7.0 Description: Enhance analysis and reporting in Supply Chain Management (SCM) View FY 2018 Plans: N/A FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: N/A	1.996	0.000	0.000	0.000	0.000
Title: LIMS-EV Support Equipment Enterprise View 2.0 Description: Augment LIMS-EV with additional Support Equipment business intelligence and new analytics and reporting FY 2018 Plans: - Enhance Support Equipment analytics with new reference tables and data and develop enhanced reports, queries, and views for support equipment-related analysis, forecasting and reporting - Enhance reports, queries, and views for support equipment-related analysis, forecasting and reporting; eliminate duplicate functionality FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased because development of Support Equipment Enterprise View 2.0 will be completed.	0.000	1.862	0.000	0.000	0.000
Title: LIMS-EV Supply Chain Management (SCM) 8.0	0.000	2.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: Enhance analysis and reporting in Supply Chain Management (SCM) 8.0</p> <p>FY 2018 Plans: - Develop enhanced reports, queries, and views for SCM-related analysis, forecasting, and reporting</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased because development of SCM 8.0 will be completed.</p>					
<p>Title: LIMS-EV Cost of Logistics 2.0</p> <p>Description: Enhance analysis and reporting in Cost of Logistics capability</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>	2.288	0.000	0.000	0.000	0.000
<p>Title: LIMS-EV Vehicle View (VV) 7.0</p> <p>Description: Enhance LIMS-EV 'Mobile' functionality, analysis, reporting, and forecasting simulation in Vehicle View capability</p> <p>FY 2018 Plans: - Enhance BI analytics and reporting: integrate 55 existing manual processes to enable new and centralize analysis and reporting; enhance analysis functionality: add Item Manager analysis and reporting functions; enable Depot Maintenance planning / forecasting/simulation functionality; provide new reporting functionality</p>	0.000	2.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Implement CSAF directed action to centralize management of the AF's vehicle fleet FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased because development of VV 7.0 enhancements will be complete.					
Title: LIMS-EV Engines View (ENV) 4.0 Description: Develop Enterprise Propulsion Business Intelligence analysis and reporting in LIMS-EV; decommission Propulsion Business Intelligence Tool (PBIT) FY 2018 Plans: N/A FY 2019 Base Plans: N/A FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: N/A	1.840	0.000	0.000	0.000	0.000
Title: LIMS-EV Supply Chain Risk Management (SCRM) Description: Develop SCRM functionality FY 2018 Plans: - Implement new reference tables and data and develop enhanced reports, queries, and views for Supply Chain community to include cost-related analysis, forecasting and reporting supporting risk management FY 2019 Base Plans: N/A FY 2019 OCO Plans:	0.000	2.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased because development of SCRM will be completed.					
Title: LIMS-EV Version 3.0 - Business Capability Acquisition Cycle (BCAC) 3	0.000	0.000	4.497	0.000	4.497
Description: Enhance existing and develop enterprise analytics to fine-tune data accessibility, the ability to scale vertically and horizontally across nodes, and prioritize data access based on usage.					
FY 2018 Plans: N/A					
FY 2019 Base Plans: - Enable ability to manage data in accordance with business rules defined by A4 Chief Data Officer - Provide robust analysis and reporting supporting installation health, financial optimization, total asset visibility, and maintenance reliability					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased because development of LIMS-EV Version 3.0 - Business Capability Acquisition Cycle (BCAC) 3 will begin.					
Accomplishments/Planned Programs Subtotals	10.552	9.362	4.497	0.000	4.497

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

Remarks

D. Acquisition Strategy
LIMS-EV will utilize services provided by GCSS-AF Integration Framework. GCSS-AF Data Services Program Management Office (PMO), as LIMS-EV Program Manager, is responsible to competitively acquire additional LIMS-EV capabilities using a variety of fixed price, labor hour, time and material, and cost plus contracts. LIMS-EV capabilities utilize services provided by GCSS-AF Integration Framework. GCSS-AF Data Services PMO, as LIMS-EV Program Manager, manages LIMS-EV development projects following standard software development release process.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>

LIMS-EV development projects will be awarded as task orders using GCSS AF 2 contract with GCSS AF Data Services Program Management Office, Wright-Patterson Air Force Base, Ohio.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Weapons System Enterprise Review (WSER)	C/CPFF	Leidos : Dayton, OH	-	1.992	May 2017	-		-		-		-	Continuing	Continuing	-
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Engine Health Management and Data Repository Center (EHM-DRC)	C/CPFF	Leidos : Dayton, OH	-	2.436	May 2017	-		-		-		-	Continuing	Continuing	-
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Repair Network View 5.0	C/CPFF	Leidos : Dayton, OH	-	0.000		1.500	May 2018	-		-		-	Continuing	Continuing	-
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Supply Chain Management (SCM) 7.0	C/CPAF	Leidos : Dayton, OH	-	1.996	May 2017	-		-		-		-	Continuing	Continuing	-
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Supply Chain Management (SCM) 8.0	C/CPFF	Leidos : Dayton, OH	-	-		2.000	May 2018	-		-		-	Continuing	Continuing	-
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Support Equipment Enterprise View 2.0	C/CPFF	Leidos : Dayton, OH	-	-		1.862	May 2018	-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Cost of Logistics 2.0	C/CPFF	Leidos : Dayton, OH	-	2.288	May 2017	-		-		-		-	Continuing	Continuing	-
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Vehicle View (VV) 7.0	C/CPFF	Leidos : Dayton, OH	-	-		2.000	May 2018	-		-		-	Continuing	Continuing	-
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Engines View (ENV) 4.0	C/CPAF	Leidos : Dayton, OH	-	1.840	May 2017	-		-		-		-	Continuing	Continuing	-
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Supply Chain Risk Management (SCRM)	C/CPAF	Leidos : Dayton, OH	-	-		2.000	May 2018	-		-		-	Continuing	Continuing	-
LALI LIMS-EV Systems Engineering Contractor Support (Product Development) Version 3.0 - Business Capability Acquisition Cycle (BCAC) 3	C/CPAF	Leidos : Dayton, OH	-	-		-		4.497	May 2019	-		4.497	Continuing	Continuing	-
Subtotal			-	10.552		9.362		4.497		-		4.497	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	10.552	9.362	4.497	-	4.497	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Support Systems Developments PE 0708611F																												
LIMS-EV Weapons System Enterprise Review (WSER)																												
LIMS-EV Engine Health Management and Data Repository Center (EHM-DRC)																												
LIMS-EV Supply Chain Management (SCM) 7.0																												
LIMS-EV Cost of Logistics 2.0																												
LIMS-EV Engines View (ENV) 4.0																												
LIMS-EV Repair Network View 5.0																												
LIMS-EV Support Equipment Enterprise View 2.0																												
LIMS-EV Supply Chain Management (SCM) 8.0																												
LIMS-EV Vehicle View (VV) 7.0																												
LIMS-EV Supply Chain Risk Management (SCRM)																												
LIMS-EV Version 3.0 - Business Capability Acquisition Cycle (BCAC) 3																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i>	Project (Number/Name) 675042 / <i>Log Application Logistics Integration (LALI)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Support Systems Developments PE 0708611F				
LIMS-EV Weapons System Enterprise Review (WSER)	3	2017	3	2018
LIMS-EV Engine Health Management and Data Repository Center (EHM-DRC)	3	2017	3	2018
LIMS-EV Supply Chain Management (SCM) 7.0	3	2017	3	2018
LIMS-EV Cost of Logistics 2.0	3	2017	3	2018
LIMS-EV Engines View (ENV) 4.0	3	2017	3	2018
LIMS-EV Repair Network View 5.0	3	2018	3	2019
LIMS-EV Support Equipment Enterprise View 2.0	3	2018	3	2019
LIMS-EV Supply Chain Management (SCM) 8.0	3	2018	3	2019
LIMS-EV Vehicle View (VV) 7.0	3	2018	3	2019
LIMS-EV Supply Chain Risk Management (SCRM)	3	2018	3	2019
LIMS-EV Version 3.0 - Business Capability Acquisition Cycle (BCAC) 3	3	2019	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0804743F / <i>Other Flight Training</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	1.841	2.074	2.022	0.000	2.022	2.057	2.093	2.137	2.177	Continuing	Continuing
675304: <i>Aviation Resource Management System (ARMS)</i>	-	1.841	2.074	2.022	0.000	2.022	2.057	2.093	2.137	2.177	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Aviation Resource Management System (ARMS) is the authoritative data source for recording and managing aircrew training information, aircrew/parachutist management, flying hour tracking, flight pay management, and flying gate tracking for 57,000 Air Force members. The Air Force uses this information to enhance safety of-flight operations and to determine eligibility to perform aviation related events. ARMS interfaces with the Military Personnel Data System (MilPDS) and multiple operations and flight scheduling systems such as Patriot Excalibur (PEX), Graduate Training Integration Management System (GTIMS), Center Operations On-Line(COOL), Global Decision Support System (GDSS), and Automated Aircrew Management System (AAMS) and is used to determine whom to select for flying operations, assignment actions, and promotion of aircrew members.

New development work is required to provide additional flying operations information which will aid in better portraying Air Force readiness and to feed this data into Defense Readiness Reporting System Strategic (DRRS-S). These enhanced capabilities, to be developed incrementally, include the following: electronic flight record, flying hour management/execution, simulator and RPA management/utilization, full career logbook, training look-back, aircrew member man-month allocation, enhanced resource and jump module management, and additional interfaces.

Development activities started in FY16 for Increment I (Inc I), Build 1, Flight and Flying Hour module which continued in FY17 and is followed by development of Training Data and Simulator Utilization modules in FY18-19.

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

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0804743F / <i>Other Flight Training</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	1.653	2.074	2.037	0.000	2.037
Current President's Budget	1.841	2.074	2.022	0.000	2.022
Total Adjustments	0.188	0.000	-0.015	0.000	-0.015
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.248	0.000			
• SBIR/STTR Transfer	-0.060	0.000			
• Other Adjustments	0.000	0.000	-0.015	0.000	-0.015

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Aviation Resource Management System (ARMS)	1.841	2.074	2.022	0.000	2.022
Description: Hardware/software development to update ARMS, adding functionality and system interfaces.					
FY 2018 Plans:					
- Finalize Testing for Inc I, Build I (Flight and Flying Hours Module)					
- Field Inc I, Build I (Flight and Flying Hours Module)					
- Begin Development Activities for Inc I, Build 2A (Training Data Module)					
- Finalize Interface Requirements for Inc I					
- Begin Early Development Activities for Inc I Build 2B (Simulator Utilization Module)					
FY 2019 Base Plans:					
- Finalize Development Activities/Testing for Inc I, Build 2A (Training Data Module)					
- Continue Development Activities for Inc I Build 2B (Simulator Utilization Module)					
FY 2019 OCO Plans:					
N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					
The funding request is steady across the FYDP.					
Accomplishments/Planned Programs Subtotals	1.841	2.074	2.022	0.000	2.022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0804743F / <i>Other Flight Training</i>	
D. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
E. Acquisition Strategy ARMS will incrementally develop enhancements to the existing system. The acquisition will be accomplished organically or with Firm Fixed Price (FFP) contracts awarded under Section 8(a) as small business set aside.		
F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0804743F / Other Flight Training	Project (Number/Name) 675304 / Aviation Resource Management System (ARMS)
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ARMS Increment 1, Build 1 and Build 2 contract	SS/FFP	581ST SMXS ROBINS AFB : Warner Robins, GA	-	-		-		-		-		-	Continuing	Continuing	3.400
ARMS BUILD I	SS/FFP	581ST SNXS ROBINS AFB : Warner Robins, GA	-	0.994	Jan 2018	-		-		-		-	Continuing	Continuing	-
ARMS BUILD II	SS/FFP	581ST SMXS ROBINS AFB : Warner Robins, GA	-	-		-		-		-		-	Continuing	Continuing	-
ARMS Increment 2 Development	SS/FFP	581ST SMXS ROBINS AFB : Warner Robins, GA	-	-		0.787	Mar 2019	0.810	Mar 2020	-		0.810	Continuing	Continuing	10.000
Subtotal			-	0.994		0.787		0.810		-		0.810	Continuing	Continuing	N/A

Remarks
ARMS INCREMENT I INCLUDES BUILDS I AND II. ARMS BUILD I AND II ARE NOW LISTED SEPARATELY.

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ARMS Architecture Contract Support	C/FFP	Copper River Information Technology, LLC : Anchorage, AK	-	0.163	Feb 2018	0.065	Aug 2018	0.065	Aug 2019	-		0.065	Continuing	Continuing	-
ARMS TECHNICAL & RISK SME	C/FFP	DDC IT SERVICES : Albuquerque, NM	-	0.181	Sep 2017	-		-		-		-	Continuing	Continuing	-
ARMS C&A SUPPORT III	C/FFP	OASIS : Lexington, MA	-	0.051	Apr 2018	0.154	Apr 2018	0.154	Apr 2019	-		0.154	Continuing	Continuing	-
ARMS CONFIGURATION MANAGER	C/FFP	OASIS : Lexington, MA	-	-		0.126	Apr 2018	0.126	Apr 2019	-		0.126	Continuing	Continuing	-
ARMS AGILE TOOLS	C/TBD	TBD : TBD	-	-		0.051	Apr 2018	-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0804743F / Other Flight Training	Project (Number/Name) 675304 / Aviation Resource Management System (ARMS)
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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ARMS SYSTEM ADMIN III	C/FFP	OASIS : Lexington, MA	-	0.078	Apr 2018	0.156	Apr 2018	0.156	Apr 2019	-		0.156	Continuing	Continuing	-
ARMS CIE SUPPORT	C/FFP	TBD : TBD	-	0.207	Mar 2018	0.207	Mar 2019	0.220	Mar 2020	-		0.220	Continuing	Continuing	-
ARMS CIE SUPPORT ADDENDUM	C/FFP	GSA : Atlanta, GA	-	0.104	Sep 2017	-		-		-		-	Continuing	Continuing	-
ARMS INTEGRATION SUPPORT	C/FFP	Not specified. : TBD	-	-		0.195	Apr 2019	0.158	Apr 2020	-		0.158	Continuing	Continuing	-
ARMS PLURALSIGHT	C/TBD	TBD : TBD	-	0.009	Mar 2018	-		-		-		-	Continuing	Continuing	-
ARMS Financial Improvement Audit Readiness Support	SS/FFP	TM Capture : Maxwell AFB-Gunter Annex, AL	-	-		0.065	Feb 2019	0.065	Feb 2020	-		0.065	Continuing	Continuing	0.325
Subtotal			-	0.793		1.019		0.944		-		0.944	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ARMS Test Support	C/FFP	GSA : Maxwell AFB-Gunter Annex, AL	-	0.054	Apr 2018	0.054	Apr 2019	0.054	Apr 2020	-		0.054	Continuing	Continuing	0.260
ARMS TEST MANAGER	C/CPAF	OASIS : Lexington, MA	-	-		0.154	Mar 2018	0.154	Mar 2019	-		0.154	Continuing	Continuing	-
Subtotal			-	0.054		0.208		0.208		-		0.208	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ARMS PMA Other Govt Costs	C/TBD	TBD : TBD	-	-		0.060	Apr 2018	0.060	Apr 2019	-		0.060	Continuing	Continuing	-
Subtotal			-	-		0.060		0.060		-		0.060	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0804743F / <i>Other Flight Training</i>	Project (Number/Name) 675304 / <i>Aviation Resource Management System (ARMS)</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

ARMS EXHIBIT R-4	
Advisory and Assistance Services Contract	[REDACTED]
ARMS Financial Improvement Audit Readiness Contract	[REDACTED]
Increment I Build 1 Contract	[REDACTED]
Development - Increment I Build 1 Complete	[REDACTED]
Testing - Increment I Build 1	[REDACTED]
Development - Increment I Build 2 Start	[REDACTED]
Interface Requirement Activities - Increment II Start	[REDACTED]
Architecture Support	[REDACTED]
Release RFP ARMS 7.0 Increment II	[REDACTED]
Field - Increment I Build 1	[REDACTED]
Testing - Increment I Build 2	[REDACTED]
Interface Requirement Activities - Increment II Finish	[REDACTED]
ARMS 7.0 Increment II Build 1 Contract	[REDACTED]
Development - Increment II Build 1 Start	[REDACTED]
Field - Increment I Build 2	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0804743F / <i>Other Flight Training</i>	Project (Number/Name) 675304 / <i>Aviation Resource Management System (ARMS)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ARMS EXHIBIT R-4				
Advisory and Assistance Services Contract	1	2017	4	2023
ARMS Financial Improvement Audit Readiness Contract	1	2017	4	2023
Increment I Build 1 Contract	1	2017	1	2018
Development - Increment I Build 1 Complete	2	2018	2	2018
Testing - Increment I Build 1	2	2018	3	2018
Development - Increment I Build 2 Start	2	2018	2	2018
Interface Requirement Activities - Increment II Start	4	2022	4	2022
Architecture Support	4	2017	3	2018
Release RFP ARMS 7.0 Increment II	3	2019	3	2019
Field - Increment I Build 1	4	2018	4	2018
Testing - Increment I Build 2	2	2019	4	2019
Interface Requirement Activities - Increment II Finish	4	2023	4	2023
ARMS 7.0 Increment II Build 1 Contract	1	2020	3	2020
Development - Increment II Build 1 Start	1	2020	1	2020
Field - Increment I Build 2	1	2020	1	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0808716F / <i>Other Personnel Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.057	0.107	0.108	0.000	0.108	0.110	0.112	0.114	0.116	Continuing	Continuing
675141: <i>DEOMI Faculty Research</i>	-	0.057	0.107	0.108	0.000	0.108	0.110	0.112	0.114	0.116	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Defense Equal Opportunity Management Institute (DEOMI) provides grants to the civilian academic community to conduct research on military and civilian equal opportunity issues using standard social science methodology and engineering analysis. The research methodology and analysis includes developing a literature review proposing hypotheses and methods of research. The grantee will then gather appropriate data, draw conclusions and present discussions, recommendations and reports based on their funding.

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.057	0.107	0.109	0.000	0.109
Current President's Budget	0.057	0.107	0.108	0.000	0.108
Total Adjustments	0.000	0.000	-0.001	0.000	-0.001
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.001	0.000	-0.001

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Equal Opportunity Issues	0.057	0.107	0.108	0.000	0.108
Description: Conduct research on military and civilian equal opportunity issues.					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0808716F / <i>Other Personnel Activities</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<i>FY 2018 Plans:</i> Continue conducting research on military and civilian equal opportunity issues.					
<i>FY 2019 Base Plans:</i> Continue conducting research on military and civilian equal opportunity issues.					
<i>FY 2019 OCO Plans:</i> N/A					
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Increase due to inflation.					
Accomplishments/Planned Programs Subtotals	0.057	0.107	0.108	0.000	0.108

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

N/A

Remarks

E. Acquisition Strategy

Grants will be awarded competitively.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0808716F / <i>Other Personnel Activities</i>	Project (Number/Name) 675141 / <i>DEOMI Faculty Research</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEOMI	TBD	Various : Various	-	0.057	Mar 2017	0.107	Mar 2018	0.108	Mar 2018	-		0.108	Continuing	Continuing	-
Subtotal			-	0.057		0.107		0.108		-		0.108	Continuing	Continuing	N/A

Remarks
Contract method will be a grant

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.057	0.107	0.108	-	0.108	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0808716F / <i>Other Personnel Activities</i>	Project (Number/Name) 675141 / <i>DEOMI Faculty Research</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>DEOMI Faculty Research</i>	
Receive Grants	
Award Grants	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0808716F / <i>Other Personnel Activities</i>	Project (Number/Name) 675141 / <i>DEOMI Faculty Research</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>DEOMI Faculty Research</i>				
Receive Grants	1	2017	2	2023
Award Grants	3	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0901202F <i>Joint Personnel Recovery Agency</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	3.556	2.006	2.023	0.000	2.023	2.060	2.096	2.139	2.178	Continuing	Continuing
675196: <i>Joint Technology Exploitation</i>	-	3.556	2.006	2.023	0.000	2.023	2.060	2.096	2.139	2.178	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The FY17 funding request was reduced by \$.269M to account for the availability of prior year execution balances.

Funding supports Personnel Recovery development efforts to upgrade Isolated Personnel reporting devices & locating systems in support of Combatant Commanders and Services. Joint Personnel Recovery Agency (JPRA) developmental efforts address Personnel Recovery capability shortfalls & gaps identified in the Personnel Recovery Initial Capabilities Document approved by Joint Requirements Oversight Council Memorandum 120-12 on 8 Aug 2012. Activities include funding for research and development, support equipment, contract services and all associated costs specifically identified to support the JPRA headquarters at Ft. Belvoir, VA and other JPRA operating locations.

In FY16, the Common Distress Reporting System (CDRS) began development. CDRS will integrate all personnel locating devices into the existing reporting device architecture & Combat Survivor Evader Locater base stations to provide one common operating picture for timely and efficient recovery operations of isolated personnel.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	3.663	2.006	2.038	0.000	2.038
Current President's Budget	3.556	2.006	2.023	0.000	2.023
Total Adjustments	-0.107	0.000	-0.015	0.000	-0.015
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.107	0.000	-0.015	0.000	-0.015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0901202F <i>I Joint Personnel Recovery Agency</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Title: Common Distress Reporting System</p> <p>Description: Develop/implement the Common Distress Reporting System</p> <p>FY 2018 Plans: - Continued the Common Distress Reporting System (CDRS)development. CDRS will integrate all personnel locating devices into the existing reporting device architecture & Combat Survivor Evader Locator base stations to provide one common operating picture for timely and efficient recovery operations of isolated personnel.</p> <p>FY 2019 Plans: - Continue the Common Distress Reporting System (CDRS)development. CDRS will integrate all personnel locating devices into the existing reporting device architecture & Combat Survivor Evader Locator base stations to provide one common operating picture for timely and efficient recovery operations of isolated personnel.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increased to account for inflation.</p>		1.841	1.003	1.004
<p>Title: Collaborative Personnel Recovery planning systems & PR Capabilities Development</p> <p>Description: - Assess and evaluate technologies for personnel recovery real-time collaborative planning capabilities to include cyber support to personnel recovery, standardization and interoperability of joint personnel recovery mission management and planning systems, and standardization of human and machine-to-machine information exchanges, communications, and data transfer to facilitate mission planning for personnel recovery</p> <p>FY 2018 Plans: - Continued to assess and evaluate technologies for personnel recovery real-time collaborative planning capabilities to include cyber support to personnel recovery, standardization and interoperability of joint personnel recovery mission management and planning systems, and standardization of human and machine-to-machine information exchanges, communications, and data transfer to facilitate mission planning for personnel recovery</p> <p>FY 2019 Plans: - Continue to assess and evaluate technologies for personnel recovery real-time collaborative planning capabilities to include cyber support to personnel recovery, standardization and interoperability of joint personnel recovery mission management and planning systems, and standardization of human and machine-to-machine information exchanges, communications, and data transfer to facilitate mission planning for personnel recovery</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>		1.715	1.003	1.019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0901202F / <i>Joint Personnel Recovery Agency</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Increased to account for inflation.			
Accomplishments/Planned Programs Subtotals	3.556	2.006	2.023

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

N/A

Remarks

E. Acquisition Strategy

Projects will leverage existing program contracts. In the rare instance where a contract does not already exist, contracts will be awarded through full and open competition.

F. Performance Metrics

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

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901202F / <i>Joint Personnel Recovery Agency</i>	Project (Number/Name) 675196 / <i>Joint Technology Exploitation</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
Common Distress Reporting System	2	2017	4	2023
Collaborative Personnel Recovery planning systems	2	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0901218F / <i>Civilian Compensation Program</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	2.878	3.780	3.772	0.000	3.772	3.809	3.876	3.956	4.028	Continuing	Continuing
674139: <i>Civilian Compensation Program</i>	-	2.878	3.780	3.772	0.000	3.772	3.809	3.876	3.956	4.028	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program element provides for payment of civilian compensation benefits for disability due to personal injury sustained while in the performance of duty or due to employment-related disease according to the Federal Employees Compensation Act (FECA) under Title 5 U.S.C., Chapter 81. The Department of Labor (DOL) administers this program and charges the Department of the Air Force for its employee costs; therefore, this is a MUST PAY bill for Air Force. The Program Element(PE) excludes manpower authorizations and costs. This PE is in Budget Activity 7 in support of payment of civilian compensation benefits for disability due to personal injury sustained while in the performance of duty or due to employment-related disease according to FECA under Title 5 U.S.C., Chapter 81.

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

B. Program Change Summary (\$ in Millions)

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	3.735	3.780	3.802	0.000	3.802
Current President's Budget	2.878	3.780	3.772	0.000	3.772
Total Adjustments	-0.857	0.000	-0.030	0.000	-0.030
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.857	0.000	-0.030	0.000	-0.030

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

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>
Title: Civilian Compensation	2.878	3.780	3.772
Description: Program compensates employees assigned to RDT&E facilities for work-related injuries or occupational diseases.			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0901218F / <i>Civilian Compensation Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>FY 2018 Plans: Provide compensation to employees assigned to RDT&E facilities for work-related injuries or occupational diseases.</p> <p>FY 2019 Plans: Continue to provide compensation to employees assigned to RDT&E facilities for work-related injuries or occupational diseases, and implement services to expedite the return of employees back to work.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increased due to expected increase in employee compensation requirements.</p>			
Accomplishments/Planned Programs Subtotals	2.878	3.780	3.772

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 07 0901218F: <i>Civilian Compensation Program</i>	3.735	3.780	3.802	0.000	3.802	3.838	3.905	3.985	4.057	Continuing	Continuing

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901218F / <i>Civilian Compensation Program</i>	Project (Number/Name) 674139 / <i>Civilian Compensation Program</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	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>Civilian Compensation Program</i>	
Compensation program	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901218F / <i>Civilian Compensation Program</i>	Project (Number/Name) 674139 / <i>Civilian Compensation Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Civilian Compensation Program</i>				
Compensation program	1	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	4.968	7.472	6.358	0.000	6.358	6.476	6.589	6.725	6.848	Continuing	Continuing
673318: <i>Product Data Systems Modernization (PDSM)</i>	-	0.000	1.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
675194: <i>Force Development Transformation</i>	-	4.968	6.469	6.358	0.000	6.358	6.476	6.589	6.725	6.848	Continuing	Continuing

A. Mission Description and Budget Item Justification

Personnel Services Delivery (PSD), under the Personnel Administration program, funds operational developments necessary to acquire, field, and modify business processes to transform the delivery of Human Resources (HR) capabilities through the structured redesign of the Total Force Personnel Community's people (Active Duty, Reserve, Guard, and Civilians), processes, and technologies. PSD Transformation fundamentally shifts the way personnel services are provided, transitioning from primarily face-to-face interactions with a personnelist to a tiered model with services delivered through online self-service, contact centers, and fewer in-person interactions. PSD supports the migration of legacy applications and other information technologies to a more sustainable and flexible services-based architecture. PSD also supports transition from the legacy Military Personnel Data System (MilPDS) to the Air Force Integrated Personnel and Pay System (AFIPPS) to improve financial auditability and track military personnel data. To this end, PSD executes the development of several legacy personnel systems through the deployment and transitioning of applications to Department of Defense (DoD) and commercial cloud services as part of the Data Center Optimization Initiative, as well as future HR application requirements which are beyond the scope of AFIPPS.

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

Program is in Budget Activity 7, Operational System Development which includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	5.157	7.472	6.406	0.000	6.406
Current President's Budget	4.968	7.472	6.358	0.000	6.358
Total Adjustments	-0.189	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	-0.189	0.000			
• Other Adjustments	0.000	0.000	-0.048	0.000	-0.048

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>	Project (Number/Name) 673318 / <i>Product Data Systems Modernization (PDSM)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
673318: <i>Product Data Systems Modernization (PDSM)</i>	-	0.000	1.003	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 CY 2018 Cadet Administration and Information System (CAMIS) was a new start.

The United States Air Force Academy (USAFA) is currently in the process of modernizing its Cadet Administration and Information System (CAMIS). CAMIS is the USAFA's primary mission system and is used for most functions related to the Cadet Lifecycle including class scheduling, grading, summer programs, performance averages, and graduation/commission requirements tracking. This effort also includes collapsing existing CAMIS IT systems to unique, non-standard processes that remain which include the Cadet Honor System, discipline and accountability, advanced admission, and a replacement for the Cadet Logistics and Supply System (CLASS). The largest component expected to require development includes re-designing the data warehouse to enable Commercial Off the Shelf (COTS) analytic software.

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

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

	FY 2017	FY 2018	FY 2019
Title: CAMIS	-	1.003	-
Description: System development activities associated with modernizing the USAFA CAMIS primary mission system. This system supports most functions related to the Cadet life cycle.			
FY 2018 Plans:			
<ul style="list-style-type: none"> • Will develop and re-design data warehouse to enable analytic software • Will refine requirements to provide capability to replace portions of CAMIS not available in the planned COTS solution 			
FY 2018 to FY 2019 Increase/Decrease Statement:			
- Funding decrease is due to all efforts transitioning to a 3400 funding source.			
Accomplishments/Planned Programs Subtotals	-	1.003	-

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901220F / Personnel Administration	Project (Number/Name) 673318 / Product Data Systems Modernization (PDSM)

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

Remarks

D. Acquisition Strategy

CAMIS will modernize the current Student Information System (SIS) to include Recruiting and Admission, Cadet Life Cycle Management, and Cadet Support Services. The majority of efforts are being completed with 3400 sustainment funding and only the data warehouse re-design is covered by this PE. CAMIS is managed by the United States Air Force Academy. All other aspects of the Acquisition Strategy are still in development.

E. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>	Project (Number/Name) 673318 / <i>Product Data Systems Modernization (PDSM)</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	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>Product Data Systems Modernization</i>	
Info & Knowledge Management Re-design Analysis	████████
Acquisition Planning, RFI, Contract Award	████████
Data Warehouse Re-design, Integration, Deployment	████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>	Project (Number/Name) 673318 / <i>Product Data Systems Modernization (PDSM)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Product Data Systems Modernization</i>				
Info & Knowledge Management Re-design Analysis	1	2018	2	2018
Acquisition Planning, RFI, Contract Award	2	2018	3	2018
Data Warehouse Re-design, Integration, Deployment	3	2018	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>				Project (Number/Name) 675194 / <i>Force Development Transformation</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675194: <i>Force Development Transformation</i>	-	4.968	6.469	6.358	0.000	6.358	6.476	6.589	6.725	6.848	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Personnel Services Delivery (PSD), under the Personnel Administration program, funds operational developments necessary to acquire, field, and modify business processes to transform the delivery of Human Resources (HR) capabilities through the structured redesign of the Total Force Personnel Community's people (Active Duty, Reserve, Guard, and Civilians), processes, and technologies. PSD Transformation fundamentally shifts the way personnel services are provided, transitioning from primarily face-to-face interactions with a personnelist to a tiered model with services delivered through online self-service, contact centers, and fewer in-person interactions. PSD supports the migration of legacy applications and other information technologies to a more sustainable and flexible services-based architecture. PSD also supports transition from the legacy Military Personnel Data System (MilPDS) to the Air Force Integrated Personnel and Pay System (AFIPPS) to improve financial auditability and track military personnel data. To this end, PSD executes the development of several legacy personnel systems through the deployment and transitioning of applications to Department of Defense (DoD) and commercial cloud services as part of the Data Center Optimization Initiative, as well as future HR application requirements which are beyond the scope of AFIPPS.

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

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

	FY 2017	FY 2018	FY 2019
Title: AF/A1 Service Oriented Architecture (SOA) Services	1.066	1.200	1.300
Description: Develop reusable business and data sharing SOA services on an established architecture. These services provide authoritative personnel data and business logic to myriad of enterprise processes and systems.			
FY 2018 Plans:			
<ul style="list-style-type: none"> • Continue development of SOA Increment 3 additional military data elements and update operations • Continuing to develop reusable business and data sharing SOA services 			
FY 2019 Plans:			
<ul style="list-style-type: none"> • Will deliver SOA Increment 3 (additional military data elements and update operations) • Will continue to develop reusable business and data sharing SOA services 			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>	Project (Number/Name) 675194 / <i>Force Development Transformation</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Slight increase due to inflation				
<p>Title: Human Resource Systems (HRS) Transition</p> <p>Description: Identify and document personnel legacy systems for modernization, transition and/or decommission with inclusion of capability into the ORACLE Enterprise Business Suite (EBS). Provide legacy systems transition and data translation to the Air Force Integrated Personnel and Pay System (AFIPPS) Enterprise Resource Planning (ERP) program. Transition personnel legacy systems to DoD and/or commercial cloud services as part of the Data Center Optimization Initiative effort. Transition the Test and Development Environment (T&DE) to an approved Cloud Service Provider.</p> <p>FY 2018 Plans: HRS Transition Phase 1:</p> <ul style="list-style-type: none"> • Complete migration of systems/applications to supportable software platforms • Implement data management strategy for MiIPDS/AFIPPS transition • Continue migration of T&DE capability to an approved Cloud Service Provider • Continue migration of apps to an approved Cloud Service Provider • Continue consolidation of apps by life cycle requirements and functionality <p>FY 2019 Plans:</p> <ul style="list-style-type: none"> • Will continue migration of T&DE capability to an approved Cloud Service Provider • Will continue migration of apps to an approved Cloud Service Provider • Will continue consolidation of apps by life cycle requirements and functionality <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease. RDT&E funding reduced as projects transition from development to sustainment.</p>		3.902	4.790	4.642
<p>Title: Test and Evaluation/Systems Engineering</p> <p>Description: Continued support for all aspects of engineering including software and systems engineering, requirements analysis, configuration management, database administration, and test and evaluation throughout the lifecycle of all Human Resources applications and continued infrastructure development.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> • Continue supporting all aspects of engineering including software and systems engineering, requirements analysis, configuration management, and database administration 		0.000	0.479	0.416

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>	Project (Number/Name) 675194 / <i>Force Development Transformation</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<ul style="list-style-type: none"> • Perform test and evaluation of SOA, HRS transition, and any emergent customer needs and provide system engineering support for the HRS transition <p>FY 2019 Plans:</p> <ul style="list-style-type: none"> • Will continue supporting all aspects of engineering including software and systems engineering, requirements analysis, configuration management, and database administration • Will perform test and evaluation of SOA, HRS transition, and any emergent customer needs and provide system engineering support for the HRS transition <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease. RDT&E funding reduced as projects are combined under new systems, evaluated and accepted into production environments.</p>				
Accomplishments/Planned Programs Subtotals		4.968	6.469	6.358
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
Personnel Services Delivery employs an evolutionary acquisition strategy to deliver incremental Information Technology, and Human Resources capabilities with development contracts that are awarded in a competitive environment. In 2015, the government conducted a Full and Open competition for Human Resources System Technical Support and awarded a contract to provide PSD with development and test/technical support. Air Force Program Executive Officer (PEO) for Business and Enterprise Systems (AFPEO BES) is the PEO and Milestone Decision Authority (MDA) for PSD. Air Force Life Cycle Management Center (AFLCMC) is the Contracting Authority for the PSD Program and provides Contracts, Legal and Comptroller support.				
E. Performance Metrics				
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>	Project (Number/Name) 675194 / <i>Force Development Transformation</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Service Oriented Architecture	C/FFP	Deloitte Consulting LLP : Alexandria, VA	-	1.066	Jan 2018	1.200	Aug 2018	1.300	Aug 2019	-		1.300	Continuing	Continuing	3.600
Human Resource Systems (HRS) Transition Phase 1	TBD	TBD : TBD	-	3.125	Sep 2018	-		-		-		-	Continuing	Continuing	2.853
HRS Transition Phase 2	TBD	TBD : TBD	-	-		3.990	Jan 2019	3.807	Jan 2020	-		3.807	Continuing	Continuing	7.845
Subtotal			-	4.191		5.190		5.107		-		5.107	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering/Technical Support	C/CPFF	Oasis : Lincoln, MA	-	0.000		0.350	Apr 2019	0.375	Apr 2020	-		0.375	Continuing	Continuing	1.055
Subtotal			-	0.000		0.350		0.375		-		0.375	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation Support	MIPR	GSA : Atlanta, GA	-	0.000		0.035	Apr 2019	0.016	Apr 2020	-		0.016	Continuing	Continuing	0.078
Test/Evaluation Support	C/CPIF	Diversified Technical Services, Inc. : San Antonio, TX	-	0.000		0.444	Apr 2019	0.400	Apr 2020	-		0.400	Continuing	Continuing	1.244
Subtotal			-	0.000		0.479		0.416		-		0.416	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>	Project (Number/Name) 675194 / <i>Force Development Transformation</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	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>Force Development Transformation</i>	
SOA Inc 3 Development/Fielding	██████████
HR Applications Functionality Improvements	██████████
HRS Transition Analysis	██████████
HRS Transition Phase 1 Contract Award/ Development/Testing/Fielding	██████████
HRS Transition Phase 2 Contract Award/ Development/Testing/Fielding	██████████
HRS Transition Phase 3 Contract Award/ Development/Testing/Fielding	██████████
HRS Transition Phase 4 Contract Award/ Development/Testing/Fielding	██████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i>	Project (Number/Name) 675194 / <i>Force Development Transformation</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Force Development Transformation</i>				
SOA Inc 3 Development/Fielding	4	2017	4	2018
HR Applications Functionality Improvements	4	2018	4	2019
HRS Transition Analysis	4	2017	3	2018
HRS Transition Phase 1 Contract Award/Development/Testing/Fielding	2	2018	2	2019
HRS Transition Phase 2 Contract Award/Development/Testing/Fielding	2	2019	2	2020
HRS Transition Phase 3 Contract Award/Development/Testing/Fielding	2	2020	2	2021
HRS Transition Phase 4 Contract Award/Development/Testing/Fielding	2	2021	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0901226F I Air Force Studies and Analysis Agency
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	1.415	1.563	1.418	0.000	1.418	1.443	1.468	1.499	1.527	Continuing	Continuing
676009: M & S DEVELOPMENT	-	1.415	1.563	1.418	0.000	1.418	1.443	1.468	1.499	1.527	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Provides for development and enhancement of modeling and simulation (M&S) tools for strategic planning, operational requirements, modernization and recapitalization of systems and programs, as well as the Planning, Programming, Budgeting and Execution (PPBE) processes for the AF Analytic Community and Secretary of the Air Force Standard Analysis Toolkit in support of AF Senior Leadership. As new technologies are introduced to the battlefield (Digital Electronic Jammers, maneuvering Surface-to-Surface Missiles, Directed Energy Weapons, etc.) along with evolving warfighting techniques and support operations, the range of capabilities that needs to be covered by analytic tools needs to expand as well. M&S creation and enhancement can require extensive research in how to properly implement the emerging weapons capabilities as well as demand development of software techniques to implement the changes. Additionally, emerging and continuing focus areas such as Space, Irregular Warfare, Information Operations, Cyber warfare and ISR demand specific tools of their own for new exploration and development. These focus areas require examination in isolation as well as cross-domain making the problem more complex and increasing the R&D challenges to field new decision support tools.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	1.523	1.563	1.429	0.000	1.429
Current President's Budget	1.415	1.563	1.418	0.000	1.418
Total Adjustments	-0.108	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	0.000	0.000			
• Other Adjustments	-0.108	0.000	-0.011	0.000	-0.011

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

	FY 2017	FY 2018	FY 2019
Title: Modeling and Simulation Development	1.415	1.563	1.418

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0901226F / <i>Air Force Studies and Analysis Agency</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>Description: Develop and Update Modeling & Simulation (M&S) tools.</p> <p>FY 2018 Plans: Research and development of M&S Tools.</p> <p>FY 2019 Plans: Continue research and development of M&S Tools</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funding increased to account for inflation.</p>			
Accomplishments/Planned Programs Subtotals	1.415	1.563	1.418

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

N/A

Remarks

N/A.

E. Acquisition Strategy

Previous and planned future efforts have been/will be awarded under existing Task Order contracts. AF/A9 does not anticipate awarding a new contract for R&D work in the next year.

F. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901226F / <i>Air Force Studies and Analysis Agency</i>	Project (Number/Name) 676009 / <i>M & S DEVELOPMENT</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

M&S Development	
Modeling & Simulation Development	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901226F / <i>Air Force Studies and Analysis Agency</i>	Project (Number/Name) 676009 / <i>M & S DEVELOPMENT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>M&S Development</i>				
Modeling & Simulation Development	1	2017	4	2023

Note
 Applying the resources under this PE started in 1Q FY2012 and has continued to develop successful products over time. A9 anticipates work to begin continue for 12-24 months for (1)research into how to better model new friendly and enemy weapons systems, (2) continue to develop tools to better examine evolving weapons technologies and (3) developing new models to better populate the data requirements of existing tools.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	577.133	10.478	91.211	99.734	0.000	99.734	69.667	57.063	54.362	55.352	Continuing	Continuing
672222: <i>Program Budget Enterprise Service (PBES)</i>	0.000	2.720	7.751	15.346	0.000	15.346	14.259	3.971	0.041	0.042	Continuing	Continuing
675177: <i>Cost Estimating Modeling (CEM)</i>	0.000	4.717	5.000	4.954	0.000	4.954	4.964	5.049	5.152	5.246	Continuing	Continuing
675178: <i>Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc 2)</i>	0.000	0.000	0.000	11.816	0.000	11.816	14.895	48.043	49.169	50.064	Continuing	Continuing
675179: <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>	577.133	3.041	78.460	67.618	0.000	67.618	35.549	0.000	0.000	0.000	0.000	761.801

Program MDAP/MAIS Code: N87

Note
This program, BA 7, PE 0901538F, project 675178, DEAMS INC 2 Product Development, is a new start.

A. Mission Description and Budget Item Justification

This program element develops upgrades to existing financial management systems. These upgrades are required to comply with auditability and transparency requirements as well as efficiencies in processing financial transactions. This program element also supports studies and analysis to improve future program planning and execution.

There are four projects within this program element: Program and Budget Enterprise Services (PBES), Cost Estimating Modeling (CEM), Defense Enterprise Accounting and Management System (DEAMS) Increment 1 (Inc 1), and DEAMS Increment 2 (Inc 2).

PBES is a software development effort that will utilize a Service Oriented Architecture (SOA) to deliver budgeting and programming capability for the Air Force and will replace legacy systems (Automated Budget Interactive Data Environment System (ABIDES) and Resource Allocation Programming Information Decision System (RAPIDS)) that support the budget formulation and force programming process.

CEM is a knowledge-based study effort to improve Air Force-wide cost estimating by analyzing cost data and recommending changes to estimating models, methods, and tools.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>
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DEAMS is the Air Force's target core accounting and financial management solution, and is a key component of the long-term business process improvements needed to sustain auditability and correct financial system weaknesses.

DEAMS Increment 1 post critical change is focusing on upgrading the software to Oracle Release 12; upgrading the hardware infrastructure; improving reporting capabilities; and deploying to Pacific Air Forces (PACAF), US Air Force in Europe (USAFE), and incremental users in Air Force Space Command (AFSPC) and Air Force Materiel Command (AFMC).

DEAMS Increment 2 is a new start in FY19 initial business capability and acquisition strategy planning. Planned efforts include incorporating Increment 1 deferred acquisition capabilities to AFSPC and AFMC.

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

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

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	10.581	91.211	100.486	0.000	100.486
Current President's Budget	10.478	91.211	99.734	0.000	99.734
Total Adjustments	-0.103	0.000	-0.752	0.000	-0.752
• Congressional General Reductions	-0.596	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.851	0.000			
• SBIR/STTR Transfer	-0.358	0.000			
• Other Adjustments	0.000	0.000	-0.752	0.000	-0.752

Change Summary Explanation

FY17 reprogramming consists of \$800K for PBES and \$51K for a CEM RAND study.

FY19 change due to higher Air Force priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>					Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i>		
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
672222: <i>Program Budget Enterprise Service (PBES)</i>	0.000	2.720	7.751	15.346	0.000	15.346	14.259	3.971	0.041	0.042	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

PBES is a single solution software development effort to deliver budgeting and programming capability for the United States Air Force. PBES will replace legacy systems such as the Automated Budget Interactive Data Environment System (ABIDES), Resource Allocation Programming Information Decision System (RAPIDS) and the Enhanced Tradespace Tool (ETT), supporting the budget formulation and force programming process. Upon full deployment of PBES, the system will be compliant with the Standard Financial Information Structure (SFIS) and Standard Line of Accounting (SLOA) conventions, which will enable standardization of data across the Department of Defense (DoD).

Utilizing Business Process Re-engineering (BPR), the Air Force has designated PBES as the solution to deliver traceability of financial data in support of the programming and budgeting processes. Through the use of BPR, PBES will address excessive overhead, outdated business practices and other time-consuming support activities. PBES will make the budget formulation process more efficient by incorporating business best practices, organizing programming and budgeting personnel, as well as utilizing current technology. PBES will also eliminate checks and balances required of older technology, taking advantage of automated reconciliation services. In addition, the solution will allow the use of Authoritative Data Sources (ADS) for data exposure, resulting in more timely and accurate budget submissions to Office of the Secretary of Defense (OSD), Congress, and other internal and external customers.

A Commercial-off-the-Shelf (COTS) product has been selected as the tool of choice which will require minor configuration changes to meet the stated user requirements. There are not any planned code changes to the actual COTS product itself which should drive lower support costs along with making future requirements changes easier in the out-years. Requirements will be satisfied through an iterative process of sprint development cycles, where usable capability is produced and made available to operational users after every sprint. The IPO construct along with application of agile principles allows the program to properly plan system requirements, deliver early capability to the end users, achieve early return on investment of taxpayer dollars, division of risk, reduce waste, effectively respond to change, and continuously improve our processes.

Through agile software development, PBES will look to introduce capability quickly to the field by sitting with requirements owners and incorporating their feedback into the application in real-time. Efforts are already underway to incorporate these changes and are currently being rolled out in 5 week delivery cycles. This rhythm has already proved successful in delivering 5 Sprints on-time with added functionality to the users.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: PBES	2.720	7.751	15.346	0.000	15.346

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: Software development effort providing modern and enhanced budgeting and programming capabilities to the USAF. Funding supports engineering and technical development and implementation activities.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue PBES acquisition planning, reporting, and execution activities - Continue risk reduction activities to support long-term expedited Acquisition Strategy - Continue to develop plans for system design, configuration, test, and training - Stand-up Hosting environments for both Unclassified/Classified use - Award contract for System Integrator - Award commercial off the shelf (COTS) Software Contract - Receive contingent approval of Authority to Operate (ATO) to support first years test activities - Begin Operational Test at Air Staff level <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Will continue PBES acquisition planning, reporting, and execution activities - Will continue to make updates to system design, configuration, test, and training - Will prepare documentation to support Limited Deployment Decision Milestone approval - Will continue to satisfy risk management framework (RMF) controls needed for ATO - Will begin implementation of PBES capability to AF Major Command users <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p> <ul style="list-style-type: none"> - Funding increased due to System Integrator costs, increased costs associated with hosting environments, and purchasing commercial off the shelf (COTS) licenses needed for testing with operational users. 					
Accomplishments/Planned Programs Subtotals	2.720	7.751	15.346	0.000	15.346

C. Other Program Funding Summary (\$ in Millions)										
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete Total Cost
• OPAF 03 834010: <i>General Information Technology</i>	0.000	0.000	7.248	-	7.248	4.466	0.695	0.000	0.000	0.000 12.409

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i>

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

Risk Reduction activities are currently on-going to prove out functionality with COTS solution. PBES will employ a sole-source contract to the System Integrator (SI) as the various development activities and software releases are developed, tested, and deployed incrementally to Air Staff and AF Major Command users. Program Office will provide management oversight of the SI. Program reviews will occur throughout the lifecycle of the program. Programmatic adjustments will occur as appropriate or as directed by AF leadership or by the Milestone Decision Authority (MDA).

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PBES Risk Reduction	MIPR	Washington Head Quarter Service : Washington, DC	-	0.600	Mar 2017	-		0.000		-		0.000	0.000	0.600	1.000
PBES AIS CI PMP	C/CPAF	AFLCMC : MAFB, AL	-	-		0.100	Sep 2018	-		-		-	0.000	0.100	-
PBES CI SEPM	C/CPAF	AFLCMC : MAFB, AL	-	-		0.200	Sep 2018	-		-		-	0.000	0.200	-
PBES DEV/TEST LICENSES	C/CPAF	AFLCMC : MAFB, AL	-	-		1.731	Jan 2018	4.584	Jan 2019	-		4.584	0.000	6.315	-
PBES Systems Integrator	C/CPAF	AFLCMC : MAFB, AL	-	-		3.120	Jan 2018	3.500	Jan 2019	-		3.500	0.000	6.620	-
Subtotal			-	0.600		5.151		8.084		-		8.084	0.000	13.835	N/A

Remarks
 AIS - Automated Information System
 CI - COTS Implementer
 PMP - Prime Mission Product
 SEPM - Systems Engineering Program Management

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PBES DEV/TEST Hosting	MIPR	DISA : Fort Meade, MD	-	-		1.400	Jan 2018	3.362	Jan 2019	-		3.362	0.000	4.762	-
Program Management Costs	C/CPAF	AFLCMC : MAFB, AL	-	2.120	Apr 2017	1.200	Apr 2018	3.900	Apr 2019	-		3.900	Continuing	Continuing	-
Subtotal			-	2.120		2.600		7.262		-		7.262	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		-	2.720	7.751	15.346	-	15.346	Continuing	Continuing	N/A

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Program Budget Enterprise Service				
Pre Material Development Decision (MDD) Acquisition Activities	1	2017	4	2017
MDD (Mar 17)	2	2017	2	2017
Initiate Program Office Operation	2	2017	2	2017
Risk Reduction	3	2017	1	2018
Request For Proposal (RFP) development and evaluation	4	2017	1	2018
Milestone B (Dec 2017)	1	2018	1	2018
Contract award for Software (Jan 2018)	1	2018	2	2018
Contract award for System Integrator (Dec 2017)	1	2018	4	2018
Limited Deployment Decision (LDD)	2	2018	2	2018
PBES Development & Limited Deployment	4	2018	2	2021
Full Deployment Decision	3	2020	3	2020
Full Deployment	2	2021	2	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>					Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i>		
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675177: <i>Cost Estimating Modeling (CEM)</i>	0.000	4.717	5.000	4.954	0.000	4.954	4.964	5.049	5.152	5.246	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Cost Estimating Modeling (CEM) provides and enhances Air Force-wide cost estimating capabilities by developing current cost data and estimating methods and tools, data process reengineering, data structure development, and gap filling initiatives. In collaboration with the OSD Cost Assessment Data Enterprise (CADE) project (DoD's unified initiative to collect, organize, store, and use data more efficiently), these products will improve the quality, timeliness, and effectiveness of the acquisition program cost estimates required by statute (e.g., 10 USC 2366, 2433, 2434) and regulation (e.g., DoDI 5000.02) in support of AF and DoD acquisition decisions, programming and execution decisions, and Congressional mandates.

CEM will ensure the Air Force continuously improves cost estimating capabilities for broad cross-cutting areas, as well as specific to each weapon system type (aircraft, UAVs, ballistic missiles, tactical missiles, munitions, electronics and aircraft modifications, ground stations and automated information systems, space and launch vehicles). Changing technologies, acquisition laws, regulations, and initiatives drive the need to revise cost estimating processes, methods, and tools. For example, current capability shortfalls reflect gaps in the ability to respond effectively to the laws and regulations such as the FY06 NDAA report (PL 109-163--Provisions relating to Major Defense Acquisition Programs (MDAPs)), Weapon System Acquisition Reform Act (WSARA) (provisions related to improving cost estimating quality, especially earlier in the program life-cycle and affordability analysis), Secretary of the Air Force (SECAF) Acquisition Excellence Plan (priorities to improve cost estimating capability and affordability analysis and improved cost estimating support to requirements process), and Office of the Secretary of Defense (OSD) policy (better buying power initiatives on enhanced trade-off analysis, affordability analysis, and will versus should cost analysis). The CADE and CEM partnership is the lead example for AT&L Better Data initiatives designed as a response to Congressional expressed desire for better outcomes in acquisition. The partnership provides data/analysis/ methods/tools and institutional knowledge at the analysts' fingertips versus the status quo inefficient, ad hoc approach.

This project will perform knowledge-based studies (KBS) to include analyzing historical data and changing technologies/programmatics to develop new estimating methods (e.g. statistical tools, cost estimating relationships (CERs)) across hundreds of product work breakdown structure (WBS) elements and functional cost elements within each weapon system type noted above. Examples of areas of cost studies and modeling efforts that cut across all weapon system types are cost risk analysis metrics; model/tool development; software cost data sets and metrics; contract or engineering change order studies, analysis, and models; other government cost databases, methods, and analysis tools (e.g., depot standup and government test); nuclear hardening technology change and impacts to cost; cybersecurity emerging issues and costs; time phasing method improvements; reliability and maintainability trends and impacts on cost; and overarching and commodity area price escalation analysis and estimating method development.

CEM will deliver valuable analytical tools in support of higher quality/credible estimates (as required by statute and regulation) allowing for more realistic cost conscious decisions on over \$100B of critical warfighter capability.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i>

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: CEM</p> <p>Description: Perform knowledge-based studies (KBS)—Develop data collection requirements documents/tables and data collection process improvements, collect and analyze data to develop new estimating methods (e.g. statistical tools, cost estimating relationships (CERs)), and perform other gap filling studies for aircraft, UAVs, ballistic and tactical missiles, munitions, electronics and aircraft modifications, ground stations and automated information systems, space, launch vehicles, and cross-cutting areas.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue to collect historical program data to fill gaps against defined data collection requirements from previous year efforts and integrate historical data collected into Cost Assessment Data Enterprise (CADE) system for central access to all DoD - Develop normalized data sets, benchmark metrics, and cost estimating methods/analytical tools with recent data collections - Continue studies started in FY17 and begin in areas such as Aircraft Systems Engineering and Program Management (SE/PM) analysis and common computing environments (cloud) - Continue to work with OSD CADE team to implement data design and structure requirements and visual analysis tool requirements into CADE system - Conduct weekly reviews with technical/cost teams and quarterly progress reviews with entire government cost community <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Will continue to collect historical program data to fill gaps against defined data collection requirements from previous year efforts and integrate historical data collected into CADE system for central access to all DoD - Will develop normalized data sets, benchmark metrics, and cost estimating methods/analytical tools with recent data collections - Will continue studies started in FY17 and FY18 and begin in areas such as reliability adjustment ratios, fuel consumption and modification cost estimating relationships - Will continue to work with OSD CADE team to implement data design and structure requirements and visual analysis tool requirements into CADE system - Will conduct weekly reviews with technical/cost teams and quarterly progress reviews with entire government cost community <p>FY 2019 OCO Plans:</p>	4.717	5.000	4.954	0.000	4.954

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A					
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Studies planned for FY19 cost less than expected.					
Accomplishments/Planned Programs Subtotals	4.717	5.000	4.954	0.000	4.954

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

Remarks
N/A

D. Acquisition Strategy
Contracts are expected to be firm-fixed price and/or cost plus, and will be awarded through full and open competition and follow Federal Acquisition Regulations (FAR) guidelines. Headquarters Air Force will provide contract management oversight and direction. Contracted knowledge-based studies progress will be reviewed on a quarterly basis and adjusted as appropriate.

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CEM																												
Commodity Specific KBS Activities																												
Populate Data Templates w/ Commodity Specific KBS findings (ongoing)																												
Develop CERs/Estimating Tools/Models																												
Templates / CERs / Tools / Models Deliverables (Feb 2017)		■																										
Data / CERs / Tools / Models Deliverables (Sep 2017)				■																								
Data / CERs / Tools / Models Deliverables (Feb 2018)					■																							
Data / CERs / Tools / Models Deliverables (Sep 2018)							■																					
Data / CERs / Tools / Models Deliverables (Feb 2019)								■																				
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Data / CERs / Tools / Models Deliverables (Feb 2020)										■																		
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Data / CERs / Tools / Models Deliverables (Feb 2021)												■																
Data / CERs / Tools / Models Deliverables (Sep 2021)													■															
Data / CERs / Tools / Models Deliverables (Feb 2022)																	■											

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Data / CERs / Tools / Models Deliverables (Sep 2022)	█																											
Data / CERs / Tools / Models Deliverables (Feb 2023)	█																											
Quarterly KBS Progress Reviews																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CEM				
Commodity Specific KBS Activities	1	2017	4	2023
Populate Data Templates w/ Commodity Specific KBS findings (ongoing)	1	2017	4	2023
Develop CERs/Estimating Tools/Models	1	2017	4	2023
Templates / CERs / Tools / Models Deliverables (Feb 2017)	2	2017	2	2017
Data / CERs / Tools / Models Deliverables (Sep 2017)	4	2017	4	2017
Data / CERs / Tools / Models Deliverables (Feb 2018)	2	2018	2	2018
Data / CERs / Tools / Models Deliverables (Sep 2018)	4	2018	4	2018
Data / CERs / Tools / Models Deliverables (Feb 2019)	2	2019	2	2019
Data / CERs / Tools / Models Deliverables (Sep 2019)	4	2019	4	2019
Data / CERs / Tools / Models Deliverables (Feb 2020)	2	2020	2	2020
Data / CERs / Tools / Models Deliverables (Sep 2020)	4	2020	4	2020
Data / CERs / Tools / Models Deliverables (Feb 2021)	2	2021	2	2021
Data / CERs / Tools / Models Deliverables (Sep 2021)	4	2021	4	2021
Data / CERs / Tools / Models Deliverables (Feb 2022)	2	2022	2	2022
Data / CERs / Tools / Models Deliverables (Sep 2022)	4	2022	4	2022
Data / CERs / Tools / Models Deliverables (Feb 2023)	2	2023	2	2023
Quarterly KBS Progress Reviews	1	2017	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>				Project (Number/Name) 675178 / <i>Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc 2)</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675178: <i>Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc 2)</i>	0.000	0.000	0.000	11.816	0.000	11.816	14.895	48.043	49.169	50.064	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0901538F, project 675178, DEAMS INC 2 Product Development, is a new start.

A. Mission Description and Budget Item Justification

The Defense Enterprise Accounting and Management System (DEAMS) is a commercial-off-the-shelf (COTS), Oracle-based software implementation effort that will provide an auditable, modern accounting and finance system. The DEAMS implementation will replace many existing accounting and finance legacy systems and will provide core funds execution management functions consistent with financial management laws, regulations and policy, general ledger, funds management, payments, receivables, cost and revenues, and fiduciary reporting. DEAMS is compliant with the Clinger-Cohen Act, Business Enterprise Architecture (BEA), and integrates into Global Combat Support System-Air Force (GCSS-AF). DEAMS is a key enabler and provides the core accounting system for all enterprise business system development necessary to sustain financial statement auditability.

DEAMS Inc 2 provides specific capabilities necessary to provide the core accounting and reporting functionality necessary to enable development and deployment of modernized personnel, contracting and logistics systems. Additional capabilities under requirements definition include complex acquisition management, reimbursable cost accounting, military entitlement accounting, advanced accounting controls and audit sustainment, treasury cash accountability, and management accounting and billing for revolving funds. Included in these capabilities are selected requirements deferred from Increment 1.

Additional user deployments enabled by future increment capabilities include acquisition program executive offices; ranges, laboratories and test centers; and air logistics centers.

This funding request will support development of initial Capability Implementation Plan (CIP), Capability Process Maps (CPMs) for each business capability, and mapping of financial management processes the capability will require (Blueprinting). Additionally, the funding will support acquisition strategy planning by early identification/definition of IT Functional Requirements (ITFRs) and Information Assets (IA), Acquisition Strategy Determination, Solution Approach, and Request for Proposal (RFP) preparation.

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

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675178 / <i>Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc 2)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: DEAMS INC 2 Product Development</p> <p>Description: DEAMS Increment 2 capability development activities (performed by a System Integrator) support multiple user deployments as described in the Mission Description section. Development activities include requirements analysis, design, build, test, data conversion, cut-over from legacy systems, and the resolution of deficiency reports and defects. Also includes the support services (product development support, solution architecture support, configuration control and management support, quality assurance support, acquisition strategy support, test support, and cybersecurity support) of various Advisory and Assistance Services (A&AS), Direct Mission Support (DMS), and Federally Funded Research and Development Centers (FFRDC).</p> <p>FY 2018 Plans: N/A - New start 2019</p> <p>FY 2019 Base Plans: - Will begin Technical support services for requirements definition and analysis and System Integrator request for proposal (RFP) development - Will begin Acquisition planning and support for Inc 2 system capabilities to include but not limited to: --Acquisition Contracting Interfaces --Foreign Military Sales (FMS) --Budget Distribution Interface --Conversion interface with System Integrator</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: This is a new start project for 2019.</p>	0.000	0.000	11.816	0.000	11.816
Accomplishments/Planned Programs Subtotals	0.000	0.000	11.816	0.000	11.816

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675178 / <i>Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc 2)</i>

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 834470: <i>Defense Enterprise Accounting and Mgmt System (DEAMS)</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	3.107	3.162	0.000	6.269

Remarks

D. Acquisition Strategy

DEAMS Increment 2 will employ multiple contract actions as the various Development Activities are developed, tested, and deployed through FY2023. Program Office will provide management oversight of the system integrator and multiple subcontractors. Program reviews will occur throughout the lifecycle of the program. Programmatic adjustments will occur as appropriate or as directed by Air Force leadership or by the Milestone Decision Authority (MDA).

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018		
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>				Project (Number/Name) 675178 / <i>Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc 2)</i>					

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEAMS Inc 2	Various	Various : Various	-	-		-		9.816	Mar 2019	-		9.816	Continuing	Continuing	-
Subtotal			-	-		-		9.816		-		9.816	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administrative (PMA) Costs	Various	Various : Various	-	-		-		2.000	Mar 2019	-		2.000	Continuing	Continuing	-
Subtotal			-	-		-		2.000		-		2.000	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-	0.000	11.816	-	11.816	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675178 / <i>Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc 2)</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

DEAMS																												
Acquisition Planning																												
Milestone B / Acquisition Authority to Proceed																												
Contract Award - System Integrator																												
DEAMS Increment 2, Development Activity																												
Initial Operational Test and Evaluation (IOT&E)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675178 / <i>Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc 2)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
DEAMS				
Acquisition Planning	3	2019	3	2020
Milestone B / Acquisition Authority to Proceed	2	2020	2	2020
Contract Award - System Integrator	3	2020	3	2020
DEAMS Increment 2, Development Activity	3	2020	4	2023
Initial Operational Test and Evaluation (IOT&E)	2	2022	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>				Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675179: <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>	577.133	3.041	78.460	67.618	0.000	67.618	35.549	0.000	0.000	0.000	0.000	761.801
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Defense Enterprise Accounting and Management System (DEAMS) is a commercial-off-the-shelf (COTS), Oracle-based software implementation effort that will provide an auditable, modern accounting and finance system. DEAMS is a Joint United States Air Force (USAF) and United States Transportation Command (USTRANSCOM) Enterprise Resource Planning (ERP) Program that will replace many existing accounting and finance legacy systems and will provide core funds execution management functions consistent with financial management laws, regulations and policy, general ledger, funds management, payments, receivables, cost and revenues, and fiduciary reporting. DEAMS is compliant with the Clinger-Cohen Act, Business Enterprise Architecture (BEA), and integrates into Global Combat Support System-Air Force (GCSS-AF). When fully deployed, DEAMS will be key to Air Force compliance with the Financial Improvement and Audit Readiness (FIAR) requirement in the 2010 NDAA.

DEAMS user deployments include:

- Air Mobility Command (AMC) without Transportation Working Capital Funds (TWCF)
- AMC with TWCF, in conjunction with Defense Finance and Accounting Service (DFAS) Rome
- Air Combat Command (ACC) and Air Force Global Strike Command (AFGSC)
- Air Force Reserve Command (AFRC), and Air National Guard (ANG) and other Geographically Separated Units (GSUs) to include DFAS Limestone, Air Force District of Washington (AFDW), Air Force Special Operations Command (AFSOC), U.S. Air Force Academy (USAFA), Pacific Air Forces (PACAF), and DFAS Japan
- U. S. Air Forces in Europe (USAFE), DFAS Europe, and Air Education and Training Command (AETC), Joint Base San Antonio
- Air Force Material Command (AFMC) and Air Force Space Command (AFSPC) (Incremental Deployments)
- Remaining DFAS locations and all other GSUs

On 23 January 2017, the senior official provided the Critical Change Report (CCR) with certifications to Congress. The report recommended a restructure of DEAMS from one increment to multiple increment. The Milestone Decision Authority (MDA) approved the restructured program for DEAMS Inc 1, to include deferring certain requirements to future increments, a limited deployment to an additional 700 users for Inc 1 to United States Air Force in Europe (USAFE), and the updated Full Deployment Decision (FDD) criteria via an Acquisition Decision Memorandum (ADM) dated 2 June 2017. FDD Threshold date is August 2020 and Full Deployment (FD) Threshold date is February 2021.

The remaining DEAMS Inc 1 schedule includes Oracle R12 upgrade transition to a new production environment, hardware upgrade, and reporting and disbursing initiatives, where applicable via software releases to the system baseline.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>

DEAMS funding includes initial planning, design, and development activities associated with the DEAMS Inc 2 effort.

DEAMS Inc 1 is developing capability which allows for deployment to the remaining user locations. However, DEAMS has also begun transitioning the support of previously deployed locations to the Operation and Support (O&S) phase.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Product Development</p> <p>Description: DEAMS Inc 1 capability development activities support multiple software releases and user deployments as described in the mission description. Development activities include design, build, test, data conversion, reporting, cutover from legacy systems, and the resolution of deficiency reports and defects. Activities also include hardware support (system administration and database security) and storage service by Defense Information Systems Agency (DISA); continued development of interface to Global Combat Support System - Air Force (GCSS-AF); Enterprise Resource Planning (ERP) Common Computing Environment (CCE); Independent Verification and Validation (IV&V); Developmental Release Field Support (DRFS) to include process execution and data scripts; help desk support; Engineering Integration Services (EIS) for oversight of development tools and processes; deployment training and change management activities. Provides acquisition, contract, finance, and cost management planning and direct mission support activities.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue to develop DEAMS auditing initiative - Continue development/integration of DEAMS Oracle Reporting Solution to address IOT&E findings - Continue development/integration of DEAMS disbursing initiative - Continue to work on Software Change Requests (SCRs) - Continue remaining development activities to develop capability in support of remaining deployments - Continue direct mission support activities - Continue planning activities for DEAMS Inc 2 <p>FY 2019 Base Plans:</p> <ul style="list-style-type: none"> - Will continue development/integration of DEAMS disbursing initiative, auditing and long term reporting - Will continue to work on SCRs - Will continue remaining development activities to develop capability in support of remaining deployments 	2.948	75.755	66.788	-	66.788

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Will continue direct mission support activities					
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from 2018 to 2019 as development winds down and some DEAMS Increment 1 efforts migrate to sustainment					
Title: Test and Evaluation (T&E)	0.093	2.705	0.830	-	0.830
Description: The T&E process will be a complete system operational test to determine DEAMS effectiveness, suitability, and mission capability. It begins with validation of requirements and end to end functional capabilities including compliance mandates. The T&E effort are conducted in developer sites, Air Force test sites, DISA production sites, and user locations. The DEAMS Test and Evaluation Master Plan (TEMP), Lead Developmental Test Organization (LDTO) Integrated Test Plan (ITP), System Integrators (SIs) Software Test Plans (STPs), and Operational Test Agency (OTA) operational test plans covers the details of Increment 1 T&E. Database Administrator (DBA) Test Support required to service test instances. CIE Integration/Development support for ancillary Test activities required. Hardware and software required for test activities.					
FY 2018 Plans:					
- Continue developmental testing for hardware upgrade					
- Continue validation of software and hardware releases and other system updates for DEAMS Inc 1					
- Continue Operational Utility Evaluation (OUE) Phase 1 testing and begin OUE Phase 2 testing with OTA					
- Continue scheduled test events to add confidence to the revised schedule, and DEAMS critical change					
- Begin testing for Oracle 12 technical software upgrade					
- Prepare for Follow-on Operational Test and Evaluation (FOT&E)					
- Continue development/integration of DEAMS disbursing initiative and other system capabilities					
- Obtain final approval of DEAMS TEMP from the Director, Operational Test and Evaluation (DOT&E) OSD					
FY 2019 Base Plans:					
- Will continue to validate planned software releases and coordinate the complete testing of the Oracle R12 technical software upgrade					
- Will continue to validate user deployments and coordinate testing					
- Will continue to plan for and start execution of FOT&E					
FY 2018 to FY 2019 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Decrease is due to less cost being allocated to test					
Accomplishments/Planned Programs Subtotals	3.041	78.460	67.618	-	67.618

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 834470: <i>Defense Enterprise Accounting and Mgmt System</i>	0.000	1.514	0.802	-	0.802	1.905	0.000	0.000	0.000	0.000	4.221

Remarks

D. Acquisition Strategy

DEAMS Inc 1 will employ multiple contract actions as the various Development Activities and Releases are developed, tested, and deployed through FY 2020. Program office will provide management oversight of the system integrator and multiple subcontractors. Program reviews will occur throughout the lifecycle of the program. Programmatic adjustments will occur as appropriate or as directed by Air Force leadership or by the Milestone Decision Authority.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>				Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>							

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEAMS DRFS (Post Production Support, Level 2/3 Help Desk Support), System Stabilization, Design, Blueprint, Code, Development tools/ processes, etc.	C/FFP	Accenture Federal Services LLC : Various	195.215	0.750		23.039	Oct 2017	0.000		-		0.000	0.000	219.004	-
DEAMS : DRFS (Level 0 Help Desk Support)	C/FFP	The Greentree Group : Dayton, OH	2.491	-		-		-		-		-	0.000	2.491	-
DEAMS: ESB messaging, adapters, web services, security, digital signature service, etc.	MIPR	GCSS-AF : Gunter AFB, AL	6.426	-		-		-		-		-	0.000	6.426	-
DEAMS: Computing and storage support, system administration, security, storage, etc.	MIPR	DISA : Various	28.822	-		0.031	Feb 2018	-		-		-	0.000	28.853	-
DEAMS: Direct Mission Support (Development/ Integration Environments)	Various	Various : Various	103.062	0.430	Oct 2016	4.726	Oct 2017	15.782	Oct 2018	-		15.782	10.000	134.000	-
DEAMS: Oracle R12 Support, ERP Support	C/FFP	SRISYS : West Chester, OH	7.440	-		-		-		-		-	0.000	7.440	-
DEAMS: SME Support, General Ledger Reports and Analysis, Business Process Analysis, Master Data Conversion and Training Development	C/T&M	Kearney and Company : Various	102.739	0.500	Mar 2017	18.545	Mar 2018	12.758	Mar 2019	-		12.758	9.500	144.042	-
DEAMS: Change Management, Strategic Communications	C/FFP	SAIC : Dayton, OH	4.829	-		-		-		-		-	0.000	4.829	-
DEAMS: Information Assurance (IA) / Risk	C/CPFF	Jacobs Technology : Dayton, OH	2.238	-		-		-		-		-	0.000	2.238	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>					Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>				

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management Framework (RMF)															
DEAMS: ERP System Integration	C/FFP	Credence Management Solutions LLC : Dayton, OH	22.180	0.902		6.237	Feb 2018	8.338	Feb 2019	-		8.338	5.000	42.657	-
DEAMS FFRDC ERP Engineering	C/Variou	The MITRE Corporation : Various	12.052	0.112		1.477	Oct 2017	1.499	Oct 2018	-		1.499	0.900	16.040	-
DEAMS: Independent Verification and Validation (IV&V)	C/FFP	JYG Innovations : Dayton, OH	7.865	-		-		-		-		-	0.000	7.865	-
DEAMS: ETASS (Engineering)	C/CPFF	Jacobs Technology : Dayton, OH	35.583	-		5.995	Feb 2018	5.355	Feb 2019	-		5.355	3.200	50.133	-
DEAMS: DTUS	C/FFP	DSD Laboratories, Inc : Sudbury, MA	-	-		11.265	Jan 2018	18.929	Jan 2019	-		18.929	4.595	34.789	-
Subtotal			530.942	2.694		71.315		62.661		-		62.661	33.195	700.807	N/A

Remarks

DIRC: DEAMS Increment 1 Requirements Continuation
 DTUS: DEAMS Technical Upgrade and Sustainment
 DRFS: Developmental Release Field Support
 DISA: Defense Information Systems Agency
 ERP: Enterprise Resource Planning
 ESB: Enterprise Service Bus
 ETASS: Engineering and Technology Acquisition Support Services
 FFRDC: Federally Funded Research and Development Center
 GCSS-AF: Global Combat Support System - Air Force
 SME: Subject Matter Expert

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>				Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>							

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEAMS: Test services from AFOTEC, JITC, LDTO and other miscellaneous test resources	MIPR	Various : Various	13.661	0.093	Oct 2016	2.705	Oct 2017	0.830	Oct 2018	-		0.830	0.530	17.819	-
Subtotal			13.661	0.093		2.705		0.830		-		0.830	0.530	17.819	N/A

Remarks
 AFOTEC: Air Force Operational Test and Evaluation Center
 JITC: Joint Interoperability Test Command
 LDTO: Lead Developmental Test Organization

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEAMS: Program Management Office Support	C/CPFF	BTAS : Beavercreek, OH	-	-		0.676	Oct 2017	0.690	Oct 2018	-		0.690	0.500	1.866	-
DEAMS:Program Management Administration costs	Various	AFLCMC : Wright-Patterson AFB, OH	11.000	0.254	Oct 2016	2.096	Oct 2017	0.320	Oct 2018	-		0.320	0.180	13.850	-
DEAMS: Economic/ Sustainment Analysis Support	C/CPAF	Peerless Technologies : Dayton, OH	3.200	-		-		0.290	Dec 2018	-		0.290	0.160	3.650	-
DEAMS;Program Management Office Support	C/CPFF	Quantech Services : Lexington, MA	18.330	-		1.668	Feb 2018	2.827	Feb 2019	-		2.827	1.251	24.076	-
Subtotal			32.530	0.254		4.440		4.127		-		4.127	2.091	43.442	N/A

Remarks
 A&AS: Advisory & Assistance Services

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DEAMS																												
DEAMS Inc 1, Software Change Requests																												
DEAMS Inc 1, Reporting																												
DEAMS Inc 1, Disbursing																												
DEAMS Inc 1, Auditing																												
Deploy DEAMS Inc 1 Capability																												
DEAMS Inc 1, Full Deployment Decision (FDD)																												
DEAMS Inc 1, Follow-on Operational Test and Evaluation (FOT&E)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i>	Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
DEAMS				
DEAMS Inc 1, Software Change Requests	1	2017	4	2020
DEAMS Inc 1, Reporting	4	2017	1	2019
DEAMS Inc 1, Disbursing	4	2017	1	2019
DEAMS Inc 1, Auditing	4	2017	1	2019
Deploy DEAMS Inc 1 Capability	1	2017	1	2021
DEAMS Inc 1, Full Deployment Decision (FDD)	2	2020	4	2020
DEAMS Inc 1, Follow-on Operational Test and Evaluation (FOT&E)	3	2019	3	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	8.381	14.255	14.161	0.000	14.161	15.001	15.170	15.398	15.679	Continuing	Continuing
670373: <i>DCIP</i>	-	0.474	0.492	0.487	0.000	0.487	0.488	0.496	0.506	0.515	Continuing	Continuing
672486: <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>	-	2.602	7.453	7.427	0.000	7.427	7.467	7.513	7.583	7.723	Continuing	Continuing
67A011: <i>Space Analysis and Application Development</i>	-	5.305	6.310	6.247	0.000	6.247	7.046	7.161	7.309	7.441	Continuing	Continuing

A. Mission Description and Budget Item Justification

The USSTRATCOM Defense Critical Infrastructure Protection program (DCIP) is a risk management program that seeks to ensure the availability of networked assets critical to USSTRATCOM and other DoD missions. Critical infrastructure assets can include installations, facilities, antennas, vehicles, computing systems, and communications links. DCIP is directed by the Office of the Assistant Secretary of Defense (Homeland Defense & Americas' Security Affairs) [OASD (HD&ASA)]. DCIP manages the identification, prioritization, assessment, and assurance of Critical Infrastructure as a comprehensive program that includes the development of adaptive plans and procedures to mitigate risk, restore capability in the event of loss or degradation, support incident management, and protect defense critical infrastructure.

Navigation Warfare (Navwar) is deliberate defensive and offensive action to assure positioning, navigation, and timing (PNT) information through coordinated employment of space, cyberspace, and electronic warfare (EW) operations. The JNWC develops and maintains the Department's premier collection of Navwar knowledge, and provides subject matter expertise support to warfighters, Department decision makers, the Federal Interagency (the Department of Homeland Security and other civil agencies concerned with the Critical National Infrastructure), and the Coalition. Navwar expertise is developed in part by execution of PNT Operational Field Assessments (POFAs), modeling and simulation, analysis, and exercise and training support. JNWC-conducted POFAs are a key element in evaluating US and Coalition Navwar capabilities and vulnerabilities and adversary capabilities and vulnerabilities, both crucial to executing PNT superiority mission sets in potentially denied / degraded PNT environments. JNWC provides Department wide PNT posture through the PNT Annual assessment. JNWC helps develop defensive and offensive PNT capabilities by focusing on two Joint Mission Essential Tasks:

1. Provide Operational Navwar Support - Enable Navwar operations and provide planning subject matter expertise to Combatant Commands, Services, interagency partners and the coalition; Advocate DoD-wide Navwar activities to fully integrate Navwar into military operations and the future force structure.
2. Create and Maintain Navwar Knowledge Operationalize PNT Superiority - Conduct PNT operational field assessments, studies and analyses, analyze and disseminate Navwar R intelligence, and maintain a Navwar armory

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>
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The Space Analysis and Application Development program integrates space based effects into Department's 'Model of Record' for joint campaign analysis. Current modeling and simulation (M&S) models are inadequate to represent the contribution that U.S space capabilities make to the air, sea, and land fight and do not accurately portray current and future space threats. This line of effort integrates effects of space capabilities into the Synthetic Theater Operations Research Model (STORM) campaign level M&S tool. Enhanced space M&S will enable the DoD to make informed decisions regarding the direction of U.S. Space Doctrine, Tactics, Techniques, Procedures, and Resource Decisions. The DoD requires the ability to conduct campaign-level analysis to quantify the holistic operational impacts of adversary space actions on military campaigns and U.S. global operations.

USSTRATCOM Data Integration and Fusion Center (DIFC) is an innovative organization developing and experimenting innovative concepts designed to validate both material and non-material methodologies to overcome data isolation in order to enable kill chains in the Joint Battlespace. These data isolation challenges result from network isolation, incomplete communications architectures, data security, incompatible information formats, security release policy, etc., inhibiting effective and efficient consolidation of decision quality strategic, operational and tactical information. The DIFC develops machine to machine solutions capable of ingesting Title 10 data at multiple classification levels, to include Special Access Program data, and associating/correlating with National Technical Means at multiple classification levels to both enhance and amplify the Common Operational Picture. The DIFC works closely with DoD SAPCO and elements of the Director of National Intelligence, to include NSA, NRO and CIA, to both identify and address policy barriers, architectures and training opportunities necessary to enable seamless flow of data from all available sensors to warfighters during time of conflict, primarily leveraging currently fielded tactical data links. Though some recommended solutions validated during demonstration events may not transition to operations immediately, but nevertheless provide validated architecture solutions and approved security policies for use should conflict arise versus ad hoc attempts to solve data movement issues during conflict.

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	8.674	14.255	14.268	0.000	14.268
Current President's Budget	8.381	14.255	14.161	0.000	14.161
Total Adjustments	-0.293	0.000	-0.107	0.000	-0.107
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.293	0.000	-0.107	0.000	-0.107

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 670373 / DCIP
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
670373: DCIP	-	0.474	0.492	0.487	0.000	0.487	0.488	0.496	0.506	0.515	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

An October 2014 memorandum of agreement between USSTRATCOM and Deputy Assistant Secretary of Defense for Defense Continuity and Mission Assurance transferred budget authority for DCIP funding to USSTRATCOM beginning in FY16. THIS IS NOT A NEW START.

A. Mission Description and Budget Item Justification

The USSTRATCOM Defense Critical Infrastructure Protection program (DCIP) is a risk management program that seeks to ensure the availability of networked assets critical to USSTRATCOM and other DoD missions. Critical infrastructure assets can include installations, facilities, antennas, vehicles, computing systems, and communications links. DCIP is directed by the Office of the Assistant Secretary of Defense (Homeland Defense & Americas' Security Affairs) [OASD (HD&ASA)]. DCIP manages the identification, prioritization, assessment, and assurance of Critical Infrastructure as a comprehensive program that includes the development of adaptive plans and procedures to mitigate risk, restore capability in the event of loss or degradation, support incident management, and protect defense critical infrastructure.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Asset Dependency / Risk Characterization, Mitigation, and Prototyping	0.474	0.492	0.487	0.000	0.487
<p>Description: Supports 1) systems engineering analysis for the decomposition of mission systems and assets, and supporting networks and infrastructure that execute USSTRATCOM mission, 2) research, studies, and operational assessment of mission system capabilities, methodologies, and tactics to identify critical assets and dependency relationships, and 3) evaluation of mission risk through research, studies, analysis and assessment of threats and hazards paired with exploitable vulnerabilities. Supports analysis for the identification and development of risk mitigation and remediation options through research, studies, analysis and assessment of current and future tactics, techniques and procedures and materiel solutions, enabling USSTRATCOM mission assurance planning, coordination, integration, synchronization supporting the reduction of risk to CDRUSSTRATCOM acceptable levels. Supports three spiral development cycles annually consisting of concept and requirement development, tool engineering, algorithm development, prototyping, and testing to support rapid mission impact assessment, risk assessment, and risk management.</p>					
FY 2018 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 670373 / DCIP
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Supports analysis, studies and research of critical infrastructure assets and dependencies supporting all USSTRATCOM assigned missions, to include focusing efforts of future critical infrastructure vulnerability assessments and researching the various sources to perform threats and hazards assessments.</p> <p><i>FY 2019 Base Plans:</i> Continued support of analysis, studies and research of critical infrastructure assets and dependencies supporting all USSTRATCOM assigned missions, to include focusing efforts of future critical infrastructure vulnerability assessments and researching the various sources to perform threats and hazards assessments.</p> <p><i>FY 2019 OCO Plans:</i> No OCO requested</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Decrease of \$5K is due to Air Force allocation to the program.</p>					
Accomplishments/Planned Programs Subtotals	0.474	0.492	0.487	0.000	0.487

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

N/A

Remarks

D. Acquisition Strategy

Projects funded through DCIP will be awarded using competitive contracts to the maximum extent possible.

E. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 670373 / <i>DCIP</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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>Defense Critical Infrastructure Program</i>	
Asset Dependency, Risk Mitigation, Ops Research, Design/Development, Modeling and Simulation, Test and Evaluation	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 670373 / <i>DCIP</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Defense Critical Infrastructure Program</i>				
Asset Dependency, Risk Mitigation, Ops Research, Design/Development, Modeling and Simulation, Test and Evaluation	1	2017	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>				Project (Number/Name) 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
672486: <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>	-	2.602	7.453	7.427	0.000	7.427	7.467	7.513	7.583	7.723	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY18 PDM plus up of \$4.8M per year thru the FYDP.

A. Mission Description and Budget Item Justification

Navigation Warfare (Navwar) is deliberate defensive and offensive action to assure positioning, navigation, and timing (PNT) information through coordinated employment of space, cyberspace, and electronic warfare (EW) operations. The JNWC develops and maintains the Department's premier collection of NAVWAR knowledge, and provides subject matter expertise support to the warfighters, Department decision makers, the Federal Interagency (the Department of Homeland Security and other civil agencies concerned with Critical National Infrastructure), and the Coalition. Navwar expertise is developed in part by execution of PNT Operational Field Assessments (POFAs), modeling and simulation, analysis, and exercise and training support. JNWC conducted POFAs are a key element in evaluating US and Coalition NAVWAR capabilities and vulnerabilities and adversary capabilities and vulnerabilities, both crucial to executing PNT superiority mission sets in potentially denied / degraded PNT environments. JNWC provides Department wide PNT posture through the PNT annual assessment. JNWC helps develop defensive and offensive PNT capabilities by focusing on two Joint Mission Essential Tasks:

1. Provide Operational Navwar Support - Enable Navwar operations and provide planning subject matter expertise to Combatant Commands, Services, interagency partners and the coalition; Advocate DoD-wide Navwar activities to fully integrate Navwar into military operations and the future force structure.
2. Create and Maintain Navwar Knowledge Operationalize PNT Superiority - Conduct PNT operational field assessments, studies and analyses, analyze and disseminate Navwar R intelligence, and maintain a Navwar armory.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: PNT Operational Field Assessments	2.602	7.453	7.427	0.000	7.427
Description: The JNWC will investigate, operationally assess, and simulate potential threats and mitigation strategies for denial of blue force PNT capabilities as well as preventing the hostile use of PNT information. Major Performers - Best value to the government selected contractors, universities, government facilities, federally funded research and development centers, laboratories, or other organizations					
FY 2018 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>- Operational assessments - Simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities - Continuing development to prevent the hostile use of Positioning, Navigation and Timing (PNT) information.</p> <p>FY 2019 Base Plans: - Continuing Operational assessments - Simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities - Continuing development to prevent the hostile use of Positioning, Navigation and Timing (PNT) information.</p> <p>FY 2019 OCO Plans: No OCO requested</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Decrease of \$26K is due to Air Force allocation to the program.</p>					
Accomplishments/Planned Programs Subtotals	2.602	7.453	7.427	0.000	7.427

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

N/A

Remarks

D. Acquisition Strategy

New contracts will be awarded using competitive procedures to the maximum extent possible.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PNT Operational Field Assessments	PO	Multiple : Kirtland AFB, NM	-	2.602	Oct 2016	7.453	Oct 2017	7.427	Oct 2018	0.000		7.427	Continuing	Continuing	-
Subtotal			-	2.602		7.453		7.427		0.000		7.427	Continuing	Continuing	N/A

Remarks
Beginning in FY 2018 the JNWC portfolio transferred out of PE 15921F in to PE 120921F.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	2.602	7.453	7.427	0.000	7.427	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Navigation Warfare (NAVWAR)	
NAVWAR Operational Field Assessments	
Create Maintain NAVWAR Knowledge - PNTAA	
NAVWAR Operations & CONOPS Events	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Navigation Warfare (NAVWAR)				
NAVWAR Operational Field Assessments	1	2017	4	2023
Create Maintain NAVWAR Knowledge - PNTAA	2	2017	2	2023
NAVWAR Operations & CONOPS Events	1	2017	4	2023

Note

Joint Navigation Warfare Center (JNWC) conducts PRISM, FORTUNE, and GYPSY operational field assessments on an on-going, annual basis.

PRISM events encompass all Operations, Actions, and Activities (OAAs) associated with events outside of specific Combatant Command and/or Service exercise or mission event.

FORTUNE events are Positioning, Navigation, and Timing (PNT) vulnerability field assessments and are small scale technical risk assessments or can be risk reduction events for larger GYPSY events.

GYPSY events are larger than FORTUNE PNT related events and involve other coalition partners, and multiple US services in direct support of Geographic Combatant Command requirements.

JNWC uses the Major Range and Test Facility Base (MRTFB) program, administered by USD (AT&L). Requirements dictate which MRTFB facility will be contracted to host a GYPSY or FORTUNE event.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>				Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A011: <i>Space Analysis and Application Development</i>	-	5.305	6.310	6.247	0.000	6.247	7.046	7.161	7.309	7.441	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space Analysis and Application Development program Integrates space based effects into Department's 'Model of Record' for joint campaign analysis. Current modeling and simulation (M&S) models are inadequate to represent the contribution that U.S space capabilities make to the air, sea, and land fight and do not accurately portray current and future space threats. This line of effort integrates effects of space capabilities into the Synthetic Theater Operations Research Model (STORM) and other mission and campaign-level M&S tools. Enhanced space M&S will enable the DoD to make informed decisions regarding the direction of U.S. Space Doctrine, Tactics, Techniques, Procedures, and Resource Decisions.

The DoD requires the ability to conduct campaign-level analysis to quantify the holistic operational impacts of adversary space actions on military campaigns and U.S. global operations.

USSTRATCOM Data Integration and Fusion Center (DIFC) is an innovative organization developing and experimenting innovative concepts designed to validate both material and non-material methodologies to overcome data isolation in order to enable kill chains in the Joint Battlespace. Funds are necessary to update current government-owned software to ingest and disseminate new data sources from Title 10 and Title 50 sensors. The DIFC efforts at COCOM sponsored experimentation events will inform service acquisition decisions, capability gaps, intelligence gaps and tactics, techniques and procedures (TTP) development and implementation to mitigate effects on warfighter operations.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Space Campaign Modeling and Simulation, Development/Modification/Verification/Validation	4.315	5.492	5.447	0.000	5.447
Description: Developed, modifies, verifies, and validates new models for space mission areas and modifies existing models to portray new capabilities.					
FY 2018 Plans: Determine touchpoints between space capabilities and mission tasks for additional Joint Mission Threads.					
- Extend space modeling, simulation and analysis process to classified space capabilities - Expand analysis of degraded/denied space capabilities to an additional Theater					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<ul style="list-style-type: none"> - Assess use of Joint Space Warfighting Forum (JSWF) Space Modeling, Simulation and Analysis process in a different campaign model such as Joint Interagency Contingency Model (JICM) - Analyze/assess modeling results to determine impact/effects of space activities on U.S. military campaigns and global operations - Integrate enterprise-level model data for Position, Navigation, and Timing (PNT), Missile Warning, Battlespace Awareness, and Satellite Communications (SATCOM) space-based capabilities into campaign-level modeling - Coordinate and update Blue space order of battle data, Red counterspace order of battle data, and Red counterspace CONOPS to support integration of space into mission and campaign-level M&S - Integrate Red counterspace capability for an additional theater into mission-level modeling to support estimation of Blue survivability and assessment of Blue Defensive Space Control options - Support cost-benefit analyses of Defensive Space Control alternatives with quantifiable impacts to warfighter operations- Develop change request proposals and submit to STORM Configuration Control Board (CCB) to improve instantiation of the effects of denied/degraded Satellite Communications (SATCOM), Battlespace Awareness, and Position, Navigation, and Timing (PNT) on the Warfighter in STORM - Provide Modeling, Simulation, and Analysis support to inform Air Force Space Command's Space Enterprise Vision (SEV) <p>No OCO Requested</p> <p>FY 2019 Base Plans: In coordination with European Command and Pacific Command, identify and select 4 joint missions for mission-level analysis and integration into campaign-level modeling</p> <ul style="list-style-type: none"> - Analyze/assess modeling results to determine impact/effects of space activities on U.S. military campaigns and global operations - Assess and integrate enterprise-level model data for Environmental Monitoring and ISR space-based capabilities into campaign-level modeling - Coordinate and update Blue space order of battle data, Red counterspace order of battle data, and Red counterspace CONOPS to support integration of space into mission and campaign-level M&S - Support cost-benefit analyses of Offensive Space Control alternatives with quantifiable impacts to warfighter operations 					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>- Develop change request proposals and submit to STORM Configuration Control Board (CCB) to improve instantiation of denied/degraded Intelligence, Surveillance, and Reconnaissance (ISR) space-based capability and its effects on the Warfighter in STORM</p> <p>- In coordination with HAF/A9 (Headquarters Air Force Studies, Analyses and Assessments), develop schedule and identify funding requirements and sources toward implementation of approved change requests and improved instantiation of space and contested space capabilities in STORM</p> <p>- Provide Modeling, Simulation, and Analysis support to inform Air Force Space Command's Space Enterprise Vision (SEV)</p> <p>No OCO Requested</p> <p>FY 2019 OCO Plans: No OCO Requested</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Decrease is due to Air Force allocation to the program.</p>					
<p>Title: Data Integration and Fusion Center</p> <p>Description: USSTRATCOM/J8 Data Integration and Fusion Center (DIFC) is an innovative organization developing and experimenting innovative concepts designed to validate both material and non-material methodologies to overcome data isolation in order to enable kill chains in the Joint Battlespace. The DIFC will work to update current government-owned software to ingest and disseminate new data sources from Title 10 and Title 50 sensors. The DIFC efforts at COCOM sponsored experimentation events will inform service acquisition decisions, capability gaps, intelligence gaps and tactics, techniques and procedures (TTP) development and implementation to mitigate effects on warfighter operations.</p> <p>FY 2018 Plans: The DIFC will continue to investigate, experiment, and disseminate various Title 10 and Title 50 data sources from collect through dissemination to tactical platforms using machine to machine solutions to move data more efficiently and affect kill chain timelines.</p> <p>FY 2019 Base Plans:</p>	0.990	0.818	0.800	0.000	0.800

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>The DIFC will continue to investigate, experiment, and disseminate various Title 10 and Title 50 data sources from collect through dissemination to tactical platforms using machine to machine solutions to move data more efficiently and affect kill chain timelines.</p> <p><i>FY 2019 OCO Plans:</i> No OCO Requested</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY17 RMD allocated funding stream in FY19 at \$800K</p>					
Accomplishments/Planned Programs Subtotals	5.305	6.310	6.247	0.000	6.247

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

Remarks

D. Acquisition Strategy
Any new projects funded in this program will be awarded using competitive procedures to the maximum extent possible.

Best value to the government selected contractors, universities, government facilities, federally funded research and development centers, laboratories, or other organizations

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Model Space effects for two mission tasks and integrate into STORM for joint campaign analysis	TBD	TBD : TBD	-	4.315	Oct 2016	5.455	Oct 2017	5.447	Oct 2018	0.000		5.447	Continuing	Continuing	-
Data Integration and Fusion Center	C/Various	Multiple Gov/Civ Agencies : Schriever AFB, CO	-	0.990	Oct 2016	0.855	Oct 2017	0.800	Oct 2018	0.000		0.800	Continuing	Continuing	-
Subtotal			-	5.305		6.310		6.247		0.000		6.247	Continuing	Continuing	N/A

Remarks
Best value to the government selected contractors, universities, government facilities, federally funded research and development centers, laboratories, or other organizations

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	5.305	6.310	6.247	0.000	6.247	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Space Analysis Modeling & Simulation																												
Develop 22 Joint Mission Threads accounting for Warfighter tasks dependent on space-based capabilities	██████████																											
Conduct operational risk analysis with Combatant Commands on impacts of contested space to OPLAN missions and tasks; identify priority risk areas	██████████																											
Coordinate implementation and schedule to implement modification proposals for improved space and counterspace effects in STORM	██████████																											
Complete mission-level modeling and analysis of 22 Joint Mission Threads	██████████																											
Complete priority integration of 22 Joint Mission Threads, space-based capabilities, and counterspace effects on the Warfighter in STORM.	██████████																											
Run improved STORM model and update integrated risk analysis with Combatant Commands	██████████																											
Identify and develop 10 additional Joint Mission Threads for integration into mission and campaign-level modeling	██████████																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Space Analysis Modeling & Simulation</i>				
Develop 22 Joint Mission Threads accounting for Warfighter tasks dependent on space-based capabilities	1	2017	4	2017
Conduct operational risk analysis with Combatant Commands on impacts of contested space to OPLAN missions and tasks; identify priority risk areas	1	2018	4	2018
Coordinate implementation and schedule to implement modification proposals for improved space and counterspace effects in STORM	1	2019	4	2019
Complete mission-level modeling and analysis of 22 Joint Mission Threads	1	2020	4	2020
Complete priority integration of 22 Joint Mission Threads, space-based capabilities, and counterspace effects on the Warfighter in STORM.	1	2021	4	2021
Run improved STORM model and update integrated risk analysis with Combatant Commands	1	2022	4	2023
Identify and develop 10 additional Joint Mission Threads for integration into mission and campaign-level modeling	1	2022	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	28.412	31.914	26.986	5.000	31.986	21.365	21.683	22.134	22.536	Continuing	Continuing
670001: <i>Air Force TENCAP</i>	-	28.412	31.914	26.986	5.000	31.986	21.365	21.683	22.134	22.536	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 In FY2018, PE 0207247F, AF TENCAP efforts were transferred to PE 1202247F, AF TENCAP, due to the creation of a new Major Force Program for Space. FY2017 funding is now documented in the exhibits for PE 1202247F.

A. Mission Description and Budget Item Justification

Air Force TENCAP increases warfighter effectiveness through the exploitation of national capabilities and promotes cross-domain integration of these capabilities into military operations/training, intelligence, surveillance and reconnaissance (ISR) activities.

AF TENCAP exploits existing air, space, cyber, national and global ISR, and Non-Traditional ISR (NTISR) for operational and tactical applications by rapidly prototyping and providing capability demonstrations. Projects are designed to transition to warfighters and/or national intelligence agencies for operational use, sustainment and appropriate acquisition Programs of Record for further development. AF TENCAP projects can influence the design and operation of current and future air, space, cyber, national and global ISR and NTISR while providing situational awareness to warfighters, national intelligence agency organizations and units.

Program consists of multiple small projects supporting one of the Air Force Core Function Mission Areas (CFMAs). Projects are executed to provide continued support to the National Warfighter, operational and Tactical Warfighter, and to Special Operations Forces.

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	28.413	31.914	27.189	0.000	27.189
Current President's Budget	28.412	31.914	26.986	5.000	31.986
Total Adjustments	-0.001	0.000	-0.203	5.000	4.797
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.001	0.000	-0.203	5.000	4.797

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Exploitation Applications	21.004	22.914	21.189	5.000	26.189
Description: Exploiting existing air, space, cyber, national and global ISR, and Non-Traditional ISR (NTISR) for operational and tactical applications by rapidly prototyping, demonstrating capability, and influencing the design and operation of future space, cyber, national and global ISR, and NTISR systems for tactical users.					
FY 2018 Plans:					
- Continue to rapidly prototype projects and focus warfighter support and resource allocation based on AF TENCAP mission/investment areas as a reflection of Air Force CFMAs					
- Continue to execute projects which provide continued support to the National Warfighter, Operational and Tactical Warfighter, and Special Operations Forces					
- Continue to execute focused effort to increase Air Domain Awareness to Air Force and Joint Warfighters.					
FY 2019 Base Plans:					
- Will continue to rapidly prototype projects and focus warfighter support and resource allocation based on AF TENCAP mission/investment areas as a reflection of Air Force CFMAs					
- Will continue to execute projects which provide continued support to the National Warfighter, Operational and Tactical Warfighter, and Special Operations Forces					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Will continue focused effort to increase Air Domain Awareness to Air Force and Joint Warfighters. FY 2019 OCO Plans: - Will complete development and test of counter-unmanned aerial system prototype. FY 2018 to FY 2019 Increase/Decrease Statement: - Decrease reflects reduced funding profile for ongoing Air Domain Awareness effort.					
Title: Talon HATE Description: Talon HATE is a technology prototype to evaluate the military utility of a next-generation capability for the F-15C providing multi-domain information to tactical users. Talon HATE will provide a multi-domain environment for enhanced capability to the warfighter. FY 2018 Plans: N/A FY 2019 Base Plans: N/A. FY 2019 OCO Plans: N/A	6.408	0.000	0.000	0.000	0.000
Title: Talon SPITBALL Description: Talon SPITBALL is a technology prototype to develop jam-resistant antenna for next-generation aircraft. Talon SPITBALL will enable tactical communications and intelligence for advanced aircraft operating in denied environments. FY 2018 Plans: - Continue development and test of jam-resistant antenna effort for advanced aircraft. FY 2019 Base Plans: - Will continue development and test of jam-resistant antenna effort for advanced aircraft. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement:	1.000	9.000	5.797	0.000	5.797

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Decrease reflects reduced funding profile for ongoing Talon SPITBALL development.					
Accomplishments/Planned Programs Subtotals	28.412	31.914	26.986	5.000	31.986

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

N/A

Remarks

N/A.

E. Acquisition Strategy

Projects are selected based upon needs identified by the program's customers - DOD Departments, Combatant Commands, Components, MAJCOMs, and/or National Intelligence Agencies. Many projects are executed via existing contracts maintained by other agencies; others are executed via Air Force TENCAP contracts established with vendors responding to annual Broad Agency Announcements. The U.S. government organization sponsoring a project is responsible for assuming acquisition, deployment, logistics, sustainment and budgetary responsibilities for the developed capability after it has been successfully demonstrated by Air Force TENCAP.

AF TENCAP projects typically use an incremental acquisition strategy. AF TENCAP utilizes a disciplined systems engineering approach that allows program team to solve problems through a series of segments. Each increment has to be successful to pursue the following segment which mitigates cost and schedule risk.

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

F. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP	Project (Number/Name) 670001 / Air Force TENCAP
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023																			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																
AF TENCAP Projects																																												
FY 2017 Exploitation Applications Developed	██████████																																											
FY 2017 Exploitation Applications Tested, Evaluated, and Released					██████████																																							
FY 2018 Exploitation Applications Developed					██████████																																							
FY 2018 Exploitation Applications Tested, Evaluated, and Released									██████████																																			
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FY 2021 Exploitation Applications Tested, Evaluated, and Released																					██████████																							
FY 2022 Exploitation Applications Developed																					██████████																							
FY 2022 Exploitation Applications Tested, Evaluated, and Released																									██████████																			
Talon HATE Integrated /Tested	██████████																																											
Talon SPITBALL Developed	██████████				██████████																																							
Talon SPITBALL Integrated/Tested									██████████																																			
FY 2023 Exploitation Applications Developed																									██████████																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP	Project (Number/Name) 670001 / Air Force TENCAP
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AF TENCAP Projects				
FY 2017 Exploitation Applications Developed	1	2017	2	2018
FY 2017 Exploitation Applications Tested, Evaluated, and Released	2	2018	3	2018
FY 2018 Exploitation Applications Developed	1	2018	2	2019
FY 2018 Exploitation Applications Tested, Evaluated, and Released	2	2019	3	2019
FY 2019 Exploitation Applications Developed	1	2019	2	2020
FY 2019 Exploitation Applications Tested, Evaluated, and Released	2	2020	3	2020
FY 2020 Exploitation Applications Developed	1	2020	2	2021
FY 2020 Exploitation Applications Tested, Evaluated, and Released	2	2021	3	2021
FY 2021 Exploitation Applications Developed	1	2021	2	2022
FY 2021 Exploitation Applications Tested, Evaluated, and Released	2	2022	3	2022
FY 2022 Exploitation Applications Developed	1	2022	2	2023
FY 2022 Exploitation Applications Tested, Evaluated, and Released	2	2023	3	2023
Talon HATE Integrated /Tested	1	2017	4	2017
Talon SPITBALL Developed	1	2017	2	2019
Talon SPITBALL Integrated/Tested	1	2019	4	2019
FY 2023 Exploitation Applications Developed	1	2023	4	2023

Note

Most project selection activities occur approximately per the timelines shown, but some projects are initiated on a rolling basis throughout each year in response to time-sensitive operational requirements.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	50.071	32.426	80.168	0.000	80.168	184.320	178.794	132.694	71.682	0.000	730.155
672490: <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i>	-	50.071	32.426	80.168	0.000	80.168	184.320	178.794	132.694	71.682	0.000	730.155
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The FAB-T program replaces legacy Milstar terminals and will provide Extremely High Frequency (EHF), protected high data rate communication for nuclear and conventional forces to include Presidential and National Voice Conferencing (PNVC). FAB-T will provide this new, highly secure, state-of-the-art capability for DoD platforms to include strategic platforms and airborne/ground command posts via Milstar, AEHF, and Enhanced Polar System (EPS) satellites. FAB-T terminals will also support the critical command and control (C2) of the Milstar, AEHF and EPS satellite constellations. The Air Force will continue development of the FAB-T Command Post Terminal (CPT), performing systems engineering, architecture studies, development & operational test efforts, FAB-T terminal interoperability with the full AEHF satellite constellation activities, and other program activities to meet current and future emerging SATCOM requirements.

The Force Element Terminal (FET) subprogram provides a nuclear survivable terminal capable of communicating with the Milstar and AEHF satellites, and provides for survivable NC3 data transport services (EAM dissemination and force report back) for airborne platforms. The FET is for the B-52 and select RC-135 aircraft and will not provide satellite control or PNVC functionality.

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

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver FAB-T weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	52.578	32.426	21.871	0.000	21.871
Current President's Budget	50.071	32.426	80.168	0.000	80.168
Total Adjustments	-2.507	0.000	58.297	0.000	58.297
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	7.740	0.000			
• SBIR/STTR Transfer	-0.047	0.000			
• Other Adjustments	-10.200	0.000	58.297	0.000	58.297

Change Summary Explanation

FY2017: -\$10.200M Decrease of \$10.2M because of FY 2017 Request for Additional Appropriations (RAA) for PNVC Integrator was not appropriated.

FY2017: \$7.740 Increase for PNVC Integrator.

FY 2019: \$14.90M increase for PNVC Integrator.

FY 2019: \$44.0M increase for FAB-T Force Element Terminal (FET).

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: FAB-T CPT Development	14.532	0.000	0.000
Description: The FAB-T program will provide EHF voice and data MILSATCOM for nuclear and conventional forces as well as airborne and ground command posts with connectivity to Milstar, AEHF, and EPS satellites.			
FY 2018 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
N/A				
FY 2019 Plans: N/A				
FY 2018 to FY 2019 Increase/Decrease Statement: N/A				
Title: PNVC Integrator		35.539	21.246	36.496
Description: PNVC is the SECN replacement capability which provides anti-jam, anti-scintillation, survivable, and endurable voice communications through the AEHF satellite system for national and strategic users. The PNVC capability consists of constituent programs being developed and produced by other organizations. This program will integrate test and support configuration of hardware from these other programs. PNVC components will be installed at ground fixed and mobile command locations, as well as in the airborne E-4B, E-6B and Very Important Person Special Airlift Mission (VIPSAM) aircraft.				
FY 2018 Plans: Execute Developmental Test focused on system functional performance with expanded number of network participants in a scintillated environment potentially with air terminal components. Continue support of fielding activities. Execute factory test with production assets to assess component compliance with authenticated system specification and establish training and technical publications required to support Developmental and Operational Testing activities. Continue program office support and other related support activities that may include, but are not limited to studies, technical analysis, etc.				
FY 2019 Plans: Award Product Support Integrator contract activity to complete training, technical publications and conclude Developmental and Operational Testing activities. Execute further Developmental Test focused on system functional performance with an expanded number of network participants to address all nodes (fixed, transportable, airborne and special users) in a scintillated environment with component variants. Continue support of fielding activities and site checkout. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.				
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$15.250M. Justification for this increase is described in plans above.				
Title: FAB-T FET		-	11.180	43.672

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>Description: Funding to ensure continued effort to complete the cost/capability analysis and begin development of force element terminals on B-52 and RC-135 aircraft. FAB-T FET is a sub-program under FAB-T and previously funded in FY16 under FAB-T FET CCA.</p> <p>FY 2018 Plans: Funding to ensure continued effort to complete the cost/capability analysis and begin development of Force Element Terminals on B-52 and RC-135 aircraft.</p> <p>FY 2019 Plans: Funding for the continued development of Force Element Terminals. Activities will include, but not limited to, development and coordination of regulatory and statutory Milestone documents, technical requirements definition, and FET Request for Proposal (RFP) planning for award of a development contract in FY 2019. Funding will also be used for technology risk reduction activities and platform environmental studies to ensure a viable AEHF terminal can be developed in timely manner for the B-52 and RC-135. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased by \$32.492M compared to FY 2018. Justification for this increase is described in plans above.</p>			
Accomplishments/Planned Programs Subtotals	50.071	32.426	80.168

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 FBLOST: <i>FAB-T</i>	4.673	22.252	14.292	-	14.292	1.969	1.576	0.000	0.000	0.000	44.762
• APAF 05 PNVC: <i>PNVC</i>	-	2.464	-	-	-	-	-	-	-	0.000	2.464
• SPAF 03 FBLOST: <i>FAB-T</i>	88.963	144.758	27.867	-	27.867	32.105	8.497	0.000	88.913	0.000	391.103
• SPAF 03 PNVC: <i>PNVC</i>	-	2.214	-	-	-	-	-	-	-	0.000	2.214
• APAF 03 Aircraft Spares and Repa...: <i>FAB-T</i>	3.561	1.343	6.141	-	6.141	0.000	0.000	0.000	-	0.000	11.045
• SPAF 03 SSPARE Spares and Repair...: <i>FAB-T</i>	12.078	3.598	20.583	-	20.583	0.057	0.000	0.000	-	0.000	36.316

Remarks

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force Date: February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>
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E. Acquisition Strategy

FAB-T Acquisition Strategy: In FY 2012, the government restructured the FAB-T development program to introduce competition into the acquisition strategy in order to reduce risk in delivering this capability as well as to drive down production costs. To ensure the best value to the government, the Air Force awarded production contracts in September 2013 to both contractors (Boeing and Raytheon). The production contracts began with production planning for both contractors. In June 2014, the Air Force down-selected to Raytheon. Development and production of FAB-T Command Post Terminals continued with Raytheon. The first Production contract options to produce CPT terminals were exercised after a successful Milestone C decision was approved September 1, 2015.

PNVC Acquisition Strategy: On May 15, 2015 the Deputy Secretary of Defense assigned the PNVC End-to-End Integration responsibility to the Air Force; effective May 16, 2015, SAF/AQ designated the AFPEO/SP. The PNVC End-to-End Integrator program is responsible for requirements traceability, End-to-End system testing, site configuration activities, training and technical manuals, network transition support, identifying deficiencies in the PNVC capability, and enterprise and life cycle support for all PNVC components.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)	Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FAB-T Prime Contract	Various	Various : Various, MA	-	1.630		-		-		-		-	Continuing	Continuing	-
FAB-T Technical Mission Analysis	Various	Various : Various, MA	-	9.919	Jul 2016	-		-		-		-	Continuing	Continuing	-
FAB-T GFE	Various	Various : Various, MA	-	0.144		-		-		-		-	Continuing	Continuing	-
FAB-T FET Prime Contract	Various	Various : Various, MA	-	-		4.230	Jan 2018	33.272	Apr 2019	-		33.272	Continuing	Continuing	-
FAB-T FET Technical Mission Analysis	Various	Various : Various, MA	-	-		4.200	Jan 2018	3.000	Oct 2018	-		3.000	Continuing	Continuing	-
PNVC Prime Contract	Various	Various : Various, MA	-	22.603	Jan 2017	11.394	Feb 2018	16.184	Jan 2019	-		16.184	Continuing	Continuing	-
PNVC Technical Mission Analysis	Various	Various : Various, MA	-	6.428	Jan 2017	5.149	Jan 2018	5.891	Oct 2018	-		5.891	Continuing	Continuing	-
PNVC Enterprise SE&I	Various	Various : Various, MA	-	2.735		-		1.904	Nov 2018	-		1.904	Continuing	Continuing	-
Subtotal			-	43.459		24.973		60.251		-		60.251	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FAB-T Government Test and LDTO Support	PO	Various : Various	-	1.211		-		-		-		-	Continuing	Continuing	-
FAB-T FET Test and Evaluation	PO	Various : Various	-	-		-		1.500	Nov 2018	-		1.500	Continuing	Continuing	-
PNVC Government Test and LDTO Support	PO	Various : Various	-	-		1.800	Jan 2018	4.800	Apr 2019	-		4.800	Continuing	Continuing	-
Subtotal			-	1.211		1.800		6.300		-		6.300	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)	Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FAB-T FFRDC	Various	Not specified. : TBD	-	0.398	Jul 2018	-		-		-		-	Continuing	Continuing	-
FAB-T A&AS	Various	Various : TBD : MA	-	0.836	Dec 2017	-		-		-		-	Continuing	Continuing	-
FAB-T Other Support	Various	Various : MA	-	0.123	Oct 2016	-		-		-		-	Continuing	Continuing	-
FAB-T FET Other Support	Various	Various : MA	-	-		0.250	Oct 2017	1.500	Oct 2018	-		1.500	Continuing	Continuing	-
FAB-T FET A&AS	Various	Various : MA	-	-		2.500	Jan 2018	4.400	Oct 2018	-		4.400	Continuing	Continuing	-
FAB-T FET CCA Other Support	Various	Various : MA	-	0.075	Oct 2016	-		-		-		-	Continuing	Continuing	-
PNVC FFRDC	MIPR	Various : CA	-	2.398	Nov 2016	-		2.673	Nov 2018	-		2.673	Continuing	Continuing	-
PNVC A&AS	Various	Various : TBD	-	1.041	Jul 2017	1.796		3.300	Oct 2018	-		3.300	Continuing	Continuing	-
PNVC Other Support	Various	Various : MA	-	0.530	Oct 2016	1.107		1.744	Oct 2018	-		1.744	Continuing	Continuing	-
Subtotal			-	5.401		5.653		13.617		-		13.617	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	50.071	32.426	80.168	-	80.168	Continuing	Continuing	N/A

Remarks
 Prior Years funding, FY 2016 \$14.573M was executed in PE 0303001F. Prior to FY 2016, \$180.602M was executed in PE 0303601F.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	Project (Number/Name) 672490 / <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FAB-T																												
FAB-T CPT Raytheon Development Contract																												
FAB-T Government Test Support																												
FAB-T Force Element Terminal																												
PNVC Integrator																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	Project (Number/Name) 672490 / <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>FAB-T</i>				
FAB-T CPT Raytheon Development Contract	1	2017	2	2018
FAB-T Government Test Support	1	2017	2	2018
FAB-T Force Element Terminal	1	2018	4	2022
PNVC Integrator	4	2017	4	2022

Note
FAB-T Raytheon Development Contract actual award date 4Q 2012, completion is 2Q 2018.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	14.099	18.808	17.808	0.000	17.808	15.891	16.167	16.503	16.804	Continuing	Continuing
673276: <i>Satellite Control Network</i>	-	14.099	18.808	17.808	0.000	17.808	15.891	16.167	16.503	16.804	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 This program, BA 7, PE 1203110F, project 673276, Resilient Enterprise Ground, is a new start.

A. Mission Description and Budget Item Justification

The Air Force Satellite Control Network (AFSCN) is a satellite ground terminal network comprised of two communication nodes (Schriever AFB & Vandenberg AFB) and 15 antenna systems. The antennas are distributed around the globe at seven locations -- Vandenberg Tracking Station (VTS), Diego Garcia Station (DGS), Guam Tracking Station (GTS), Hawaii Tracking Station (HTS), New Hampshire Tracking Station (NHS), Thule Tracking Station (TTS) and Telemetry and Commanding Station (TCS) at RAF Oakhanger, England -- to ensure global coverage for over 170 satellites in various orbits. The AFSCN conducts an average of 450 satellite contacts per day supporting Positioning, Navigation and Timing (PNT), Intelligence, Surveillance and Reconnaissance (ISR), Missile Warning, Communications, Weather, Launch Vehicle Support, and Research and Development (R&D) in support of Department of Defense (DoD), Intelligence Community (IC), and National Aeronautics and Space Administration (NASA) operations. While most of the 450 satellite contacts/day are routine command and control activities, the AFSCN is also used for satellite emergencies (e.g. tumbling satellite) because its high power antennas are often the only earthbound assets that can contact a non-responsive satellite to re-establish command & control. During FY 2017 the AFSCN supported 14 space vehicle emergencies resulting in the preservation of \$4.97B worth of satellites. In addition to routine and emergency satellite operations C2, the AFSCN provides support to launch vehicle and early orbit operations, ensuring worldwide antennas receive telemetry as the rocket travels through the atmosphere and transmit commands to a newly orbiting satellite to initiate early orbit checkout. In FY 2017, the AFSCN supported 26 launches delivering \$14.2B worth of satellites to their operational orbits. Finally, the AFSCN provides Factory Compatibility Testing (FCT) to ensure satellites and rockets can communicate via the AFSCN before the satellite is launched. These funds are used to develop next-generation tools to improve the AFSCN and ensure the capability is available to support DoD, Intelligence Community, and civil users. These efforts support cybersecurity operations and Systems Engineering & Integration (SE&I) activities as well as align with the evolving future space domain demands through Resilient Enterprise Ground (REG) & Enterprise Ground Services (EGS), to include transmit and receive, data transport, and cyber activities.

Remote Tracking Station (RTS) Block Change (RBC) - Satellite Anomaly Recovery and Support Upgrade; Enhanced High-Power Amplifier (EHPA): The Air Force will complete development testing of the EHPA first article. The AFSCN is in jeopardy of losing the emergency high power satellite contact capability due to obsolete parts used in the legacy AFSCN system. The EHPA program will develop a new high power amplifier that resolves the obsolescence issue through the 2020s.

AFSCN Deficiency Resolution: Provides test, cyber security, requirements management, and system architecture support to the AFSCN.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i>
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Electronic Scheduling and Dissemination (ESD): The ESD project called AFSCN Scheduling Tool (AST) will allow satellite operators to request contact time with their satellites via the shared AFSCN antennas, automatically deconflict overlapping requests, create a schedule, and publish the schedule in real-time to all users.

Resilient Enterprise Ground (REG): Provides the means to communicate with all future spacecraft through diverse antenna networks. This effort is a New Start in FY2019.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This program element may include necessary civilian pay expenses required to manage, execute, and deliver AFSCN weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

This program is in Budget Activity 7, Operational System Development. BA 7 includes development efforts to upgrade systems that have been fielded and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	15.624	18.808	17.942	0.000	17.942
Current President's Budget	14.099	18.808	17.808	0.000	17.808
Total Adjustments	-1.525	0.000	-0.134	0.000	-0.134
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-1.000	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	-0.525	0.000			
• Other Adjustments	0.000	0.000	-0.134	0.000	-0.134

Change Summary Explanation

FY2017: -\$1.000M Congressional reduction for underexecution.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Title: Remote Tracking Station (RTS) Block Change (RBC) - Satellite Anomaly Recovery and Support Upgrade; Enhanced High-Power Amplifier (EHPA):</p> <p>Description: RBC development replaces outdated, unique RTS equipment with standardized equipment and technology to reduce failures and enhance sustainability. Provides Advisory and Assistance Services (A&AS) to execute the RBC upgrade effort. Effort accomplished under Satellite Control Network Contract (SCNC). Developmental testing and fielding of first article will occur in FY 2018 to complete this effort.</p> <p>FY 2018 Plans: Developmental testing and fielding of first article</p> <p>FY 2019 Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>		3.346	0.339	0.000
<p>Title: AFSCN Deficiency Resolution</p> <p>Description: Provides test, cyber security, requirements management, and system architecture support to the AFSCN. Additionally, the Air Force is investigating multiple cyber defense tools for integration onto the AFSCN baseline</p> <p>FY 2018 Plans: The Air Force is pursuing more capable ground based apertures, augmenting the existing AFSCN with commercial apertures, and upgrading satellite scheduling to commercial standards in order to realize the Resilient Enterprise Ground (REG) vision.</p> <p>FY 2019 Plans: Continue program office support and other related support activities. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$3.105M. Justification for this decrease is described in plans above.</p>		4.773	4.105	1.000
<p>Title: Electronic Scheduling and Dissemination System</p> <p>Description: Develop an upgrade for the aging, increasingly-unsustainable resource scheduling system needed to coordinate and manage satellite supports using the AFSCN antennas. Analysis shows the existing legacy system will no longer support AFSCN operations beginning in Jan 2024. There is currently no viable replacement scheduler to perform day to day satellite scheduling</p>		4.459	12.748	8.260

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>operations. The Air Force is assessing multiple potential technologies and tools, to include the use of a Small Business Innovative Research (SBIR) solution and virtualization of the legacy system, that could be used to meet system requirements to address the scheduling system obsolescence.</p> <p>FY 2018 Plans: Continue development of software solution, conduct preliminary design reviews, and start contractor developmental testing.</p> <p>FY 2019 Plans: Select technology and tools for final system design, complete final design review, complete major software development, and prepare for testing/fielding/deployment.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$4.488M. Justification for this increase is described in plans above.</p>				
<p>Title: Resilient Enterprise Ground</p> <p>Description: Provide the means to communicate with all future spacecraft through diverse antenna networks including government and commercial, ensuring continued operation through a range of threats.</p> <p>FY 2019 Plans: Initiate Multi Band Multi Mission and Advanced Planning and Scheduling System Development Programs. Begin initiation of service level agreements for commercial augmentation services.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>		-	-	3.628
<p>Title: Enterprise Systems Engineering and Integration</p> <p>Description: SE&I manages the government controlled system and subsystem level baseline requirements including analysis of future changes to the fielded baseline. SE&I provides "government as the integrator" engineering support to ensure multiple separate modernizations and the sustainment baseline are synchronized. SE&I will develop and recommend investment strategies to keep the AFSCN operating well beyond the FYDP.</p> <p>FY 2018 Plans: Continue Program Office support and independent SE&I efforts as required to integrate modernization and sustainment efforts into future sites. Provide systems and subsystem level definition, baseline, architecture, integration planning and support for</p>		1.521	1.616	4.920

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
the AFSCN. Additionally, SE&I will provide support to SMC initiatives such as logistics and sustainment planning for Enterprise Ground Services (EGS).			
<i>FY 2019 Plans:</i> Continue Program Office support and independent SE&I efforts as required to integrate modernization and sustainment efforts into future sites. Provide systems and subsystem level definition, baseline, architecture, integration planning and support for the AFSCN. Additionally, SE&I will provide support to Space & Missile Center (SMC) initiatives such as logistics and sustainment planning for EGS.			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY 2019 increased compared to FY 2018 by \$3.304M. Justification for this decrease is described in plans above.			
Accomplishments/Planned Programs Subtotals	14.099	18.808	17.808

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF 01 Line Item AFSCOM: <i>AF Satellite Comm System</i>	37.281	57.516	35.400	-	35.400	56.298	48.376	49.359	50.284	Continuing	Continuing

Remarks
Procures the mission critical electronics and telecommunications equipment to upgrade the aging AFSCN Range and Network Operations segments.

E. Acquisition Strategy
RDT&E efforts focus on completing upgrades as well as future architectures and studies to ensure the best use of investment funding. The SE&I contractor maintains the DoD Architecture Framework (DoDAF) architecture and requirements baseline for Government approval and may perform studies to determine Government options. Limited RDT&E will be applied to the Consolidated Air Force Satellite Control Network (AFSCN) Modifications, Maintenance, and Operations (CAMMO) contract when sustaining engineering expertise is needed to finalize Government-approved architectures. FFRDC technical depth and breadth will be leveraged to ensure AFSCN modernization efforts are compatible with mission rules and do not pose a risk to safe and cost-effective satellite contacts.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i>	Project (Number/Name) 673276 / <i>Satellite Control Network</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Satellite Control Network Contract (SCNC)	Various	KBR Wylie : Colorado Springs, CO	-	3.112	Oct 2016	10.868	Oct 2017	-		-		-	Continuing	Continuing	-
Electronic Scheduling and Dissemination (ESD)/ AFSCN Scheduling Tool (AST)	C/TBD	TBD : TBD	-	-		0.000		6.658	Jun 2019	-		6.658	Continuing	Continuing	-
Consolidated Air Force Satellite Control Network (AFSCN) Modifications, Maintenance, and Operations (CAMMO)	Various	CACI : Colorado Springs, CO	-	5.113	Mar 2018	4.218	Jul 2018	4.602	Jul 2019	-		4.602	Continuing	Continuing	-
Small Business Innovative Research (SBIR)	Various	AFRL : Dayton, OH	-	4.147	Mar 2018	0.000		-		-		-	Continuing	Continuing	-
Enterprise Systems Engineering and Integration	C/CPIF	ENSCO : Colorado Springs, CO	-	1.415	Nov 2016	1.191	Nov 2017	3.966	Nov 2018	-		3.966	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	-	-		1.336	Oct 2017	1.376	Oct 2018	-		1.376	Continuing	Continuing	-
Subtotal			-	13.787		17.613		16.602		-		16.602	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test & Evaluation	C/T&M	Leidos : El Segundo, CA	-	0.000	Jan 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.000		-		-		-		-	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i>	Project (Number/Name) 673276 / <i>Satellite Control Network</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

AFSCN	
EHPA First Article Test & Gov't acceptance	
AFSCN Deficiency Resolution	
ESD Vendor MCT Downselect/Fielding	
Resilient Enterprise Ground	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i>	Project (Number/Name) 673276 / <i>Satellite Control Network</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AFSCN				
EHPA First Article Test & Gov't acceptance	1	2017	3	2018
AFSCN Deficiency Resolution	1	2017	4	2023
ESD Vendor MCT Downselect/Fielding	1	2017	3	2019
Resilient Enterprise Ground	1	2019	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 1203165F / NAVSTAR <i>Global Positioning System (Space and Control Segments)</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	10.029	8.937	0.000	8.937	1.986	1.985	1.991	2.027	Continuing	Continuing
67A025: <i>GPS Enterprise Integrator</i>	-	0.000	10.029	8.937	0.000	8.937	1.986	1.985	1.991	2.027	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Detailed information on this effort remains classified and will be provided on a need-to-know basis.

B. Program Change Summary (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	10.029	9.004	0.000	9.004
Current President's Budget	0.000	10.029	8.937	0.000	8.937
Total Adjustments	0.000	0.000	-0.067	0.000	-0.067
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.067	0.000	-0.067

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

	FY 2017	FY 2018	FY 2019
Title: Classified Effort	-	10.029	8.937
Description: Classified effort			
FY 2018 Plans: Classified effort			
FY 2019 Plans: Classified effort			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203165F / NAVSTAR Global Positioning System (Space and Control Segments)
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
N/A			
Accomplishments/Planned Programs Subtotals	-	10.029	8.937

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203165F / NAVSTAR Global Positioning System (Space and Control Segments)	Project (Number/Name) 67A025 / GPS Enterprise Integrator

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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 Event	
Classified Effort	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203165F / NAVSTAR Global Positioning System (Space and Control Segments)	Project (Number/Name) 67A025 / GPS Enterprise Integrator

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Test Event				
Classified Effort	1	2019	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	4.250	25.051	59.935	0.000	59.935	34.343	4.398	4.013	4.086	Continuing	Continuing
67A014: <i>R&D Space & Missile Operations</i>	-	4.250	25.051	2.626	0.000	2.626	4.567	4.398	4.013	4.086	Continuing	Continuing
673140: <i>Enterprise Ground Services EGS</i>	-	0.000	0.000	57.309	0.000	57.309	29.776	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Research and Development Space and Missile Operations (RDSMO) program, executed by the Advanced Systems and Development Directorate at Kirtland AFB, NM, conducts space and missile Research and Developmental Test and Evaluation (RDT&E) and Initial Operational Test and Evaluation (IOT&E) in support of experimental, demonstration, and operational satellites. The program develops, acquires, and operates satellite command and control (C2) and fixed/deployable telemetry, tracking, and commanding (TT&C) antenna systems in support of AF and DoD missions. The RDSMO program is responsible for the design, development, integration, testing, sustainment and operations of the Multi-Mission Satellite Operations Center (MMSOC) C2 systems installed in the RDT&E Support Complex (RSC) at Kirtland AFB, NM and Schriever AFB, CO.

The main objective of the MMSOC Development is to develop the capability to rapidly support R&D and operational systems and to transition R&D space vehicle technology with residual military utility to operational status for immediate warfighter support. MMSOC is a multiple mission operation system that uses standard software to (1) perform satellite C2 in support of launch requirements; (2) develop and test tactics, techniques, procedures and concepts to conduct satellite operations; (3) provide a satellite C2 incremental block evolution resource for RDT&E of new systems and concepts; and (4) deliver operational flexibility for new and currently flying assigned satellites. A secondary objective of MMSOC is to provide a foundational C2 platform and product line for the Enterprise Ground Services (EGS) effort to build upon and to meet the evolving initiatives of the current and future space domain.

This Program Element contains the EGS as part of the evolving current and future space domain. MMSOC capability will transition to become the EGS C2 product line. The EGS C2 product line will perform technology maturation, experiments, prototyping and operational mission transition for increased commonality and resiliency in space program ground systems. The RDSMO program will continue to support all mission sets described above as the EGS capability becomes the primary ground C2 system for AFSPC and other users. The main objective of the EGS is to provide a robust enterprise ground architecture for Air Force space systems. In FY 2019, EGS will focus efforts on developing and integrating data centers in laboratories at three separate sites, advanced concept exploration, prototype development and demonstrations, user experience maturation, training and Concept of Operations (CONOPS) refinement, cyber operations and operational mission training support. These efforts will require support such as systems engineering, integration and test, standards and interface development, architecture development, enhanced cybersecurity development and implementation.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise,

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>
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to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This program element may include necessary civilian pay expenses required to manage, execute, and deliver warfighting space capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	3.989	25.051	61.563	0.000	61.563
Current President's Budget	4.250	25.051	59.935	0.000	59.935
Total Adjustments	0.261	0.000	-1.628	0.000	-1.628
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.379	0.000			
• SBIR/STTR Transfer	-0.118	0.000			
• Other Adjustments	0.000	0.000	-1.628	0.000	-1.628

Change Summary Explanation

FY2019: rephrased \$1.2M of FY19 funds to \$.7M in FY20 and \$.5M in FY21 because of prior year execution.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>				Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A014: <i>R&D Space & Missile Operations</i>	-	4.250	25.051	2.626	0.000	2.626	4.567	4.398	4.013	4.086	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Research and Development Space and Missile Operations (RDSMO) program, executed by the Advanced Systems and Development Directorate at Kirtland AFB, NM, conducts space and missile Research and Developmental Test and Evaluation (RDT&E) and Initial Operational Test and Evaluation (IOT&E) in support of experimental, demonstration, and operational satellites. The program develops, acquires, and operates satellite command and control (C2) and fixed/deployable telemetry, tracking, and commanding (TT&C) antenna systems in support of AF and DoD missions. The RDSMO program is responsible for the design, development, integration, testing, sustainment and operations of the Multi-Mission Satellite Operations Center (MMSOC) C2 systems installed in the RDT&E Support Complex (RSC) at Kirtland AFB, NM and Schriever AFB, CO.

The main objective of the MMSOC Development is to develop the capability to rapidly support R&D and operational systems and to transition R&D space vehicle technology with residual military utility to operational status for immediate warfighter support. MMSOC is a multiple mission operation system that uses standard software to (1) perform satellite C2 in support of launch requirements; (2) develop and test tactics, techniques, procedures and concepts to conduct satellite operations; (3) provide a satellite C2 incremental block evolution resource for RDT&E of new systems and concepts; and (4) deliver operational flexibility for new and currently flying assigned satellites. A secondary objective of MMSOC is to provide a foundational C2 platform and product line for the Enterprise Ground Services (EGS) effort to build upon and to meet the evolving initiatives of the current and future space domain.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

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

	FY 2017	FY 2018	FY 2019
Title: MMSOC Development	3.850	3.967	2.626
Description: Multi-Mission Satellite Operations Center (MMSOC) development/integration/test.			
FY 2018 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Continue providing capability to AFSPC for reduced cost of operations and maintenance through evolution of MMSOC C2 architecture and automated processes to support the objectives of the EGS and the current and future space domain. Refine and continue to support operations of multiple satellites and enhance automation capability. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> <p>FY 2019 Plans: Continue providing capability to AFSPC for reduced cost of operations and maintenance through evolution of MMSOC C2 architecture and automated processes and integrate EGS backwards functionality into MMSOC. Transition Air Force Research Laboratory (AFRL)'s Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE) and Mycroft Missions from Kirtland AFB to Schriever AFB. Transition all missions from the MMSOC 2.0 baseline to the 2.1 baseline. Decommission and dispose of the MMSOC 2.0 baseline. Onboard Long Duration Propulsive ESPA (LDPE)-1 mission C2 and provide backup to EGS mission schedule. Continue program office support and other related support activities. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$1.341M. Justification for this decrease is described in plans above.</p>				
<p>Title: Enterprise Ground Services (EGS)</p> <p>Description: Enterprise Ground Services (EGS) provides the Air Force with a robust enterprise ground architecture by creating a set of government standards and interfaces to flexibly manage and execute integrated and agile satellite operations (SATOPS) in a contested environment. EGS provides the complete operations solution for SATOPS at various classification levels with increased resiliency and capability, and improved cyber defense capabilities. EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status and 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. EGS operates as a key element of the current and future space domain, and leverages lessons learned, contracts and resources from the other elements of the Enterprise Space Battle Management Command and Control (ESBMC2) and Threat Warning and Response (TWAR).</p> <p>FY 2018 Plans: Continue to develop the initial prototype capability for a robust enterprise ground architecture. Continue developing the programmatic, technical, and architectural roadmap to enable the phased transition of mission partners to EGS.</p>		0.400	21.084	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
EGS effort specifically includes development of the EGS C2 data center, prototype demonstrations with the Space Based Infrared System (SBIRS) Highly Elliptical Orbit (HEO) payloads 1-4, cybersecurity development and implementation, standards and interface development, integration and test of mission unique software, and integration of common applications and services. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.			
FY 2019 Plans: FY2019 plans are under the EGS Budget Program Activity Code (BPAC) (673140) within this Program Element.			
FY 2018 to FY 2019 Increase/Decrease Statement: Due to the creation of the EGS BPAC, FY 2019 decreased compared to FY 2018 by \$21.084M. Justification for this decrease is described in the plans above. The net increase for EGS in this Program Element is \$35.478M.			
Accomplishments/Planned Programs Subtotals	4.250	25.051	2.626

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 834010 / 1203173F: <i>General Information Technology</i>	1.977	1.964	-	-	-	-	-	-	-	-	Continuing
• SPAF 01 BP23 GNRLIT / 1203173F: <i>General Information Technology</i>	-	-	1.861	0.000	1.861	1.894	1.928	1.964	2.001	Continuing	Continuing

Remarks
As of the FY2019 PB submission, this effort has been recategorized from appropriation 3080, Other Procurement Air Force (OPAF) to appropriation 3021, Space Procurement Air Force (SPAF) in FY2019 and beyond. The FY2019 request is described in the SPAF P-1, BP23, GNRLIT, General Information Technology.

D. Acquisition Strategy
To modernize and sustain MMSOC; and to procure, integrate and test EGS prototypes for the SBIRS and ORS-5 prototyping projects, the Air Force will be competitively awarding a new Engineering, Development, Integration, and Sustainment (EDIS) Contract to replace the existing Engineering, Development, and Sustainment (EDS) Follow-On Contract. Additionally, MMSOC will be using a competitively awarded System Test and Engineering Contract, and a competitively awarded Advisory & Assistance Support (A&AS) contract. These contracts are all managed by the Space and Missile Systems Center (SMC), Advanced Systems and Development Directorate. Finally, key applications and support will be obtained from the Naval Research Lab (NRL).

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering, Development, and Sustainment (EDS) Follow-on Contract (MMSOC)	C/CPAF	Lockheed Martin : Santa Maria, CA	-	1.902	Oct 2016	1.201	Oct 2017	0.450	Oct 2018	-		0.450	Continuing	Continuing	-
Engineering, Development, Integration, and Sustainment (EDIS) Contract	C/CPAF	TBD : TBD, NM	-	-		-		0.450	Apr 2019	-		0.450	Continuing	Continuing	-
Neptune Common Ground Architecture	MIPR	Naval Research Lab : Washington, DC	-	0.968	Oct 2016	1.200	Oct 2017	0.602	Oct 2018	-		0.602	Continuing	Continuing	-
Service Bus Architecture Standards	MIPR	NASA Goddard : Greenbelt, MD	-	0.050	Oct 2016	0.050	Oct 2017	0.050	Oct 2018	-		0.050	Continuing	Continuing	-
Information Assurance (MMSOC)	MIPR	SAF/FMBIB : Albuquerque, NM	-	0.115	Oct 2016	0.118	Jan 2018	0.120	Jan 2019	-		0.120	Continuing	Continuing	-
Enterprise Ground Services (EGS)	Various	Various : CA	-	0.400	Jan 2017	21.084	Jan 2018	0.000		-		0.000	Continuing	Continuing	-
Subtotal			-	3.435		23.653		1.672		-		1.672	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Test and Engineering Contract (STEC) (MMSOC)	C/CPAF	LINQUEST : Kirtland, AFB, NM	-	0.385	Oct 2016	0.498	Oct 2017	0.354	Oct 2018	-		0.354	Continuing	Continuing	-
Subtotal			-	0.385		0.498		0.354		-		0.354	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	Various	Various : Kirtland, AFB, NM	-	0.430	Oct 2016	0.900	Oct 2017	0.600	Mar 2019	-		0.600	Continuing	Continuing	-
Subtotal			-	0.430		0.900		0.600		-		0.600	Continuing	Continuing	N/A
Project Cost Totals			-	4.250		25.051		2.626		-		2.626	Continuing	Continuing	N/A

Remarks

The costs for EGS for FY2019 and beyond are under the EGS Budget Program Activity Code (BPAC) (673140) within this Program Element.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MMSOC Development																												
MMSOC Development																												
MMSOC Space Test Program Satellite-2 (STPSat-2)																												
MMSOC Space Test Program Satellite-3 (STPSat-3) (Customer Funded)																												
MMSOC CloudSat Supt (Customer Funded)																												
MMSOC Automated Navigation and Guidance Experiment for Local Space (ANGELS) Support (Customer Funded)																												
MMSOC Green Propellant Infusion Mission (GPIM) Support (Customer Funded)																												
MMSOC Demonstration and Science Experiment (DSX) Support (Customer Funded)																												
MMSOC ORS-5 Support (Customer Funded)																												
MMSOC ORS-6 Support (Customer Funded)																												
MMSOC Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE) Support (Customer Funded)																												
MMSOC Mycroft Support (Customer Funded)																												
MMSOC Long Duration Propulsive ESPA-1 (Customer Funded)																												
Enterprise Ground Services (EGS)																												
Enterprise Ground Services (EGS)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

EGS Space Based Infrared System (SBIRS) Highly Elliptical Orbit (HEO) and Geosynchronous Orbit (GEO) Support (Customer Funded)																												
EGS AFSPC-12 Support (Customer Funded)																												
Mission Partner Demonstration																												
EGS Tetra 1 (Customer Funded)																												
EGS ORS-8 Support (Customer Funded)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
MMSOC Development				
MMSOC Development	1	2017	4	2023
MMSOC Space Test Program Satellite-2 (STPSat-2)	1	2017	4	2023
MMSOC Space Test Program Satellite-3 (STPSat-3) (Customer Funded)	1	2017	4	2020
MMSOC CloudSat Supt (Customer Funded)	1	2017	4	2020
MMSOC Automated Navigation and Guidance Experiment for Local Space (ANGELS) Support (Customer Funded)	1	2017	1	2018
MMSOC Green Propellant Infusion Mission (GPIM) Support (Customer Funded)	1	2017	3	2019
MMSOC Demonstration and Science Experiment (DSX) Support (Customer Funded)	1	2017	3	2019
MMSOC ORS-5 Support (Customer Funded)	1	2017	4	2023
MMSOC ORS-6 Support (Customer Funded)	1	2017	1	2019
MMSOC Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE) Support (Customer Funded)	1	2017	4	2023
MMSOC Mycroft Support (Customer Funded)	1	2017	4	2023
MMSOC Long Duration Propulsive ESPA-1 (Customer Funded)	1	2018	3	2022
Enterprise Ground Services (EGS)				
Enterprise Ground Services (EGS)	1	2017	4	2018
EGS Space Based Infrared System (SBIRS) Highly Elliptical Orbit (HEO) and Geosynchronous Orbit (GEO) Support (Customer Funded)	1	2017	4	2018
EGS AFSPC-12 Support (Customer Funded)	2	2017	4	2018
Mission Partner Demonstration	2	2018	4	2018
EGS Tetra 1 (Customer Funded)	2	2018	4	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018	
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 67A014 / <i>R&D Space & Missile Operations</i>		

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
EGS ORS-8 Support (Customer Funded)	1	2018	4	2018

Note

Note: This schedule reflects RDSMO support to the customer funded missions and may not directly align with customer program office schedules.

The schedule for EGS for FY2019 and beyond is under the EGS Budget Program Activity Code (BPAC) (673140) within this Program Element.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>				Project (Number/Name) 673140 / <i>Enterprise Ground Services EGS</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
673140: <i>Enterprise Ground Services EGS</i>	-	0.000	0.000	57.309	0.000	57.309	29.776	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enterprise Ground Services (EGS) program is part of the evolving current and future space domain demands. MMSOC capability will transition to become the EGS command and control (C2) product line. The EGS C2 product line will perform technology maturation, experiments, prototyping and operational mission transition for increased commonality and resiliency in space program ground systems. The EGS capability will become the primary ground C2 system for AFSPC and other users.

The main objective of the EGS is to provide a robust enterprise ground architecture for Air Force space systems. In FY 2019, EGS will focus efforts on developing and integrating data centers in laboratories at three separate sites, advanced concept exploration, prototype development and demonstrations, user experience maturation, training and Concept of Operations (CONOPS) refinement, cyber operations and operational mission training support. These efforts will require support such as systems engineering, integration and test, standards and interface development, architecture development, enhanced cybersecurity development and implementation.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

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

	FY 2017	FY 2018	FY 2019
Title: Enterprise Ground Services (EGS)	-	0.000	57.309
Description: Enterprise Ground Services (EGS) provides the Air Force with a robust enterprise ground architecture by creating a set of government standards and interfaces to flexibly manage and execute integrated and agile satellite operations (SATOPS) in a contested environment. EGS provides the complete operations solution for SATOPS at various classification levels with increased resiliency and capability, and improved cyber defense capabilities. EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status and 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. EGS operates as a key element of the current and future space domain, and leverages lessons learned, contracts and resources from the other elements of the Enterprise Space Battle Management Command and Control (ESBMC2) and Threat Warning and Response (TWAR).			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 673140 / <i>Enterprise Ground Services EGS</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p><i>FY 2018 Plans:</i> FY2018 plans are under the R&D Space and Missile Operations Budget Program Activity Code (BPAC) (67A014) within this Program Element.</p> <p><i>FY 2019 Plans:</i> Continue to enhance MMSOC capabilities in support of ongoing missions as EGS C2 matures and continue to develop the prototype capabilities for a robust enterprise ground architecture. Continue developing the programmatic, technical, and architectural roadmap to enable the phased transition of mission partners to EGS. Continue maturation of EGS laboratories, data centers, networks, and links. Continue prototype Mission Partner Demonstrations. Continue transition planning and prototype development to include but not limited to the SBIRS Geosynchronous Earth Orbit (GEO) satellite systems, EGS AFSPC-12 Support, Weather System Follow-on-Microwave, Tetra 1-3, ORS-8, and Long Duration Propulsive ESPA-2 vehicles. Continue cybersecurity development and implementation, standards and interface refinement, training and CONOPS refinement, advanced concept maturation, integration and test of mission unique software, and integration of common applications and services, Integrated Product Support, and integration efforts with current and future space domain capabilities. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Due to the creation of this new BPAC, FY 2019 increased compared to FY 2018 by \$57.309M. Justification for this increase is described in plans above. The net increase for EGS in this Program Element is \$36.225M.</p>			
Accomplishments/Planned Programs Subtotals	-	0.000	57.309

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

N/A

Remarks

D. Acquisition Strategy

EGS leverages a multitude of contracts, agreements and other government agencies. Design, systems engineering and architecture support will be obtained from FFRDC (i.e. Aerospace and MITRE), Systems Engineering and integrations (SE&I) contracts, including University Affiliated Research Centers (UARC) for the EGS software development kit (SDK), and Advisory & Assistance Support (A&AS) contracts. System development and integration will be obtained from the Engineering, Development, Integration, and Sustainment (EDIS) contract which will be competitively awarded. Developmental Test & Evaluation Support will be obtained from the 46 Test Squadron and the competitively awarded System Test and Engineering Contract (STEC). Technology development will be obtained from AFRL Small Business Innovative Research (SBIR) initiatives. Prototypes for advanced concepts will leverage Other Transaction Authorities (OTA) agreements at SMC and other government agencies. Cybersecurity support will be obtained from Air Force Space Command 50th Space Wing and 50th Network Operations Group. Key applications and support

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 673140 / <i>Enterprise Ground Services EGS</i>

will be obtained from external government agencies such as National Aeronautics and Space (NASA) Goddard Missions Services Evolution Center (GMSEC) and the Naval Research Lab (NRL). Financial management and cost estimating support will continue to leverage existing contract vehicles.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 673140 / <i>Enterprise Ground Services EGS</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering, Development, Integration, and Sustainment (EDIS) Contract	C/CPAF	TBD : TBD, NM	-	0.000		0.000		15.545	Apr 2019	0.000		15.545	Continuing	Continuing	-
Neptune Common Ground Architecture	MIPR	Naval Research Lab : Washington, DC	-	0.000		0.000		8.225	Dec 2018	0.000		8.225	Continuing	Continuing	-
Information Assurance	MIPR	SAF/FMBIB : Los Angeles, CA	-	0.000		0.000		1.100	Dec 2018	0.000		1.100	Continuing	Continuing	-
Service Bus Architecture Standards	MIPR	NASA Goddard : Greenbelt, MD	-	0.000		0.000		1.400	Dec 2018	0.000		1.400	Continuing	Continuing	-
Systems Engineering & Integration	C/FFP	Linquest : Los Angeles, CA	-	0.000		0.000		8.515	Mar 2019	0.000		8.515	Continuing	Continuing	-
Subtotal			-	0.000		0.000		34.785		0.000		34.785	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Test and Engineering Contract (STEC) (EGS)	C/CPAF	Linquest : Kirtland, AFB, NM	-	0.000		0.000		1.200	Nov 2018	0.000		1.200	Continuing	Continuing	-
Developmental Test & Evaluation (DT&E)	MIPR	46th Test Squadron : Eglin, AFB, FL	-	0.000		0.000		1.100	Jan 2019	0.000		1.100	Continuing	Continuing	-
Subtotal			-	0.000		0.000		2.300		0.000		2.300	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC (Aerospace)	MIPR	Aerospace : Los Angeles, CA	-	0.000		0.000		11.479	Oct 2018	0.000		11.479	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 673140 / <i>Enterprise Ground Services EGS</i>
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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC (MITRE)	SS/CPAF	MITRE : Los Angeles, CA	-	0.000		0.000		5.345	Oct 2018	0.000		5.345	Continuing	Continuing	-
Other	Various	Various : Los Angeles, CA	-	0.000		0.000		2.000	Oct 2018	0.000		2.000	Continuing	Continuing	-
A&AS Support (SAFS)	Various	Tecolote : Los Angeles, CA	-	0.000		0.000		1.400	Oct 2018	0.000		1.400	Continuing	Continuing	-
Subtotal			-	0.000		0.000		20.224		0.000		20.224	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		-	0.000	0.000	57.309	0.000	57.309	Continuing	Continuing	N/A

Remarks
The costs for EGS for FY2017 and FY2018 are under the R&D Space & Missile Operations Budget Program Activity Code (BPAC) (67A014) within this Program Element.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 673140 / <i>Enterprise Ground Services EGS</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	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 Ground Services (EGS)	
Enterprise Ground Services (EGS)	[REDACTED]
EGS Space Based Infrared System(SBIRS) Highly Elliptical Orbit (HEO) and Geosynchronous Orbit (GEO) Support (Customer Funded)	[REDACTED]
EGS AFSPC-12 Support (Customer Funded)	[REDACTED]
Mission Partner Demonstration	[REDACTED]
EGS Weather System Follow-on-Microwave (WSF-M) Support (Customer Funded)	[REDACTED]
EGS Tetra 1 (Customer Funded)	[REDACTED]
EGS Tetra 2 and Tetra 3 (Customer Funded)	[REDACTED]
EGS Tetra 4 and Tetra 5 (Customer Funded)	[REDACTED]
EGS Tetra 6 and Tetra 7 (Customer Funded)	[REDACTED]
EGS Tetra 8 and Tetra 9 (Customer Funded)	[REDACTED]
EGS ORS-8 Support (Customer Funded)	[REDACTED]
EGS Long Duration Propulsive ESPA-2 (Customer Funded)	[REDACTED]
EGS Long Duration Propulsive ESPA-3 (Customer Funded)	[REDACTED]
EGS Long Duration Propulsive ESPA-4 (Customer Funded)	[REDACTED]
EGS Long Duration Propulsive ESPA-5 (Customer Funded)	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	Project (Number/Name) 673140 / <i>Enterprise Ground Services EGS</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Enterprise Ground Services (EGS)				
Enterprise Ground Services (EGS)	1	2019	4	2023
EGS Space Based Infrared System(SBIRS) Highly Elliptical Orbit (HEO) and Geosynchronous Orbit (GEO) Support (Customer Funded)	1	2019	4	2022
EGS AFSPC-12 Support (Customer Funded)	1	2019	4	2021
Mission Partner Demonstration	1	2019	4	2023
EGS Weather System Follow-on-Microwave (WSF-M) Support (Customer Funded)	4	2019	4	2023
EGS Tetra 1 (Customer Funded)	1	2019	4	2023
EGS Tetra 2 and Tetra 3 (Customer Funded)	2	2019	4	2023
EGS Tetra 4 and Tetra 5 (Customer Funded)	1	2021	4	2023
EGS Tetra 6 and Tetra 7 (Customer Funded)	1	2022	4	2023
EGS Tetra 8 and Tetra 9 (Customer Funded)	1	2023	4	2023
EGS ORS-8 Support (Customer Funded)	1	2019	4	2022
EGS Long Duration Propulsive ESPA-2 (Customer Funded)	1	2019	4	2022
EGS Long Duration Propulsive ESPA-3 (Customer Funded)	1	2020	4	2023
EGS Long Duration Propulsive ESPA-4 (Customer Funded)	1	2021	4	2023
EGS Long Duration Propulsive ESPA-5 (Customer Funded)	1	2022	4	2023

Note

The schedule for EGS for FY2017 and FY2018 is under the R&D Space & Missile Operations Budget Program Activity Code (BPAC) (67A014) within this Program Element.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	6.233	11.390	21.019	0.000	21.019	24.220	24.401	24.643	24.859	Continuing	Continuing
67A011: <i>Space Analysis and Application Development</i>	-	6.233	11.390	21.019	0.000	21.019	24.220	24.401	24.643	24.859	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Located at Peterson AFB, Colorado, the Space Innovation, Integration and Rapid Technology Development program develops and modifies modeling and simulation tools that Air Force Space Command's Space Analysis Center uses for operations research, military utility analyses, tradeoff studies, and other evaluations of space mission areas to guide planning, programming, requirements generation, analyses of alternatives, and other activities. Development activities incorporate changes in fielded and projected space operational capabilities, as well as technical improvements, into the group's software tools to ensure their data and technology remain current. Space Training Simulators develop and upgrades space training emulators using Standard Space Trainer (SST) to meet Space Mission Force (SMF) threat-based, advanced training requirements as well as funds connection to Distributed Mission Operations (DMO) training networks. Finally, its innovation, education, and training activities foster solutions to operational deficiencies and enhance the integration of space systems into Air Force operations, thereby enabling service and joint warfighters to realize the full potential of existing and planned space capabilities.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	3.070	11.390	11.178	0.000	11.178
Current President's Budget	6.233	11.390	21.019	0.000	21.019
Total Adjustments	3.163	0.000	9.841	0.000	9.841
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-1.500	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.052	0.000			
• Other Adjustments	4.715	0.000	9.841	0.000	9.841

Change Summary Explanation

FY2017: -\$1.500M Congressional reduction for unjustified request; \$4.715 FY2017 OCO

FY2018: +\$8.3M increase from FY2017 for modeling and simulation development support to USSTRATCOM/DEPSECDEF Joint Warfighting Forum

FY2019: +\$10.000M increase for Space Training Simulators

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
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<p>Title: Model/Tool Development and Capability Upgrades</p> <p>Description: Develops, verifies, and validates models for space and cyber mission areas and modifies existing models to portray new capabilities. Advancing modeling and simulation (M and S) tools to incorporate space effects at the campaign, mission and engagement levels with the goal of enhancing decision support, visualization, exercise and wargaming. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc. The space and cyber M and S Models are used for military utility analyses, trade studies, and other evaluations of space/cyber programs supporting program offices at the Space and Missile Center, HQ AFSPC and other activities with a space/cyber focus.</p> <p>FY 2018 Plans: Develop and modify several models and tools in support of space and cyber analysis. Continue building on FY 2017 activities.</p> <p>SSNAM - Continue support to JMS and analysis and studies of the Space Surveillance Network</p> <p>SEAS/STORM - Continue to produce technically sound and responsive space/cyberspace analyses analyzing warfighter ops in a highly-contested environment in support of national and military needs (SEV and JSDTF)</p>	5.444	5.467	5.206
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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Other model modifications as needed based on leadership questions and future AoAs				
<p>FY 2019 Plans: Continue to develop and modify several models and tools in support of space and cyber analysis. Continue building on FY 2018 activities.</p> <p>SSNAM - Continue support to JMS and analysis and studies of the Space Surveillance Network</p> <p>SEAS/STORM - Continue to produce technically sound and responsive space/cyberspace analyses analyzing warfighter ops in a highly-contested environment in support of national and military needs (SEV and JSOTF)</p> <p>Other model modifications as needed based on leadership questions and future AoAs</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY2019 decreased compared to FY2018 by \$0.261M. Justification for this increase is described in plans above.</p>				
<p>Title: Model Verification</p> <p>Description: Verification of changes made to models.</p> <p>FY 2018 Plans: Verification of model changes resulting from Model Development and Modification efforts.</p> <p>FY 2019 Plans: Continue verification of model changes resulting from Model Development and Modification efforts.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY2019 decreased compared to FY2018 by \$0.045M. Justification for this increase is described in plans above.</p>		0.319	2.392	2.347
<p>Title: Model Validation</p> <p>Description: Validated model change results.</p> <p>FY 2018 Plans: Validation of model changes resulting from Model Development and Modification efforts.</p> <p>FY 2019 Plans: Continue validation of model changes resulting from Model Development and Modification efforts.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>		0.470	3.531	3.466

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
FY2019 decreased compared to FY2018 by \$0.065M. Justification for this increase is described in plans above.			
Title: Space Training Simulators	-	-	10.000
Description: Develop/upgrade Standard Space Trainer (SST) simulators to meet Space Mission Force (SMF) threat-based, advanced training requirements as well as builds connectivity to Distributed Mission Operations (DMO) training networks.			
FY 2019 Plans: Distributed Mission Operations - Space (DMO-S) modeling and simulation development and develop the Geostationary Space Situational Awareness (GSAAP) Standard Space Trainer (SST). GSSAP SST will include DMO connectivity, Enterprise Ground Service (EGS) compatibility, and Blue/White/Red operator-in-the-loop modeling and simulation consoles (i.e., GSSAP space operator consoles, instructor/evaluator consoles, and opposing force consoles).			
FY 2018 to FY 2019 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals	6.233	11.390	21.019

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• SPAF 01 GNRLT: <i>General IT</i>	1.481	1.661	1.577	-	1.577	1.592	1.620	1.649	1.679	Continuing	Continuing

Remarks
Funding and content procures equipment for the SIIRTD AFSPC Virtual Analysis Capability (AVAC) system. Supports space and cyber modeling and analysis using a variety of Linux and Windows based hardware and software suites. Also procures Information Technology (IT) hardware & software infrastructure for the Distributed Communications Architecture.

E. Acquisition Strategy
Any new projects funded in this program will be awarded using competitive procedures to the maximum extent possible.

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>	Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

SIIRTD																												
Model development/modification, verification, and validation	[REDACTED]																											
Space Training Simulators	[REDACTED]												[REDACTED]															

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>	Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SIIRTD				
Model development/modification, verification, and validation	1	2017	4	2023
Space Training Simulators	1	2019	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	8.833	8.747	8.568	0.000	8.568	8.728	8.880	9.064	9.229	Continuing	Continuing
674779: <i>Integrated Broadcast Service (IBS)</i>	-	8.833	8.747	8.568	0.000	8.568	8.728	8.880	9.064	9.229	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

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

A. Mission Description and Budget Item Justification

The IBS fulfills the warfighter's requirements for worldwide threat warning and situational awareness information with timely production and simultaneous dissemination of Intelligence, Surveillance, and Reconnaissance (ISR) derived combat information. It also provides target tracking data to support threat avoidance, targeting, force protection, and situational awareness. This information is continually refined in near real time by strategic, operational and tactical sensors.

IBS is comprised of the following:

- A Common Interactive Broadcast (CIB) on UHF (Ultra High Frequency) satellite channel using a Common Message Format (CMF) and a Military Standard (MIL-STD) Demand Assigned Multiple Access (DAMA) compliant waveform and Line of Sight (LOS) using the Wideband Networking Waveform (WNW) and Joint Tactical Terminal (JTT).
- IBS-Network Services (IBS-NS) includes two Global IBS Network Servers (GINS) and four Theater Interface Nodes (TINs) to support the geographic Combatant Commanders (COCOMs), all built to validated warfighter requirements.
- Two GINS receive data from each theater and integrate this data into a worldwide picture available to all network/broadcast users.
- Four regional TINs allow local and out-of-theater users (not directly receiving IBS broadcast) to receive the CIB information broadcast. Additionally, the TIN will receive and inject data into the CIB for producers without access to the theater CIB.

This PE funds:

- Development/upgrades of IBS (IBS-NS, CIB, and CMF)

This project will identify and implement an open, scalable system architecture that will accommodate growth as the virtual world grows and cyber operations change.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i>
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This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	8.833	8.747	8.632	0.000	8.632
Current President's Budget	8.833	8.747	8.568	0.000	8.568
Total Adjustments	0.000	0.000	-0.064	0.000	-0.064
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.064	0.000	-0.064

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Development/upgrades of the Integrated Broadcast Service (IBS-NS, CIB, and CMF)	7.343	7.257	7.078
Description: Development/upgrades of the IBS (IBS-NS, CIB, and CMF).			
FY 2018 Plans:			
- Continuing to synchronize and integrate with DOD IC Cloud as a potential producer/consumer; the capability will provide a long term searchable data store for IBS information.			
- Continuing to upgrade the IBS Enterprise-level real-time and analytic views on Global and COCOM watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows			
- Continuing to upgrade volumetric increase to provide ten times performance enhancement to throughput, storage and replay to address message volume; this will increase the enterprise output to 100M messages per day			
- Continuing to provide resilience to IBS CIB UHF Broadcast by utilizing the MUOS Wideband Code Division Multiple Access SATCOM payload and supporting the receipt of IBS on 1st generation MUOS terminals			
- Continuing to upgrade and connect the COCOM J2 CIB planning function with the COCOM J6 Integrated Waveform planning function			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
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- Continuing to upgrade the CIB Planning Tool and IBS-NS capability at the COCOMs to allow automated planning to occur for active producers
 - Continuing development of the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices
 - Continuing development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS, WCDMA payload
 - Continuing to upgrade the P5 system health and welfare status at the COCOMs to include Alt-Path
 - Continuing to upgrade the resiliency of IBS to include polar coverage
 - Continuing to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of data
 - Continuing enhancement of uplink sites to handle operational surge increases
 - Continuing to upgrade the monitoring and control tools to assist in assured dissemination tasks at COCOM uplink watches, development and fielding of Downlink Monitoring Element (DME)
- FY 2019 Plans:**
- Will continue to synchronize and integrate with DOD IC Cloud as a potential producer/consumer; the capability will provide a long term searchable data store for IBS information.
 - Will continue to upgrade the IBS Enterprise-level real-time and analytic views on Global and COCOM watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows
 - Will continue to upgrade volumetric increase to provide ten times performance enhancement to throughput, storage and replay to address message volume; this will increase the enterprise output to 100M messages per day
 - Will continue to provide resilience to IBS CIB UHF Broadcast by utilizing the MUOS Wideband Code Division Multiple Access SATCOM payload and supporting the receipt of IBS on 1st generation MUOS terminals

FY 2017	FY 2018	FY 2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<ul style="list-style-type: none"> - Will continue to upgrade and connect the COCOM J2 CIB planning function with the COCOM J6 Integrated Waveform planning function - Will continue to upgrade the CIB Planning Tool and IBS-NS capability at the COCOMs to allow automated planning to occur for active producers - Will continue development of the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices - Will continue development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS, WCDMA payload - Will continue to upgrade the P5 system health and welfare status at the COCOMs to include Alt-Path -- Will continue to upgrade the resiliency of IBS to include polar coverage - Will continue to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of data - Will continue enhancement of uplink sites to handle operational surge increases - Will continue to upgrade the monitoring and control tools to assist in assured dissemination tasks at COCOM uplink watches, development and fielding of DME <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to level of effort</p>				
<p>Title: Enterprise Systems Engineering</p> <p>Description: Enterprise Systems Engineering/CMF Integration/CIB Integration.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continuing Enterprise Systems Engineering/CMF Integration/CIB Integration <p>FY 2019 Plans:</p> <ul style="list-style-type: none"> - Will continue Enterprise Systems Engineering/CMF Integration/CIB Integration <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>		0.700	0.700	0.700

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
N/A			
Title: Test & Evaluation Description: Tests & Evaluates the IBS system. FY 2018 Plans: - Continuing test and evaluation of the IBS system FY 2019 Plans: - Will continue test and evaluation of the IBS system FY 2018 to FY 2019 Increase/Decrease Statement: N/A	0.790	0.790	0.790
Accomplishments/Planned Programs Subtotals	8.833	8.747	8.568

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 832070: <i>Intelligence Comm Equipment</i>	16.452	17.283	16.580	-	16.580	16.875	17.179	17.490	-	Continuing	Continuing

Remarks

E. Acquisition Strategy
 IBS is in the PEO Battle Management portfolio and executed by AFLCMC/HBG.

IBS uses an Adaptive Life-cycle approach that provides incremental improvement and new capability in 90-day cycles.

For contracting efforts, a Single Award IDIQ contract with multiple task orders was awarded to CACI International Inc.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 1203179F / Integrated Broadcast Service (IBS)				674779 / Integrated Broadcast Service (IBS)							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
IBS (IBS-NS, CIB, and CMF) Development/Upgrades	Various	CACI International Inc/Other Government Agency : Various	-	7.183	Oct 2016	7.097	Oct 2017	6.918	Oct 2018	-		6.918	Continuing	Continuing	-
Subtotal			-	7.183		7.097		6.918		-		6.918	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 and Development Testing	MIPR	JITC : Ft Huachuca, AZ	-	0.500	Oct 2016	0.500	Oct 2017	0.500	Oct 2018	-		0.500	Continuing	Continuing	-
Responsible Test Organization (RTO)	PO	46th Test Squadron : Eglin AFB, FL	-	0.290	Oct 2016	0.290	Oct 2017	0.290	Oct 2018	-		0.290	Continuing	Continuing	-
Subtotal			-	0.790		0.790		0.790		-		0.790	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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/Engineering Support	C/FFP	Creedence : Warner Robins, GA	-	0.160	Nov 2016	0.160	Nov 2017	0.160	Nov 2018	-		0.160	Continuing	Continuing	-
Enterprise Engineering/CMF Integration/CIB Integration	SS/CPFF	L3 Comm, IS : Greenville, TX	-	0.700	Jan 2017	0.700	Nov 2017	0.700	Nov 2018	-		0.700	Continuing	Continuing	-
Subtotal			-	0.860		0.860		0.860		-		0.860	Continuing	Continuing	N/A
Project Cost Totals			-	8.833		8.747		8.568		-		8.568	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force							Date: February 2018			
Appropriation/Budget Activity 3600 / 7			R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i>			Project (Number/Name) 674779 / <i>Integrated Broadcast Service (IBS)</i>				

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
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Remarks									

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i>	Project (Number/Name) 674779 / <i>Integrated Broadcast Service (IBS)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
IBS-NS				
Initiate developing the IBS Thin Client	1	2017	1	2017
Initiate developing the CIB MUOS Group Integration - Many to Many	1	2017	1	2017
Upgrade and transition of current classified dissemination path to new architecture and enabling SCI-level dissemination of data	1	2017	4	2019
Upgrade the uplink sites to handle operational surge increases	1	2017	4	2019
Develop the monitoring and control tools to assist in assured dissemination	1	2017	4	2019
Integrate CMF updates into IBS-NS	1	2017	4	2022
Enterprise Systems Engineering of IBS (IBS-NS, CIB, and CMF)	1	2017	4	2023
Testing and Evaluation of IBS (IBS-NS, CIB, and CMF)	1	2017	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	21.082	10.549	10.641	0.000	10.641	10.837	11.023	11.253	11.459	Continuing	Continuing
674137: <i>Launch and Test Range System (LTRS) Modernization</i>	-	21.082	10.549	10.641	0.000	10.641	10.837	11.023	11.253	11.459	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Spacelift Range System (SLRS), also known as the Launch and Test Range System (LTRS), provides public safety and assured access to space. LTRS operates at the Eastern Range (ER) at Patrick AFB/Cape Canaveral AFS, FL and the Western Range (WR) at Vandenberg AFB, CA. LTRS provides tracking, telemetry, communications, flight safety, and other capabilities to support launch of national security space (NSS), civil and commercial space payloads, Intercontinental and Sea Launched ballistic missile and missile defense evaluations, and aeronautical and guided weapon tests. LTRS enables national security, civil, and commercial spacelift operations to be conducted safely; together with national security space launch capability, LTRS provides assured access to space for the nation. The ER and WR are designated as Department of Defense Major Range and Test Facility Bases (MRTFB).

LTRS is comprised of twelve subsystems that together provide this capability to the ranges. The Range Safety and Command Destruct subsystems provide the capability to destroy an errant rocket, if necessary to protect public safety. These subsystems rely on the Telemetry, Radar, and Optics subsystems to provide tracking data. The Weather and Surveillance subsystems allow range operators and customers to determine if conditions are safe for launch. The Communications, Data Handling, and Timing & Sequencing subsystems ensure critical data is expeditiously routed from remote sensors (e.g. radars, optics) to range operators and customers. Finally, the Planning and Scheduling subsystem ensures all assets are available when needed for a launch or test operation.

As aging range systems exhibit decreasing reliability, leading to higher operations and maintenance costs and increasing the risk of launch delays, the Air Force requires RDT&E funds to conduct architecture analyses to optimize investment planning for safety of flight (such as the use of drones, high definition optics, phased-array radars etc.) and commercial launch.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This program element may include necessary civilian pay expenses required to manage, execute, and deliver LTRS weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i>
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This program activity is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production fielding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	11.867	10.549	10.721	0.000	10.721
Current President's Budget	21.082	10.549	10.641	0.000	10.641
Total Adjustments	9.215	0.000	-0.080	0.000	-0.080
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	10.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.785	0.000			
• Other Adjustments	0.000	0.000	-0.080	0.000	-0.080

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

Project: 674137: *Launch and Test Range System (LTRS) Modernization*

Congressional Add: *Wallops Flight Facility Security Improvements*

Congressional Add Subtotals for Project: 674137

Congressional Add Totals for all Projects

	FY 2017	FY 2018
	10.000	0.000
	10.000	0.000
	10.000	0.000

Change Summary Explanation

FY2017: \$10.000M Congressional increase for launch range services and capability.

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

	FY 2017	FY 2018	FY 2019
Title: Systems Engineering Support to Operational Baseline	5.803	6.453	7.055
Description: Provides Advisory and Assistance Services (A&AS) support of the operational baseline (all twelve subsystems) to include configuration management of all range assets, requirements analyses, and special studies. Provides support for Systems Program Office operations, Systems Engineering and Technical Assistance (SETA), and Federally Funded Research and Development Centers (FFRDC).			
FY 2018 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Continue to manage the baseline (all twelve subsystems) to include configuration management and all range assets, requirements, analysis and special studies. FY 2019 Plans: Continue to manage the baseline (all twelve subsystems) to include configuration management and all range assets, requirements, analysis and special studies. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.602M. Justification for this increase is described in plans above.				
Title: Enterprise Systems Engineering and Integration to Support Government-Controlled Baseline Description: SE&I manages the government controlled system and subsystem level baseline requirements including analysis of future changes to the fielded baseline. SE&I provides "government as the integrator" engineering support to ensure multiple separate modernizations and the sustainment baseline are synchronized. SE&I will develop and recommend investment strategies to keep the Eastern and Western Ranges operating well beyond the FYDP. FY 2018 Plans: Continue independent SE&I efforts as required to integrate modernization and sustainment efforts into future ranges. Provide systems and subsystem level definition, baseline, architecture, integration planning and support for future ranges. FY 2019 Plans: Continue independent SE&I efforts as required to integrate modernization and sustainment efforts into future ranges. Provide systems and subsystem level definition, baseline, architecture, integration planning and support for future ranges. Focus activities on the Range Command Destruct programs for the Eastern and Western Launch Ranges. Continue program office support and other related support activities. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. These activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$0.510M. Justification for this decrease is described in plans above.		5.279	4.096	3.586
Accomplishments/Planned Programs Subtotals		11.082	10.549	10.641
		FY 2017	FY 2018	
Congressional Add: Wallops Flight Facility Security Improvements		10.000	0.000	

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i>
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	FY 2017	FY 2018
FY 2017 Accomplishments: N/A		
FY 2018 Plans: Funds to be executed by NASA to perform upgrades in support of NSS missions from Wallops Flight Facility/Mid-Atlantic Regional Spaceport. Upgrades include a classified payload processing facility and security upgrades.		
Congressional Adds Subtotals	10.000	0.000

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF 01 Line Item SPRNGE: <i>Spacelift Range System Space</i>	120.785	113.874	117.637	-	117.637	131.140	115.298	111.621	113.714	Continuing	Continuing

Remarks

E. Acquisition Strategy

Due to the fielded LTRS age and obsolescence issues, many systems need to be replaced (e.g. communications systems at ER & WR). These major modifications will be competed, typically among small business contractors, and selected through best value source selections. The competitively-selected SE&I contractor manages government-controlled requirements and processes as well as provide support to the "government as the integrator" between LTRS Integrated Support Contract (LISC) and separately competed modernization projects. FFRDC provides mission assurance oversight to ensure capabilities meet operational need.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i>	Project (Number/Name) 674137 / <i>Launch and Test Range System (LTRS) Modernization</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Enterprise Systems Engineering and Integration	C/TBD	TBD : TBD	-	5.279	Oct 2016	4.096	Oct 2017	3.586	Oct 2018	-		3.586	Continuing	Continuing	-
LTRS Range Technology Integration	C/Various	Various : TBD	-	5.135	May 2017	5.799	May 2018	6.384	May 2019	-		6.384	Continuing	Continuing	-
Wallops Flight Facility Security Improvements	SS/TBD	NASA : Wallops, VA	-	10.000		-		-		-		-	Continuing	Continuing	-
Subtotal			-	20.414		9.895		9.970		-		9.970	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TEST AND EVALUATION (WS)	Various	MIT, 17th Test Squad, NAVAIR : Various	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	-		-		-		-		-	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	RO	Aerospace : El Segundo, CA	-	0.431	Nov 2016	0.444	Nov 2017	0.457	Nov 2018	-		0.457	Continuing	Continuing	-
OTHER SUPPORT	PO	Various : El Segundo, CA	-	0.237	Nov 2016	0.210	Nov 2017	0.214	Nov 2018	-		0.214	Continuing	Continuing	-
Subtotal			-	0.668		0.654		0.671		-		0.671	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	21.082	10.549	10.641	-	10.641	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force							Date: February 2018			
Appropriation/Budget Activity 3600 / 7			R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i>			Project (Number/Name) 674137 / <i>Launch and Test Range System (LTRS) Modernization</i>				
	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i>	Project (Number/Name) 674137 / <i>Launch and Test Range System (LTRS) Modernization</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

LTRS	
Range Technology Integration	
Enterprise SE&I	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i>	Project (Number/Name) 674137 / <i>Launch and Test Range System (LTRS) Modernization</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
LTRS				
Range Technology Integration	1	2017	4	2023
Enterprise SE&I	1	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	2,946.527	165.794	243.435	144.543	0.000	144.543	42.440	10.780	7.296	8.893	Continuing	Continuing
676007: <i>SAR- GPS</i>	8.954	1.065	1.324	0.000	0.000	0.000	0.000	0.000	0.000	1.442	0.000	12.785
67A011: <i>Space Analysis and Application Development</i>	0.000	0.000	10.029	69.481	0.000	69.481	0.000	0.000	0.000	0.000	Continuing	Continuing
67A019: <i>GPS III</i>	2,937.573	164.729	232.082	75.062	0.000	75.062	42.440	10.780	7.296	7.451	12.008	3,489.421

Program MDAP/MAIS Code: 292

Note

In FY2019, Program Element (PE) 1203265F, GPS III Space Segment, Project 67A019, GPS III funding for GPS IIIC Follow-On efforts were transferred to PE 1203269F, Project 653170, GPS IIIC due to the establishment of a new PE for GPS III Follow-on SVs 11+ to provide MDAP transparency.

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space-based navigation system that fills validated Joint Service requirements for worldwide, accurate, common grid three dimensional positioning/navigation for military aircraft, ships, and ground personnel. The consistent accuracy, unaffected by location or weather and available in real time, significantly improves effectiveness of reconnaissance, weapons delivery, mine countermeasures and rapid deployment for all services. GPS must comply with Title 10 United States Code (USC) Sec. 2281 which requires that the Secretary of Defense ensures the continued sustainment and operations of GPS for military and civilian purposes, and 51 USC Sec. 50112, which requires that GPS complies with certain standards and facilitates international cooperation.

The system is composed of three segments: User Equipment (funded under PE 1203164F), Space (funded under this PE, 1203165F, and PE 1203269F) and a Control Network (funded under PE 1203165F and PE 1206423F). The satellites broadcast high accuracy data using precisely synchronized signals which are received and processed by user equipment installed in military platforms. This equipment computes the platform position and velocity and provides steering vectors to target locations or navigation waypoints. The control segment provides daily updates to the navigation messages broadcast from the satellites to maintain system precision in three dimensions to 16 meters spherical error probable worldwide. Additionally, GPS supports the United States Nuclear Detonation (NUDET) Detection System (USNDS) mission and provides strategic and tactical support to the following Department of Defense (DoD) missions: Joint Operations by providing capabilities for Positioning, Navigation, and Timing (PNT); Command, Control, Communications, and Intelligence (C3I); Special Operations; Military Operations in Urban Terrain (MOUT); Defense-Wide Mission Support; Air Mobility; and Space Launch Orbital Support.

GPS III is the next generation Space Vehicle (SV) supporting the GPS constellation and is funded in PE 1203265F and PE 1203269F. GPS III SVs will deliver significant enhancements, including a new international civil (L1C) signal, enhanced anti-jam power, and a growth path to full warfighter capabilities. GPS III SVs 03-10 are in the Production & Deployment Phase.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i>	
<p>PE 1203265F funds GPS III and supports the Research, Development, Test and Evaluation (RDT&E) of GPS III SVs 01-02, and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This PE includes SVs 01-02 engineering studies and analyses, trade studies, system development, test and evaluation efforts, integrated logistics support products, on-orbit support, and mission operations support for civil and military applications that protect U.S. military and allied use of GPS. The program also includes Contingency Operations (COps) as a bridge capability to fly GPS III SVs until the delivery of the GPS Next Generation Operational Control System (OCX).</p> <p>Starting in FY2019 PE 1203269F will fund the RDT&E of GPS III Follow-On SVs 11 and 12 which will include Non-Recurring Engineering (NRE) support efforts. This production design activity includes risk-reducing simulators and systems engineering associated with delivering the new capabilities required of GPS III Follow-On SVs, including backward compatibility, dual band Telemetry, Tracking and Control (TT&C), integration of Government Furnished Equipment (GFE) hosted payloads, a new civil (L1C) Galileo-compatible signal, and Regional Military Protection (RMP) which provides the ability to deliver high-power regional Military Code (M-Code) signals in specific areas of intended effect.</p> <p>Space Modernization Initiative (SMI) focuses on space vehicle affordability and capability, addresses future requirements and resiliency needs, and expands the industrial base supply. The Air Force (AF) is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) which will provide signal flexibility to change the signal form while the satellite is on-orbit. This effort will be funded with Air Force Research Laboratory (AFRL) Science & Technology (S&T) funding and PE 1203265F to increase the number of alternate navigation payloads and inform future PNT architectures.</p> <p>Mission Readiness Campaign (MRC) activities include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. Newly certified launch vehicles must be incorporated into the GPS III launch baseline. Integration requires the development of plans and procedures, and procurement of special support equipment.</p> <p>GPS supports the early deployment of Global M-Code to meet the congressional mandate limiting user equipment purchases to M-Code capable receivers starting in FY2017. The funds will cover the M-Code Early Use (MCEU) program and support development costs associated with the GPS control segment software to provide core M-Code capabilities to the warfighter, as well as the ability to command and control, process, and monitor the M-Code signal. MCEU mitigates delays with OCX, supports Military Global Positioning System User Equipment (MGUE) testing, and allows for early M-Code operations. M-Code provides greater security to protect navigation and timing in electronically contested environments.</p> <p>Impacts of the M-Code deployment include:</p> <ul style="list-style-type: none"> - Compliance with Commander, Air Force Space Command mandate to provide global monitoring necessary for Early M-Code Operational Use and verification of Navigation Warfare (NAVWAR) effects. - Direction to improve the resiliency of the GPS capability. - Confirmation that Enterprise modernization efforts are integrated and deployed properly. - Testing and Verification of M-Code capability on MGUE/GPS III solution and early M-Code use tied to MGUE fielding 		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i>
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The feasibility studies and preliminary engineering analyses that are funded with this budget item will determine whether or not an initiative to host GPS M-Code augmentation payloads on other satellite systems is practical and beneficial. The primary goal is to provide additional mission assurance and resiliency through redundant systems not directly connected with the current U.S. GPS satellite constellation. This augmentation to the GPS constellation enables future rapid technology on-ramps with minimal risk.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This PE may include necessary civilian pay expenses required to manage, execute, and deliver GPS III Space Segment weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in PEs 1206392F and 1206398F.

This PE encompasses the GPS III (SV 01-10), COps, MCEU, M-Code Hosted Payload, and prior to FY2019, GPS III Follow-On Production Readiness effort.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	179.188	243.435	127.699	0.000	127.699
Current President's Budget	165.794	243.435	144.543	0.000	144.543
Total Adjustments	-13.394	0.000	16.844	0.000	16.844
• Congressional General Reductions	-0.045	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	30.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-6.049	0.000			
• Other Adjustments	-37.300	0.000	16.844	0.000	16.844

Change Summary Explanation

FY2017: -\$37.300M Request for Additional Appropriations (RAA) Back-out

FY2017: +\$30.000M Congressional Add for MCEU

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i>	
FY2019: -\$48.723M Transfer to GPS III Follow-On PE 1203269F to create GPS IIIC MDAP program transparency FY2019: -\$ 1.345M Transfer GPS III SAR to GPS III SPAF funding FY2019: -\$ 1.088M Inflation FY2019: +\$ 8.000M Fund GPS III SV-2 FY2019: +\$60.000M Fund M-Code Hosted Payload		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment				Project (Number/Name) 676007 / SAR- GPS			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
676007: SAR- GPS	8.954	1.065	1.324	0.000	0.000	0.000	0.000	0.000	0.000	1.442	0.000	12.785
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Search and Rescue GPS (SAR/GPS) is an approved auxiliary payload on GPS III beginning no earlier than SV 11. SAR/GPS fills validated National Search and Rescue (SAR) Committee requirements to provide enduring, space-based distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for SAR.

In addition, the United States Air Force (USAF) has on-going requirements to rescue US Military personnel in harm's way per AF Doctrine Document 2-1.6. The implementation of a U.S. Medium Earth Orbiting (MEO) SAR Space Segment is via a Canadian-provided 406 MHz SAR repeater on GPS III SVs. This system presents a cost effective, low-risk opportunity that accommodates existing and planned 406 MHz beacons across the globe. Per National Security Presidential Directive (NSPD)-39, USAF and United States Coast Guard (USCG), the U.S. operators of the civil Cosmicheskaya Sistyema Poiska Avariynich Sudov-Search and Rescue Satellite-Aided Tracking (COSPAS/SARSAT) system, and the international SAR system will integrate the Canadian provided SAR repeater into GPS III beginning no earlier than SV 11.

SAR/GPS funds are transferred to GPS III SPAF beginning in FY19.

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

	FY 2017	FY 2018	FY 2019
Title: SAR/GPS	1.065	1.324	0.000
Description: Nonrecurring costs for systems engineering activities to integrate the payload onto the GPS III SVs starting no earlier than SV 11.			
FY 2018 Plans: Continue to complete the design and development of SAR/GPS antennas, associated hardware and cabling, and space vehicle software; systems engineering associated with integrating SAR payload onto the GPS III SVs; enterprise-level Systems Engineering & Integration, Program Management (SE&I/PM). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. Costs do not include development and production of the Canadian payload unit.			
FY 2019 Plans: N/A			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 676007 / SAR- GPS
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
N/A			
Accomplishments/Planned Programs Subtotals	1.065	1.324	0.000

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

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• SPAF 01 Line Item GPSIII: GPS III	33.974	85.894	69.386	-	69.386	773.398	782.838	1,152.975	1,152.796	4,704.949	8,756.210
• NGA: National Geospatial- Intelligence Agency	2.000	1.000	1.000	-	1.000	0.400	0.000	0.000	-	0.000	4.400

Remarks

D. Acquisition Strategy

SAR/GPS and Laser Retroreflector Array (LRA) will be integrated as part of the GPS III program no earlier than SV 11.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 676007 / SAR- GPS
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Search and Rescue SAR/ GPS Integration	Various	Engility Corp (TASC) : El Segundo, CA	8.954	0.565	Nov 2017	0.824	Nov 2017	-		-		-	1.442	11.785	-
Subtotal			8.954	0.565		0.824		-		-		-	1.442	11.785	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Search and Rescue SAR/ GPS FFRDC	MIPR	Aerospace Corp : El Segundo, CA	0.000	0.500	Dec 2016	0.500	Dec 2017	-		-		-	0.000	1.000	-
Subtotal			0.000	0.500		0.500		-		-		-	0.000	1.000	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		8.954	1.065	1.324	-	-	1.442	12.785	N/A

Remarks
 Cost to Complete includes FY2023 Baseline Extension which was incorrectly added to Project 676007. Funds will be transferred to Project 67A019 in the next budget cycle.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 676007 / SAR- GPS
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FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

SAR/GPS	
Planned Canadian SAR/GPS RFP Release	■

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 676007 / SAR- GPS
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SAR/GPS				
Planned Canadian SAR/GPS RFP Release	1	2018	1	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment				Project (Number/Name) 67A011 / Space Analysis and Application Development			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A011: <i>Space Analysis and Application Development</i>	0.000	0.000	10.029	69.481	0.000	69.481	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Space Analysis and Application Development Military Code (M-Code) Hosted Payload will provide additional mission assurance through redundant systems not directly connected with the current U.S. GPS satellite constellation. The feasibility studies and preliminary engineering analyses funded in this project will determine whether an initiative to host GPS M-Code augmentation payloads on other satellite systems is practical and beneficial. The primary goal is to provide additional mission assurance and resiliency through redundant systems not directly connected with the current U.S. GPS satellite constellation. This augmentation to the GPS constellation enables future rapid technology on-ramps with minimal risk.

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

	FY 2017	FY 2018	FY 2019
Title: M-Code Hosted Payload	-	10.029	69.481
<p>Description: The initial studies, prototyping and experiments will explore size, weight, power, and cost (SWAP-C) requirements of potential payloads, the level of broadcast power as received on the ground, advanced signal capabilities, the needed modifications that will allow current and future GPS ground control systems to communicate with these payloads, and how best to upgrade GPS user equipment with minimal impact on cost and downtime to existing GPS users. The current program under investigation has both a challenging SWAP-C requirement and launch schedule, requiring immediate action by the U.S. if it is to deliver a payload in time for integration into host vehicles.</p> <p>FY 2018 Plans: Begin initial feasibility study and preliminary engineering analysis. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> <p>FY 2019 Plans: Complete initial feasibility study and preliminary engineering analysis, with the goal of starting a Preliminary Design Review (PDR) no later than the fourth quarter FY2019. Begin long lead procurement activities. Leverage AFRL efforts to initiate technology maturation on modular, host agnostic payloads in order to bridge technologies to multiple future hosts and promote standardized interfaces for competition. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A011 / Space Analysis and Application Development

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
FY 2019 increased compared to FY 2018 by \$59.452M. Justification for this increase is described in plans above.			
Accomplishments/Planned Programs Subtotals	-	10.029	69.481

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

N/A

Remarks

D. Acquisition Strategy

Hosted payload studies and engineering analysis to be conducted by Federally Funded Research and Development Centers (FFRDCs), GPS satellite vendors, as well as contractors involved with user equipment development.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A011 / Space Analysis and Application Development
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
M-Code Hosted Payload	TBD	TBD : TBD	0.000	-		8.729	Nov 2017	59.100		-		59.100	Continuing	Continuing	-
Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	0.000	-		0.000		2.600	Nov 2018	-		2.600	Continuing	Continuing	-
Enterprise SE&I	C/CPAF	Engility : El Segundo, CA	0.000	-		0.000		0.900	Nov 2018	-		0.900	Continuing	Continuing	-
Subtotal			0.000	-		8.729		62.600		-		62.600	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	MIPR	Various : Various	0.000	-		1.300	Nov 2017	0.900	Nov 2018	-		0.900	Continuing	Continuing	-
A&AS	Various	Various : Various	0.000	-		0.000		5.481	Jan 2019	-		5.481	Continuing	Continuing	-
Other Support	Various	Various : El Segundo, CA	0.000	-		0.000		0.500	Oct 2018	-		0.500	Continuing	Continuing	-
Subtotal			0.000	-		1.300		6.881		-		6.881	Continuing	Continuing	N/A

Project Cost Totals	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract			
	0.000	-		10.029		69.481	-		69.481	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A011 / Space Analysis and Application Development

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Hosted Payload	
Hosted Payload PDR-level design	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A011 / Space Analysis and Application Development

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Hosted Payload				
Hosted Payload PDR-level design	1	2018	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment				Project (Number/Name) 67A019 / GPS III			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A019: GPS III	2,937.573	164.729	232.082	75.062	0.000	75.062	42.440	10.780	7.296	7.451	12.008	3,489.421
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

GPS III is the next generation Space Vehicle (SV) supporting the GPS constellation and is funded in Program Element (PE) 1203265F. GPS III SVs will deliver significant enhancements, including a new international civil (L1C) signal, enhanced anti-jam power, and a growth path to full warfighter capabilities. GPS III SVs 03-10 are in the Production & Deployment Phase.

PE 1203265F funds GPS III and supports Research, Development, Test and Evaluation (RDT&E) of GPS III SVs 01-02, and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This program includes SVs 01-02 engineering studies and analyses, trade studies, system development, test and evaluation efforts, integrated logistics support products, on-orbit support, and mission operations support for civil and military applications that protect U.S. military and allied use of GPS. The program also includes Contingency Operations (COps) as a bridge capability to fly GPS III SVs until the delivery of the GPS Next Generation Operational Control System (OCX).

Mission Readiness Campaign (MRC) activities include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. Newly certified launch vehicles must be incorporated into the GPS III launch baseline. Integration requires the development of plans and procedures, and procurement of special support equipment.

Space Modernization Initiative (SMI) focuses on space vehicle affordability and capability, addresses future requirements and resiliency needs, and expands the industrial base to enhance future competition. Phase 1 will address a GPS Enterprise Analysis of Alternative (AoA) recommendations to increase GPS signal strength from space by maturing navigation payload technologies that include a new regional Military Code (M-Code) capability. The Air Force (AF) is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) which will provide signal flexibility to change the signal form while the satellite is on-orbit. This effort will be funded with AFRL's Science & Technology (S&T) funding, PE 1203265F, and starting in FY2019 PE 1203269F to increase the number of alternate navigation payloads.

GPS supports the early deployment of Global M-Code to meet a congressional mandate limiting user equipment purchase to M-Code capable receivers starting in FY2017. The funds will cover the M-Code Early Use (MCEU) program and support development costs associated with the GPS control segment software to provide core M-Code capabilities to the warfighter, as well as the ability to command and control, process, and monitor the M-Code signal. MCEU mitigates delays with GPS OCX, supports Military GPS User Equipment (MGUE) testing, and allows for early M-Code operations. M-Code provides greater security to protect navigation and timing in electronically contested environments.

Impacts of the M-Code deployment include:

- Compliance with Commander, Air Force Space Command mandate to provide global monitoring necessary for Early M-Code Operational Use and verification of Navigation Warfare (NAVWAR) effects.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A019 / GPS III
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- Direction to improve the resiliency of the GPS capability.
- Confirmation that Enterprise modernization efforts are integrated and deployed properly.
- Testing and Verification of M-Code capability on MGUE/GPS III solution and early M-Code use tied to MGUE fielding

The feasibility studies and preliminary engineering analyses that are funded by this budget item will determine whether or not an initiative to host GPS M-Code augmentation payloads on other satellite systems is practical and beneficial. The primary goal is to provide additional mission assurance through redundant systems not directly connected with the current U.S. GPS satellite constellation.

This PE encompasses the GPS III (SVs 01-10), COps, MCEU, M-Code Hosted Payload, and prior to FY2019, GPS III Follow-On Production Readiness effort.

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

	FY 2017	FY 2018	FY 2019
<p>Title: GPS III SVs 01-02</p> <p>Description: Development, test and evaluation of GPS III SVs 01-02 and associated simulators, engineering studies and analyses, trade studies, system development, test and evaluation efforts, and integrated logistics support products.</p> <p>FY 2018 Plans: Continue GPS III SV development, Systems Engineering, Integration (SE&I) support, Evolved Expendable Launch Vehicle (EELV) early and detailed integration, mission unique items to support launch activities, technical and program support of SVs 01-02. Complete SV 02 Thermal Vacuum (TVAC) testing and all qualification testing. Complete SV 02 Available For Launch (AFL) activities. Finalize Mission Readiness Campaign (MRC) for GPS III SV 01 and initiate Mission Readiness Campaign (MRC) activities for SV 02. MRC events will continue and complete GPS III SV 01 and begin SV 02 MRC activities which include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. In addition, newly certified launch vehicles must continue incorporation into the GPS III launch baseline. Integration requires the development and refinement of plans and procedures, and procurement of special support equipment. Continue technical support for the launch processing facility at Cape Canaveral Air Force Station (CCAFS). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> <p>FY 2019 Plans: Begin and complete the launch campaign for GPS III SV 01 mission and On-Orbit Checkout activities.</p> <p>Continue and finalize MRC events for SV 02 which include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. Begin and complete the launch campaign for the GPS III SV 02 mission and On-Orbit Checkout activities.</p>	64.635	82.165	36.066

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A019 / GPS III		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>In addition, newly certified launch vehicles must continue incorporation into the GPS III launch baseline. Integration requires the development and refinement of plans and procedures, and procurement of special support equipment. Continue technical support for the launch processing facility at CCAFS. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$46.099M. Justification for this decrease is described in plans above.</p>				
<p>Title: GPS III Follow-On (Production Readiness)</p> <p>Description: Under Secretary of Defense for Acquisition, Technology, and Logistics USD(AT&L) approved the first phase of a two-phased GPS III Follow-On Acquisition Strategy starting no earlier than SV 11. The strategy utilizes FY 2015-2017 RDT&E funding for the Phase 1 effort to mature three contractors; GPS III Follow-On production designs. The Phase 1 Production Readiness Feasibility Assessment is providing data and insight into contractors GPS III Follow-On Production Design with emphasis on a mature navigation payload and production ready designs. Phase 1 requires contractors to provide a GPS III Follow-On SV and navigation payload production designs, manufacturing plans, and a navigation payload engineering brass board (hardware).</p> <p>FY 2018 Plans: Complete Source Selection activities to award Phase 2 in FY 2018, initiating design turn documentation efforts preparing for delta Critical Design Review (CDR) in FY 2019. Continue ORDWG maturation via AFRL to support SMI activities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> <p>FY 2019 Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 funds are reported in PE 1203269F.</p>		22.553	47.888	0.000
<p>Title: Contingency Operations (COps)</p> <p>Description: COps is a risk reduction activity to maintain constellation sustainment as prescribed by the GPS III Space Vehicle Acquisition Strategy if GPS OCX will not deliver in time to support initial GPS III operations. COps adds to the existing Operational Control System (OCS) Architecture Evolution Plan (AEP) command, control, maneuver planning, re-programmability, navigation functionality, Nuclear Detonation (NUDET) Detection System (NDS) support, and external interfaces for the GPS III SV. COps includes integrating GPS III SV simulation modules to the GPS System Simulator (GSS) and updates to the Positional Training Emulator (PTE).</p>		40.041	48.800	24.400

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A019 / GPS III
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p><i>FY 2018 Plans:</i> Complete code and unit testing; complete Software integration testing; obtain final Defense Security Service (DSS) certifications for the development laboratory; complete two AEP sustainment software baseline mergers; complete Factory Qualification Test (FQT) risk reduction activities; complete Generic Security Service (GSS) hardware purchase, installation, and integration; Start Development Test and Evaluation activities; continue PTE development and testing. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> <p><i>FY 2019 Plans:</i> Complete FQT and all Development Test and Evaluation activities; deliver PTE updates; obtain Milestone C approval; handoff to sustainment complete Operational Use Evaluation; complete Program Executive Officer (PEO) certification and Transition to Operations. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY 2019 decreased compared to FY 2018 by \$24.400M. Justification for this decrease is described in plans above.</p>			
<p><i>Title:</i> Architecture Evolution Plan (AEP) M-Code Monitoring</p> <p><i>Description:</i> The M-Code Early Use (MCEU) program initiative will cover the development costs associated with updating the legacy control segment software, AEP, with additional capabilities needed to provide M-Code operations. MCEU will provide the Joint Space Operations Center (JSpOC) with command and control (C2), processing, and integrity monitoring for the M-Code signal. The development will also include the integration of modernized Monitor Station Technology Improvement Capability (MSTIC) receivers, which are being procured separately using O&M as a Form-Fit-Functional replacement for the legacy Monitor Station Receiver Element (MSRE) Y-Code receivers. MCEU will take those MSTIC receivers and add a software upgrade to allow it to process M-Code signals. Prime contract was awarded to start software development and test activities; includes insertion of Legacy Hot Start and Demilitarized Zone (DMZ) requirements into the MCEU baseline.</p> <p><i>FY 2018 Plans:</i> Complete and deliver Modernized Monitoring Station Technology Improvement and Capability (M-MSTIC) receiver upgrade and begin integrating the receivers into the GPS enterprise. Continue program office operations and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> <p><i>FY 2019 Plans:</i> Finish software development phase and start test phase; complete Code and Unit Test; complete Component Integration Test; start FQT. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></p>	30.000	53.229	14.596

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A019 / GPS III

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
FY 2019 decreased compared to FY 2018 by \$38.633M. Justification for this decrease is described in plans above.			
Title: Enterprise Ground Services (EGS)	7.500	0.000	0.000
Description: Enterprise Ground Services (EGS) will provide a robust enterprise ground architecture for AF 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 AF 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 Air Force Space Command (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 AF space systems.			
FY 2018 Plans: In FY 2018, this effort transfers to Space and Missile Test and Evaluation Center, PE 1203173F.			
FY 2019 Plans: N/A			
Accomplishments/Planned Programs Subtotals	164.729	232.082	75.062

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• SPAF 01 Line Item GPS III: GPS III	34.059	85.894	69.955	-	69.955	850.030	789.470	1,162.883	1,161.833	4,680.293	8,834.417
• RDTE 05 PE 1203629F: GPS III Follow-On	-	-	451.889	-	451.889	474.235	435.063	371.441	306.158	Continuing	Continuing

Remarks

D. Acquisition Strategy

The GPS III next generation space segment (SV01-10) rapidly and affordably responds to warfighter capability requirements. The acquisition approach utilizes a disciplined systems engineering approach which focuses on mitigating cost and schedule risk through a lower risk incremental delivery of mature technologies. This approach focuses on mission success and on time delivery. The GPS III SVs will have GPS IIF capabilities plus up to a 3x-8x increase in anti-jam signal power, 3x

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i>	Project (Number/Name) 67A019 / <i>GPS III</i>
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improved accuracy, 3+ year increased design life, a new civil (L1C) signal compatible with the European Galileo system and a satellite bus capable of supporting future SV capability additions.

The AF is starting a new program for the second phase of the two-phased GPS III Follow-On production acquisition strategy for SVs 11-32 with SAF/AQ as the Milestone Decision Authority (MDA). The Phase 1 Production Readiness Feasibility Assessment provided data and insight into contractors' GPS III production designs with emphasis on a mature navigation payload and production-ready designs. Phase 1 results affirmed the viability of a competitive approach for Phase 2. The Phase 2 strategy transfers funding to PE 1203269F to conduct a full-and-open competition for 22 GPS III Follow-On SVs and specifies the use of RDT&E funds to deliver SVs 11 and 12, and conduct associated Non-Recurring Engineering (NRE). Upon Milestone C approval, the AF will procure SVs 13-32 via annual contract options exercised using Space Procurement Air Force (SPAF) funds consistent with full-funding policy under an annual buy approach. In addition to SVs 11 and 12, the RDT&E effort will be comprised of developing risk reducing simulators, support test equipment, and conducting the systems engineering associated with delivering the new capabilities required of GPS III Follow-On SVs 11-32 including backward compatibility, dual band Telemetry, Tracking and Control (TT&C), integration of GFE hosted payloads including a redesigned NDS payload, SAR/GPS payload, LRA, and RMP, which provides the ability to deliver high-power regional M-Code signals in specific areas of intended effect. RDT&E funding for SVs 11 and 12 will be in PE 1203269F, Project GPS III Follow-On. SPAF funding for SVs 13-32 will be in PE 1203269F, Project GPS III Follow-On beginning in FY2020.

The AF is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) which will provide signal flexibility to change the signal form while the satellite is on-orbit. This effort will be funded with AFRL's S&T funding, PE 1203265F, and starting in FY2019 PE 1203269F to increase the number of alternate navigation payloads and inform future PNT architectures.

On 19 July 2016 the Program Executive Officer (PEO) Space, approved the Acquisition Strategy Document (ASD) for the Contingency Operations (COps) effort. The strategy utilizes contingency constellation sustainment capability for GPS III Positioning, Navigation, and Timing (PNT). GPS III COps is needed because GPS OCX will not deliver in time to support initial GPS III SV operations. COps operates (post-launch and check-out) GPS III SVs at the capability level of GPS IIR-M or GPS IIF using the existing Architecture Evolution Plan (AEP) control segment.

On 21 Jan 2017, the PEO Space, approved the ASD for the M-Code Early Use (MCEU) program. The MCEU acquisition strategy, when executed, will enable the GPS Enterprise to provide core M-Code capabilities to the warfighter prior to GPS OCX delivery. MCEU will also support the scheduled operational testing of MGUE. MCEU will update the GPS control segment software, AEP, to allow for command and control, processing, and integrity monitoring of the M-Code signal. MCEU will acquire this capability by using the existing GPS III prime contract vehicle to modify the operational AEP software.

HQ USAF/A5R approved reinstatement of a previously deferred Key Support Area (KSA) on 10 Feb 2016. The MSTIC receivers currently under development will get a software upgrade to process M-Code data. This \$7.96M project to procure the M-MSTIC receivers is being funded through 3400/SPAF funds in FY2016-FY2018. Performance monitoring, integration and test will be conducted by the MCEU program and sustained under the GPL Lockheed Martin Contract. Funding is sent through a Form-9 from DoD to Lockheed Martin.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A019 / GPS III
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GPS III Development	C/CPIF	Lockheed Martin : Denver, CO	2,509.054	47.015	Dec 2016	24.005	Dec 2017	7.641	Dec 2018	-		7.641	5.266	2,592.981	2,592.981
GPS III Development 11+	C/Various	TBD : TBD	11.029	-		10.000	Oct 2018	-		-		-	0.000	21.029	21.029
GPS III Development_COps	C/CPIF	Lockheed Martin : Denver, CO	32.318	31.212	Feb 2017	42.874	Feb 2018	17.318	Feb 2019	-		17.318	0.000	123.722	123.722
GPS III Development_MCEU	C/CPIF	Lockheed Martin : Denver, CO	0.000	26.284	Aug 2017	49.533	Oct 2017	9.186	Oct 2018	-		9.186	18.082	103.085	103.085
GPS III Technical Mission Analysis	MIPR	Various : Various	9.484	8.864	Oct 2016	27.923	Oct 2017	6.954	Oct 2018	-		6.954	0.328	53.553	53.553
GPS III Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	85.994	3.906	Nov 2016	4.800	Nov 2017	4.312	Oct 2018	-		4.312	3.787	102.799	102.799
GPS III Launch Support	RO	45th : Cape Canaveral, FL	21.513	7.000	Mar 2017	37.974	Mar 2018	18.185	Mar 2019	-		18.185	45.265	129.937	129.937
GPS III Production SMI	C/CPFF	TBD : TBD	18.400	17.756		9.156	Nov 2017	-		-		-	0.000	45.312	45.312
GPS III Enterprise Ground Service	C/CPAF	TBD : TBD	-	7.500	Jan 2017	-		-		-		-	0.000	7.500	7.500
Subtotal			2,687.792	149.537		206.265		63.596		-		63.596	72.728	3,179.918	N/A

Remarks
GPS III SV11+ Phase 1 Production Readiness Feasibility Assessment contracts awarded to Lockheed Martin Space Systems Corp (Littleton, CO), Northrop Grumman Aerospace Systems Corp (Redondo Beach, CA), and Boeing Aerospace Corp (El Segundo, CA). Air Force Research Laboratory (AFRL) contracts for On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) supporting GPS III SMI activities awarded to Northrop Grumman Aerospace Systems Corp (Redondo Beach, CA), Boeing Aerospace Corp (El Segundo, CA), and General Dynamics Mission Systems Corp (Scottsdale, AZ).

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GPS III T&E	Various	Various : TBD	32.662	0.000	May 2017	-		-		-		-	0.000	32.662	-
Subtotal			32.662	0.000		-		-		-		-	0.000	32.662	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A019 / GPS III
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GPS III																												
GPS III SV01 Available for Launch				■																								
GPS III SV02 Available for Launch																												
GPS III Follow-on (SV11-32)																												
GPS III Follow-On Acquisition Decision																												
GPS III Follow-On Request for Proposal (RFP) Release																												
COps/MCEU																												
COps Critical Design Review (CDR)																												
COps Formal Qualification Test Readiness Review (FQT TRR)																												
COps Milestone C																												
COps Ready to Operate																												
Automated M-Code Test																												
Core M-Code on OCS																												
Deployment of full M-Code on OCX																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment	Project (Number/Name) 67A019 / GPS III
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
GPS III				
GPS III SV01 Available for Launch	4	2017	4	2017
GPS III SV02 Available for Launch	4	2018	2	2019
GPS III Follow-on (SV11-32)				
GPS III Follow-On Acquisition Decision	1	2018	1	2018
GPS III Follow-On Request for Proposal (RFP) Release	1	2018	1	2018
COps/MCEU				
COps Critical Design Review (CDR)	1	2017	1	2017
COps Formal Qualification Test Readiness Review (FQT TRR)	3	2018	3	2018
COps Milestone C	2	2019	2	2019
COps Ready to Operate	3	2019	3	2019
Automated M-Code Test	4	2019	1	2020
Core M-Code on OCS	3	2021	2	2022
Deployment of full M-Code on OCX	4	2022	4	2022

Note

Starting FY2019 Events for GPS III Follow-On will be reported in PE 1203269F.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	12.380	12.691	16.278	0.000	16.278	16.516	16.841	17.118	17.465	Continuing	Continuing
67A051: <i>Space Superiority - Advanced Intelligence Systems</i>	-	12.380	12.691	16.278	0.000	16.278	16.516	16.841	17.118	17.465	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Provides Electronic Support (ES) for key find, fix, track, target, engage and assess (F2T2EA) requirements supporting Space Superiority activities. Funds developmental intelligence collection to support new capability acquisition and development. This project also funds transportable intelligence collection and analysis capabilities that are modular (plug-and-play), and can keep pace with technological advances and emerging threats. It provides intelligence support systems for Space Situational Awareness activities that provide the requisite current and predictive knowledge of space events and threat conditions and intelligence support to Space Protection Programs by providing architectural survivability analysis of critical mission assets for mission assurance. It also supports phased threat system analysis and studies (A&S), test support, lab equipment, and Material Acquisition and Exploitation (MAE) for system development and vulnerability/susceptibility assessments to support tactics, techniques and procedures (TTP) development and future threat technology studies necessary for mission area success and achievement of space superiority, and to preserve the US space advantage across all domains.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This program is in Budget Activity 7, Operational System Development, because it includes development efforts to upgrade systems that have been fielded.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	13.880	12.691	12.900	0.000	12.900
Current President's Budget	12.380	12.691	16.278	0.000	16.278
Total Adjustments	-1.500	0.000	3.378	0.000	3.378
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-1.500	0.000			
• Congressional Rescissions	0.000	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	3.378	0.000	3.378

Change Summary Explanation

FY2017: -\$1.500M Congressional reduction for insufficient justification

FY2019: +\$3.378M increase for program architecture changes in support of space control capabilities

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Advanced Intelligence Systems for Space Superiority	12.380	12.691	16.278	0.000	16.278
Description: Develops transportable and fixed collection and analysis capability.					
FY 2018 Plans: Will begin Space Superiority RDT&E through transformation of collection and production activities by developing an intelligence architecture capable of front-end collection and analysis of new technologies in near real-time. This capability will be expanded across the Special Missions Enterprise to allow access to sensitive information from each point of presence providing production analysts the ability to rapidly exploit known vulnerabilities and develop new capabilities to counter adversary technological advances.					
FY 2019 Base Plans: Continue Space Superiority RDT&E through transformation of collection and production activities by developing an intelligence architecture capable of front-end collection and analysis of new technologies in near real-time. This capability will be expanded across the Special Missions Enterprise to allow access to sensitive information from each point of presence providing production analysts the ability to rapidly exploit known vulnerabilities and develop new capabilities to counter adversary technological advances.					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Provides the design, development and tools to support the SSI exploitation and analysis mission conducted at the NASIC.					
Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$3.587M. Justification for this increase is described in plans above.					
Accomplishments/Planned Programs Subtotals	12.380	12.691	16.278	0.000	16.278

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

Remarks

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

Space Superiority and R&D Intelligence Development: Single Delivery, CPFF, advisory and assistance contractor supporting development efforts. Prime contractor is Macaulay-Brown.

Architecture upgrades to SSA, SSDP, and Space Superiority: Multiple Delivery, CPFF integration contract. Prime contractor is BITSYSTEMS Data Analysis

Production development for R&D: Multiple Delivery, CPFF production contract supporting vulnerabilities analysis. Prime Contractor is Booz-Allen Hamilton Intelligence systems

Testing and data collection: Multiple Delivery, CPFF production contract providing independent validation and verification of new capability development. Prime contractor is Booz-Allen Hamilton.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	PE 1203400F / <i>Space Superiority Intelligence</i>

Arc Storm Antennae: Single delivery, CPFF development contract providing prototype and technology development, software integration and testing. Prime contractor is KYMETA Government Solutions.

NASIC SSI: Single delivery, CPFF development contract providing technology development, software integration and testing. Source selection will be competitively bid.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i>	Project (Number/Name) 67A051 / <i>Space Superiority - Advanced Intelligence Systems</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Space Superiority and R&D intelligence Development	Various	Various : TBD	-	2.761	Nov 2016	2.750	Nov 2017	2.800	Nov 2018	-		2.800	Continuing	Continuing	-
Architecture upgrades to SSA, SPP, and Space Superiority	Various	Various : TBD	-	4.300	Nov 2016	4.550	Nov 2017	6.058	Nov 2018	-		6.058	Continuing	Continuing	-
Data analysis and product development for R&D	Various	Various : TBD	-	4.000	Nov 2016	4.100	Nov 2017	5.800	Nov 2018	-		5.800	Continuing	Continuing	-
Intelligence systems testing and data collection	Various	Various : TBD	-	0.500	Nov 2016	0.500	Nov 2017	0.800	Nov 2018	-		0.800	Continuing	Continuing	-
Missile Defeat Enterprise Development	Various	Various : TBD	-	0.000		-		-		-		-	Continuing	Continuing	-
Subtotal			-	11.561		11.900		15.458		-		15.458	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	Various	Various : TBD	-	0.819	Nov 2016	0.791	Nov 2017	0.820	Nov 2017	-		0.820	Continuing	Continuing	-
Subtotal			-	0.819		0.791		0.820		-		0.820	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals		-	12.380	12.691	16.278	-		16.278	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i>	Project (Number/Name) 67A051 / <i>Space Superiority - Advanced Intelligence Systems</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	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>Space Superiority Intelligence</i>	
Architecture upgrade for SSA, SPP, and Space Superiority	
Data analysis and product development for R&D intelligence	
Deployment for testing and data collection	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i>	Project (Number/Name) 67A051 / <i>Space Superiority - Advanced Intelligence Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Space Superiority Intelligence</i>				
Architecture upgrade for SSA, SPP, and Space Superiority	1	2017	4	2023
Data analysis and product development for R&D intelligence	1	2017	4	2023
Deployment for testing and data collection	1	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203614F / <i>JSpOC Mission System</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	80.669	76.467	99.455	72.256	0.000	72.256	102.762	93.870	128.070	125.986	Continuing	Continuing
67A030: <i>Infrastructure</i>	30.018	26.619	28.030	11.914	0.000	11.914	0.000	0.000	0.000	0.000	0.000	96.581
67A031: <i>Mission Applications</i>	38.270	19.821	15.595	11.717	0.000	11.717	0.001	0.000	0.001	0.000	0.000	85.405
67A035: <i>Enterprise Space BMC2</i>	12.381	30.027	55.830	48.625	0.000	48.625	102.761	93.870	128.069	125.986	Continuing	Continuing

Program MDAP/MAIS Code: N82

A. Mission Description and Budget Item Justification

The Joint Space Operations Center (JSpOC) Mission System (JMS) Program is a Space Command and Control (C2) capability for the Commander, Joint Functional Component Commander for Space (JFCC SPACE). The JMS program is predominately a software effort that will produce an integrated, net-centric Service Oriented Architecture (SOA) and the necessary software applications to accomplish required missions. The program will provide a collaborative environment that will enhance and modernize space situational awareness (SSA) capabilities; create decision-relevant views of the space environment; rapidly detect, track and characterize objects of interest; identify / exploit traditional and non-traditional sources; perform space threat analysis; and enable efficient distribution of data across the Space Surveillance Network (SSN). Furthermore, it provides a viable migration path from the legacy Space Defense Operations Center (SPADOC) system, which has 75% of its components beyond end of life or end of service, and the majority of its software is no longer vendor-supported. Enterprise Space BMC2 (previously JMS Increment 3) will provide a Battle Management Command & Control (BMC2) system which will allow the Commander, JFCC-Space to command and control space forces in the space control and space situational awareness realms. This system will develop and integrate battle management mission applications, create an interactive modeling and simulation environment to support training and exercises, provide for secure data sharing and workflow, and Course of Action (COA) development. Funding includes technical studies, development, experimentation, integration and related support costs.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This program element may include necessary civilian pay expenses required to manage, execute, and deliver JMS weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

The FY2019 funding request was reduced by \$29.800 million to account for the availability of prior year execution balances.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203614F / <i>JSpOC Mission System</i>
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This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	87.889	99.455	93.206	0.000	93.206
Current President's Budget	76.467	99.455	72.256	0.000	72.256
Total Adjustments	-11.422	0.000	-20.950	0.000	-20.950
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.500	0.000			
• SBIR/STTR Transfer	-2.622	0.000			
• Other Adjustments	-8.300	0.000	-20.950	0.000	-20.950

Change Summary Explanation

FY2017: \$8.300 decrease due to request for additional appropriations backout.

FY2019: \$29.800M reduction for under-execution.

FY2019: \$5.000M increase to Fix ESBMC2.

FY2019: \$4.396M increase to ESBMC2 Foundational Architecture.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System				Project (Number/Name) 67A030 / Infrastructure			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A030: <i>Infrastructure</i>	30.018	26.619	28.030	11.914	0.000	11.914	0.000	0.000	0.000	0.000	0.000	96.581
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Infrastructure provides a Service Oriented Architecture (SOA), net-centric collaborative information environment at the Unclassified, Secret, and Top Secret / Sensitive Compartmented Information (TS/SCI) levels. Efforts incorporate net-centric enterprise services and integrating incremental space mission applications services. Priority is migration off the legacy SPADOC hardware and services into a sustainable infrastructure. Effort integrates components of SSA mission applications and C2 capabilities into the JSpOC to create timely, actionable knowledge necessary for maintaining space superiority and exercising command and control of space forces.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Increment 2	26.619	28.030	11.914	-	11.914
Description: Pursues and integrates a collaborative net-centric, SOA information environment.					
FY 2018 Plans: Execute testing for Service Pack (SP)-11 to include content accelerated from SP-13 and complete Standard Space Trainer. Continue program office support and other related support activities that may include, but are not limited to studies, technical analysis, etc.					
FY 2019 Base Plans: Complete testing for SP-11 and deliver JMS Increment 2. Continue program office support and other activities that may include, but are not limited to studies, technical analysis, etc. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.					
FY 2018 to FY 2019 Increase/Decrease Statement: FY2019 decreased compared to FY2018 by \$16.116M. Justification for this decrease is described in plans above.					
Accomplishments/Planned Programs Subtotals	26.619	28.030	11.914	-	11.914

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A030 / Infrastructure
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF 01 Line Item 836790: <i>Space Mods Space</i>	-	3.850	20.366	-	20.366	12.373	12.588	12.845	13.086	134.274	209.382

Remarks

Replaces JMS components and provides an operational, sustainable environment to maintain capabilities that fuse data from space intelligence, surveillance, reconnaissance, and environmental sources. This modification will procure commercial hardware, software licenses, and warranties to upgrade the operational environment enclaves (2 Secret / 2 TS/SCI), as well as keep up to date development/operational testing locations.

D. Acquisition Strategy

The JMS overarching Acquisition Strategy, approved by the Milestone Decision Authority on 15 April 2012, provides for a multi-increment program to develop, integrate, test, and deliver JMS capability. The acquisition strategy reflects new principles that address the speed, agility, and adaptability required for successful Information Technology (IT) acquisition resulting in a tailored incremental acquisition approach to deliver early and often by leveraging mature industry capabilities and taking advantage of previous Government investments in Federally Funded Research and Development Center (FFRDC) and Government lab prototyping efforts.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A030 / Infrastructure
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JMS SOA, Infrastructure and core service development	Various	Various : Various	6.744	-		-		-		-		-	0.000	6.744	18.782
JMS High-performance computing and security infrastructure development	Various	Various : Various	2.031	-		-		-		-		-	0.000	2.031	2.593
JMS Government Capability Providers	Various	Various : Various	0.000	0.150	Jul 2017	-		-		-		-	0.000	0.150	1.575
JMS Enterprise SEI	Various	Various : Various	0.000	15.470	Nov 2016	26.204	Nov 2017	10.685	Nov 2018	-		10.685	0.000	52.359	45.784
JMS Mission Infrastructure	Various	Various : Various	8.050	6.747	Jun 2017	-		0.200	Nov 2018	-		0.200	0.000	14.997	10.256
JMS Net-Centric Sensors and Data Sources	Various	Various : Various	0.835	-		-		-		-		-	0.000	0.835	0.642
JMS Standard Space Trainer	C/CPFF	Sonalyt : Colorado Springs, CO	2.150	2.175	Dec 2016	-		-		-		-	0.000	4.325	4.425
JMS Integration & Acq Logistics	Various	SPAWAR : San Diego, CA	7.504	-		-		-		-		-	0.000	7.504	13.623
Subtotal			27.314	24.542		26.204		10.885		-		10.885	0.000	88.945	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	Various	Various : Various	2.014	2.077	Nov 2016	1.826	Nov 2017	1.029	Nov 2018	-		1.029	0.000	6.946	8.744
FFRDC	Various	Various : Various	0.690	-		-		-		-		-	0.000	0.690	0.690
Subtotal			2.704	2.077		1.826		1.029		-		1.029	0.000	7.636	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			30.018	26.619	28.030	11.914	-	11.914	0.000	96.581	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A030 / Infrastructure
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

JMS Infrastructure	
Service Pack 9 Development and Delivery	
Service Pack 11 Development and Delivery	
Inc 2 Full Deployment Decision (FDD)	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A030 / Infrastructure
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
JMS Infrastructure				
Service Pack 9 Development and Delivery	1	2017	2	2018
Service Pack 11 Development and Delivery	1	2017	3	2019
Inc 2 Full Deployment Decision (FDD)	3	2019	3	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System				Project (Number/Name) 67A031 / Mission Applications			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A031: Mission Applications	38.270	19.821	15.595	11.717	0.000	11.717	0.001	0.000	0.001	0.000	0.000	85.405
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission applications provides space services to enhance the accuracy, sustainability, and responsiveness of space surveillance capabilities by providing the knowledge environment necessary to enable the Commander JFCC Space to make rapid, responsive decisions for the protection of space assets from proliferating threats (adversary as well as orbiting debris). The system provides a high accuracy space catalog (knowledge of space objects), increased observation verification and capabilities, and improved event processing. Research, development, and system design provides SSA space catalog applications, services, space surveillance observation processing, and sensor tasking. Funding includes technical studies, development, and integration.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Increment 2	19.821	15.595	11.717	-	11.717
Description: Services/mission applications to conduct space control/situational awareness.					
FY 2018 Plans: Integrate and test commercial software supporting test, training and exercises as well as software management tools. Continue program office support and other related support activities. These activities may include, but are not limited to studies, technical analysis, prototyping, etc					
FY 2019 Base Plans: Finish integration and test of mission application and deliver JMS Increment 2. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.					
FY 2018 to FY 2019 Increase/Decrease Statement: FY2019 decreased compared to FY2018 by \$3.878M. Justification for this decrease is described in plans above.					
Accomplishments/Planned Programs Subtotals	19.821	15.595	11.717	-	11.717

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

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• SPAF 01 Line Item	-	3.850	20.366	-	20.366	12.373	12.588	12.845	13.086	134.274	209.382
836790: Space Mods Space											

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A031 / Mission Applications
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

The JMS overarching Acquisition Strategy, approved by the Milestone Decision Authority on 15 Apr 2012, provides for a multi-increment program to develop, integrate, test, and deliver JMS capability. The acquisition strategy reflects new principles that address the speed, agility, and adaptability required for successful IT acquisition resulting in a tailored incremental acquisition approach to deliver early and often by leveraging mature industry capabilities and taking advantage of previous Government investments in Federally Funded Research and Development Center (FFRDC) and Government lab prototyping efforts.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A031 / Mission Applications
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JMS Mission applications and service pack content development	Various	Various : Various	14.833	-		-		-		-		-	0.000	14.833	5.845
JMS Enterprise SEI	Various	Various : Various	0.000	5.244	Nov 2016	2.489	Jan 2018	1.863	Nov 2018	-		1.863	0.000	9.596	9.235
JMS Technical Mission Analysis (WS)	Various	Various : Various	1.152	1.301	Nov 2016	1.192	Nov 2017	1.000	Jan 2019	-		1.000	0.000	4.645	11.094
JMS COTS hardware, software purchase and engineering support	Various	Various : Various	13.965	6.941	Nov 2016	6.102	Oct 2017	5.188	Nov 2018	-		5.188	0.000	32.196	27.923
Subtotal			29.950	13.486		9.783		8.051		-		8.051	0.000	61.270	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support Costs	Various	Various : Various	0.361	0.197	Nov 2016	0.223	Nov 2017	0.411	Nov 2018	-		0.411	0.000	1.192	1.033
Subtotal			0.361	0.197		0.223		0.411		-		0.411	0.000	1.192	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Combined Developmental Test / Operational Test	Various	Various : Various	2.300	2.752	Nov 2016	2.300	Dec 2017	0.800	Dec 2018	-		0.800	0.000	8.152	6.157
Combined Test Facility	Various	Various : Various	1.623	1.204	Nov 2016	0.973	Dec 2017	0.610	Dec 2018	-		0.610	0.000	4.410	4.473
Subtotal			3.923	3.956		3.273		1.410		-		1.410	0.000	12.562	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	Various	Various : Various	2.912	0.865	Dec 2016	1.184	Nov 2017	0.990	Nov 2018	-		0.990	0.000	5.951	3.338

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A031 / Mission Applications
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FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

JMS Mission Applications	
Service Pack 9 Development and Delivery	
Service Pack 11 Development and Delivery	
Increment 2 FDD	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A031 / Mission Applications
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>JMS Mission Applications</i>				
Service Pack 9 Development and Delivery	1	2017	2	2018
Service Pack 11 Development and Delivery	1	2017	3	2019
Increment 2 FDD	3	2019	3	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System				Project (Number/Name) 67A035 / Enterprise Space BMC2			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A035: Enterprise Space BMC2	12.381	30.027	55.830	48.625	0.000	48.625	102.761	93.870	128.069	125.986	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Enterprise Space Battle Management Command & Control (ESBMC2) provides a BMC2 System(s) that allows JFCC Space to meet emerging threats. This system will develop and integrate mission applications which include, but are not limited to, providing the ability to aggregate intelligence data from various user-defined sources and automatically generating alerts, provide an integrated operating picture for radio frequency spectrum inputs, and create an interactive modeling and simulation environment to support training and exercises, collaborative data sharing, and Course of Action (COA) development and assessment. Funding includes technical studies, development, experimentation, systems engineering, integration and related support costs.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Enterprise Space BMC2	30.027	55.830	48.625	0.000	48.625
Description: Services/mission applications and infrastructure to deliver a robust, responsive BMC2 capability to meet emerging threats. Completion of Enterprise Space BMC2 will deliver a system which provides critical margin of excellence for decision makers trying to prevent a conflict from extending to space, or winning it if it does. Services that tie critical Space Situational Awareness (SSA), Indications & Warning (I&W), Transmit/Receive, Space Control, Tactical Operations and Common Platforms and Infrastructure, Cyber and Threat Warning capabilities to BMC2 including dedicated Systems Engineering & Integration (SE&I), Test & Evaluation (T&E), Model Based Systems Engineering (MBSE) and prototype Validation & Verification support for BMC2 activities. Tie ESBMC2 together with its external interfaces to ensure system of systems closure.					
FY 2018 Plans: Continue developmental planning and program support, systems engineering, design, technical maturation and risk reduction, prototyping and integration of Enterprise Space BMC2 commercial, industry and government capabilities. Systems Engineering enterprise management activity will build roadmaps for BMC2 efforts including prototypes built by Space & Missile Systems Center and other organizations. Contract for comprehensive system development and initial integration with government/commercial provider(s). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, systems engineering, design, capability development, prototype development and integration, experimentation, program integration, support to residual capabilities and software integration.					
FY 2019 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A035 / Enterprise Space BMC2
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>SMC will continue developmental planning and contracting efforts to include, but not limited to, program support, systems engineering, design, technical maturation and risk reduction, prototyping and integration of Enterprise Space BMC2 commercial, industry and government capabilities including infrastructure. Continue to enhance and modernize prototype capabilities in the National Space Defense Center and the Joint Space Operations Center and other operations centers supporting or supported by space capabilities. End-to-end systems engineering requirements flow down and verification planning for Space Enterprise BMC2. Effort includes critical integration of all activities needed to support the kill chain. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, systems engineering, design, capability development, prototype development and integration, experimentation, program integration, support to residual capabilities and software integration, etc.</p> <p>FY 2019 OCO Plans: None</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY2019 decreased compared to FY 2018 by \$7.205M. Justification for this decrease is described in plans above.</p>					
Accomplishments/Planned Programs Subtotals	30.027	55.830	48.625	0.000	48.625

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

N/A

Remarks

D. Acquisition Strategy

The Air Force is in developmental planning for the Enterprise Space BMC2 acquisition strategy. Increments 1 and 2 used a government-as-an-integrator model with the Navy's Space and Naval Warfare Systems Command (SPAWAR) leading those efforts. The program developed and incrementally delivered service packs into operations. The Enterprise Space BMC2 strategy will focus on rapidly delivering capability to warfighters, leveraging commercial, industry and government prototypes, followed by a sustained comprehensive system delivery. The emphasis will be on agile software development.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A035 / Enterprise Space BMC2
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ESBMC2 Tools	Various	Various : Various	0.000	13.054	Jun 2017	18.647	Nov 2017	8.316	Nov 2018	-		8.316	Continuing	Continuing	-
ESBMC2 Government Capability Development	Various	Various : Various	3.204	9.396	Jun 2017	15.053	Nov 2017	9.000	Nov 2018	-		9.000	Continuing	Continuing	-
ESBMC2 Enterprise Systems Engineering & Integration	Various	Various : Various	3.633	3.961	Jun 2017	7.390	Oct 2017	17.484	Dec 2018	-		17.484	Continuing	Continuing	-
ESBMC2 Technical Mission Analysis (WS)	MIPR	Various : Various	-	-		1.668	Oct 2017	1.718	Nov 2018	-		1.718	Continuing	Continuing	-
Subtotal			6.837	26.411		42.758		36.518		-		36.518	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Civilian Reimbursable Budget Authority	TBD	Not specified. : TBD	0.000	0.172	Sep 2017	0.351	Jan 2018	0.358	Jan 2019	-		0.358	Continuing	Continuing	-
Subtotal			0.000	0.172		0.351		0.358		-		0.358	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	C/FFP	Various : Various	2.494	1.716	Jun 2017	5.942	Nov 2017	5.461	Nov 2018	-		5.461	Continuing	Continuing	-
FFRDC	Various	Various : Various	3.000	1.674	Jun 2017	6.674	Nov 2017	6.184	Nov 2018	-		6.184	Continuing	Continuing	-
Other Support	Various	Various : Various	0.050	0.054	Jun 2017	0.105	Oct 2017	0.104	Oct 2018	-		0.104	Continuing	Continuing	-
Subtotal			5.544	3.444		12.721		11.749		-		11.749	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		12.381	30.027	55.830	48.625	48.625	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A035 / Enterprise Space BMC2
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ESBMC2																												
Tech Exploration, Maturation & Risk Reduction																												
Systems Engineering/Design Effort																												
Prototyping & Experimentation																												
Development/Integration																												
Milestone B																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System	Project (Number/Name) 67A035 / Enterprise Space BMC2
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ESBMC2				
Tech Exploration, Maturation & Risk Reduction	4	2017	4	2020
Systems Engineering/Design Effort	3	2017	2	2021
Prototyping & Experimentation	4	2017	4	2022
Development/Integration	3	2018	4	2022
Milestone B	2	2021	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	18.052	42.209	0.000	42.209	2.653	2.692	2.755	2.805	Continuing	Continuing
670004: <i>OTHER STRATCOM ACTIVITIES</i>	-	0.000	0.000	42.209	0.000	42.209	2.653	2.692	2.755	2.805	Continuing	Continuing
67A035: <i>Enterprise Space BMC2</i>	-	0.000	18.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

Prior year funding for the National Space Defense Center was in PE 1203940F, Space Situational Awareness Operations, Project 670004, Other STRATCOM Activities

In FY2019, PE 1203620F, National Space Defense Center, Project 67A035, Enterprise Space BMC2 efforts were transferred to PE 1203620F, National Space Defense Center, Project 670004, Other STRATCOM activities to provide program transparency.

A. Mission Description and Budget Item Justification

This program element will develop Battle Management and Command and Control (BMC2) applications for the National Space Defense Center (NSDC) (formerly Joint Interagency Combined Space Operations Center (JICSpOC)). In addition, this element will develop hardware and software prototypes to support US Strategic Command Joint Emergent Operational Need (ST-0006) for an Accelerated BMC2 capability. The NSDC allows the national security space community to effectively respond to potential future space threat events and will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community operations.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This program is Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrades systems and transition them to operations.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	18.052	12.005	0.000	12.005
Current President's Budget	0.000	18.052	42.209	0.000	42.209
Total Adjustments	0.000	0.000	30.204	0.000	30.204
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	30.204	0.000	30.204

Change Summary Explanation

FY2019: Increased by \$30.2M from funds transfer from PE 1203940F.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>				Project (Number/Name) 670004 / <i>OTHER STRATCOM ACTIVITIES</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
670004: <i>OTHER STRATCOM ACTIVITIES</i>	-	0.000	0.000	42.209	0.000	42.209	2.653	2.692	2.755	2.805	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program element will develop Battle Management and Command and Control (BMC2) applications for the National Space Defense Center (NSDC) (formerly Joint Interagency Combined Space Operations Center (JICSpOC)). In addition, this element will develop hardware and software prototypes to support US Strategic Command Joint Emergent Operational Need (ST-0006) for an Accelerated BMC2 capability. The NSDC allows the national security space community to effectively respond to potential future space threat events and will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community operations.

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

	FY 2017	FY 2018	FY 2019
Title: Application Development	-	0.000	42.209
Description: Develop and field Space Battle Management Command and Control capabilities.			
FY 2018 Plans: In FY2018, this effort is in project 67A035, Enterprise Space BMC2			
FY 2019 Plans: Complete delivery of the second spiral of capabilities to NSDC operators. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. These activities include studies, technical analysis, prototyping, etc.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY2019 funds are realigned from Project 67A035, Enterprise Space BMC2			
Accomplishments/Planned Programs Subtotals	-	0.000	42.209

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>	Project (Number/Name) 670004 / <i>OTHER STRATCOM ACTIVITIES</i>

D. Acquisition Strategy

The Accelerated Space BMC2 JEON (ST-0006) is led by AFRL and will utilize existing contracts e.g. Space Security and Defense Program (SSDP), and provide funds to other AF/DoD organizations to execute on their contracts. Additionally AFRL will initiate and utilize commercial consortiums to develop capabilities.

E. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>	Project (Number/Name) 670004 / <i>OTHER STRATCOM ACTIVITIES</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NSDC INFRASTRUCTURE																												
MULTI OPERATIONS CENTER NETWORK																												
SUSTAINMENT/SUPPORT																												
BMC2 APPLICATION DEVELOPMENT																												
SPIRAL 2 APPLICATION DEVELOPMENT																												
EAGLE EXERCISE																												
SHADOW OPERATIONS CENTER																												
SOFTWARE INNOVATION LAB ESTABLISHMENT																												
SHADOW OPERATIONS CENTER DEV/ ACCREDITATION																												
SHADOW OPERATIONS CENTER IOC																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>	Project (Number/Name) 670004 / <i>OTHER STRATCOM ACTIVITIES</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>NSDC INFRASTRUCTURE</i>				
MULTI OPERATIONS CENTER NETWORK	1	2018	2	2019
SUSTAINMENT/SUPPORT	2	2019	4	2023
<i>BMC2 APPLICATION DEVELOPMENT</i>				
SPIRAL 2 APPLICATION DEVELOPMENT	4	2017	2	2019
EAGLE EXERCISE	3	2018	3	2019
<i>SHADOW OPERATIONS CENTER</i>				
SOFTWARE INNOVATION LAB ESTABLISHMENT	1	2017	1	2019
SHADOW OPERATIONS CENTER DEV/ACCREDITATION	1	2017	1	2019
SHADOW OPERATIONS CENTER IOC	3	2019	3	2019

Note

FY2018 activities are funded in Project 67A035 in this PE.

Prior Year activities are funded in PE 1203940F, Project 670004.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>			Project (Number/Name) 67A035 / <i>Enterprise Space BMC2</i>				
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A035: <i>Enterprise Space BMC2</i>	-	0.000	18.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program element will develop Battle Management and Command and Control (BMC2) applications for the National Space Defense Center (NSDC) (formerly Joint Interagency Combined Space Operations Center (JICSpOC)). In addition, this element will develop hardware and software prototypes to support US Strategic Command Joint Emergent Operational Need (ST-0006) for an Accelerated BMC2 capability. The NSDC allows the national security space community to effectively respond to potential future space threat events and will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community operations.

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

	FY 2017	FY 2018	FY 2019
Title: BMC2 Applications	0.000	18.052	0.000
Description: Develop and field Space Battlement Management and Command and Control capabilities.			
FY 2018 Plans: Continue prototyping efforts to develop tools to fill capability gaps uncovered in experimentation.			
FY 2019 Plans: In FY19 the work in this Project was transferred to Project 670004, Other STRATCOM Activities			
FY 2018 to FY 2019 Increase/Decrease Statement: No FY19 work in this project.			
Accomplishments/Planned Programs Subtotals	0.000	18.052	0.000

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

N/A

Remarks

D. Acquisition Strategy

The Accelerated Space BMC2 JEON (ST-0006) is led by AFRL and will utilize existing contracts e.g. Space Security and Defense Program (SSDP), and provide funds to other AF/DoD organizations to execute on their contracts. Additionally AFRL will initiate and utilize commercial consortiums to develop capabilities.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>	Project (Number/Name) 67A035 / <i>Enterprise Space BMC2</i>

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-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>	Project (Number/Name) 67A035 / <i>Enterprise Space BMC2</i>

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

NSDC	
APPLICATION DEVELOPMENT	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i>	Project (Number/Name) 67A035 / <i>Enterprise Space BMC2</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
NSDC				
APPLICATION DEVELOPMENT	1	2017	4	2018

Note
FY2019-FY2023 activities are funded in Project 670004, Other STRATCOM Activities in this PE.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	6.154	1.373	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.527
674838: <i>Shared Early Warning System</i>	-	6.154	1.373	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.527
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

In FY 2019, PE 1203699F, Shared Early Warning, Project 674838, Shared Early Warning System (SEWS) will be complete.

A. Mission Description and Budget Item Justification

The Shared Early Warning System (SEWS) is the result of Presidential foreign policy initiatives which began in 1996. The SEWS continues to provide Theater Combatant Commanders and foreign nation customers direct operational benefit by improving the architectural design and equipment thereby providing enhanced mission capabilities (i.e., expanded coverage, emerging capability integration, etc.). Foreign customer arrangements are negotiated with individual countries on a bilateral basis to provide selected region-specific missile warning information. SEWS Integration and Test facility is kept current by enhancing systems to improve analysis of real world events. To enhance mission capability the SEWS program tests message format updates, cross domain solution updates, mandatory crypto upgrades, SEWS integration with other warning systems, and the transition to "coalition-based" warning.

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

The North Warning System (NWS) is composed of 1970s era radar systems. The existing radar technology is quickly approaching obsolescence with regards to future threats.

In FY 2018, PE 0308699F, Shared Early Warning (SEW) efforts were transferred to PE 1203699F, Shared Early Warning (SEW) due to the creation of a new Major Force Program for Space. FY 2017 funding is now documented in the exhibits for PE 1203699F.

In FY 2019, no funding is requested and no funding is required as all SEWS development will be complete.

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i>
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B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	6.366	1.373	1.251	0.000	1.251
Current President's Budget	6.154	1.373	0.000	0.000	0.000
Total Adjustments	-0.212	0.000	-1.251	0.000	-1.251
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	-0.212	0.000			
• Other Adjustments	0.000	0.000	-1.251	0.000	-1.251

Change Summary Explanation

FY 2019 funding decreased \$1.251 because Project Shared Early Warning System (SEWS) was completed.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Shared Early Warning System (SEWS)</p> <p>Description: Development of SEWS common architecture and SEWS initiatives as identified by theater commanders.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Investigate and evaluate new Combatant Command (CCMD) Joint Staff validated SEW requirements and integrate derived requirements into plans for SEW system component enhancements like Radiant Mercury (RM) 6.0 Common Message Format (CMF) rule development, Global Command and Control System - Joint (GCCS-J) 6.0 with a CMF input capability and transition of operational sites to SEW data in a CMF format - Continue to evaluate solutions, enhancements, and approaches for an improved infrared/radar integrated missile picture based on SEW GCCS-J correlation of SEW-Space (SEW-S) and SEW-Radar (SEW-R) data to include association of multiple tracked objects to a single event and display of the weapon track resulting is a correct missile count and improved impact prediction - Develop and test Phase 3 Force Protection Tiered Notification System (FPTNS) to provide automatic data transfer from GCCS-J to FPTNS to eliminate operator entry errors and to significantly improve the delivery time of secondary missile warning to SEW partner command centers and lower tier sites 	1.203	1.373	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>- Implement SEW CMF rule sets for RM 6.0, conduct tests and verify proper operation, timely processing and output of SEW partner data to multiple sites, develop enhancements to provide new releasable CMF fields to partners; identify software/hardware problems and develop fixes and enhancements to support fielding of the new RM 6.0 architecture</p> <p>- Develop and test end-to-end SEW architecture with CMF input data from the receivers to ensure proper operation/compatibility of implemented RM 6.0 and GCCS-J 6.0 on partner and CCMD Single-Award (SA) SEW servers</p> <p>- Test GCCS-J 3D Agile Client for use as the SEW partner display and verify all required capabilities are functioning properly including configuring communications channels, SEW data record and playback, display of infrared/radar single integrated missile picture, Theater Event System (TES) site status window and capability to manage track database</p> <p>- Develop improved and enhanced mobile SEWS capability for use with partner deployable active missile defense systems</p> <p>- Conduct research and support tests with United States Strategic Command (USSTRATCOM) and TES Program Offices to develop enhancements to improve TES/SEW performance for short and dim missile events; efforts will include the exploitation of new sensor data and the development of new processing algorithms</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased due to program no longer requiring RDT&E funds starting in FY 2019.</p>					
<p>Title: North Warning System (NWS)</p> <p>Description: Conduct an analysis of alternatives for potential replacement of the NWS.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans: N/A</p> <p>FY 2019 OCO Plans:</p>	4.951	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A					
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i>					
N/A					
Accomplishments/Planned Programs Subtotals	6.154	1.373	0.000	0.000	0.000

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item	0.403	0.392	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.795
838010: <i>Comm Elect Mods</i>											

Remarks

E. Acquisition Strategy
 The acquisition strategy is to build on existing capabilities using evolutionary acquisition to modernize and sustain SEWS. The program office serves as the SEW system integrator, relying on a Prime Contractor for Logistics, Operations, and Sustainment support. This contract was re-competed through full and open competition in 2017 and was awarded to a small business. The current contract has a Period of Performance (PoP) through 30 Sep 2018. Additionally, some SEWS requirements are satisfied through Military Interdepartmental Purchase Requests to external programs of record.

The analysis of alternatives for potential replacement of the NWS will be accomplished using a to be determined mix of organic, federally funded research and development center, and advisory and assistance support contractor efforts.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203699F / Shared Early Warning (SEW)	Project (Number/Name) 674838 / Shared Early Warning System
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Development	C/CPIF	Lockheed Martin : Colorado Springs, CO	-	0.895	Oct 2016	0.923	Oct 2017	-		-		-	Continuing	Continuing	-
Integration and Modernization	MIPR	US Navy : San Diego, CA	-	0.195	Mar 2017	0.195	Mar 2018	-		-		-	Continuing	Continuing	-
Additional Product Development	MIPR	Various : Colorado Springs, CO	-	0.082	Sep 2017	0.090	Sep 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	1.172		1.208		-		-		-	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Analysis of Alternatives for potential replacement for NWS	Various	Various : Colorado Springs, CO	-	4.822	Mar 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	4.822		-		-		-		-	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	SS/CPFF	MITRE : Colorado Springs, CO	-	0.160	Nov 2016	0.165	Nov 2017	-		-		-	Continuing	Continuing	-
Subtotal			-	0.160		0.165		-		-		-	Continuing	Continuing	N/A

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	6.154	1.373	-	-	-	Continuing	Continuing	N/A

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i>	Project (Number/Name) 674838 / <i>Shared Early Warning System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Shared Early Warning System (SEWS)				
Investigation of solutions for emerging Combatant Command (CCMD) and Joint Staff validated requirements and needed Shared Early Warning (SEW) system enhancements	1	2017	4	2018
Cross Domain Solution (CDS) Common Message Format (CMF) Data Sharing Improvements	1	2017	4	2018
SEW-Radar (SEW-R) Data Correlation Solutions Development/Integration/Test	1	2017	4	2017
Accuracy Improvements Development/Test	1	2017	2	2019
Prototype Network Investigation	1	2017	3	2017
Shared Early Warning System (SEWS) Mobile System Development/Integration/Test	1	2017	1	2019
FPTNS Phase 3 Design/Development/Integration/Test	3	2017	1	2018
Agile Client Testing	3	2017	2	2018
Analysis of Alternatives for potential replacement of North Warning System (NWS)	2	2017	1	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203906F / NCMC - TW/AA System
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	5.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.000
67A051: <i>Space Superiority - Advanced Intelligence Systems</i>	-	0.000	5.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding in this exhibit was previously budgeted in PE 0305906F, NCMC - TW/AA System.

This program element supports development activities for the current and potential future NORAD Cheyenne Mountain Complex - Integrated Tactical Warning Attack Assessment (NCMC-ITW/AA) system providing authorities with accurate, timely, unambiguous warning and attack assessment of air, missile and space threats.

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

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.000	5.000	0.000	0.000	0.000
Current President's Budget	0.000	5.000	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>
Title: ITW/AA AOA	0.000	5.000	-
Description: Conduct Analysis of Alternatives (AOA) for the Integrated Tactical Warning and Attack Assessment (ITW/AA) Command and Control (C2) system.			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203906F / NCMC - TW/AA System
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p><i>FY 2018 Plans:</i> Conduct Analysis of Alternatives (AOA) for the Integrated Tactical Warning and Attack Assessment (ITW/AA) Command and Control (C2) system.</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> N/A</p>			
Accomplishments/Planned Programs Subtotals	0.000	5.000	-

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

Remarks

E. Acquisition Strategy
N/A

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203906F / NCMC - TW/AA System	Project (Number/Name) 67A051 / Space Superiority - Advanced Intelligence Systems

FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

AoA Development																												
AoA Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203906F / NCMC - TW/AA System	Project (Number/Name) 67A051 / Space Superiority - Advanced Intelligence Systems

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AoA Development				
AoA Development	3	2017	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	21.093	31.508	19.778	0.000	19.778	16.972	14.162	14.456	14.719	Continuing	Continuing
672808: <i>Nuc Detonation Det Sys (sensors)</i>	-	21.093	31.508	19.778	0.000	19.778	16.972	14.162	14.456	14.719	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The United States Nuclear Detonation (NUDET) Detection System (USNDS) provides a near real-time worldwide, highly survivable/endurable capability to detect, locate, and report any nuclear detonations in the earth's atmosphere or in near space. USNDS supports NUDET detection requirements across five mission areas: Integrated Tactical Warning and Attack Assessment (ITW/AA), Nuclear Force Management (NFM), Space Control (SC), Treaty Monitoring (TM), and a classified mission.

The USNDS program is jointly sponsored and funded by the Department of Defense (DoD), through the Air Force (AF), and the Department of Energy (DOE), through the National Nuclear Security Administration (NNSA) and its Nuclear Detonation Detection (NA-22) office, respectively. NNSA/NA-22 supplies USNDS space sensors as Government Furnished Equipment (GFE) to the AF's USNDS Program Office, which is responsible for all acquisition and Systems Engineering, Integration and Test (SEI&T) activities on Space Vehicles (SVs), to include Global Positioning System (GPS) and additional hosts, and their supporting ground control segments. The AF directly funds the development of the USNDS ground segment (described below).

DoD funds their contribution to the Nuclear Detonation (NUDET) Detection System (NDS) program in Program Element (PE) 1203913F with Research, Development, Test and Evaluation (RDT&E), Space Procurement, Air Force (SPAF), and operations and Maintenance (O&M).

USNDS consists of space sensors and complex ground segments. The space segment sensors, funded by DOE, consists of three nuclear detection sensor payloads: the Radiation Detection Capability (RADEC) payload for Defense Support Program (DSP) satellites, the Global Burst Detection (GBD) payload for Medium Earth Orbit (MEO) platforms (GPS satellites), and the Space Atmospheric Burst Reporting System (SABRS) payload for Geosynchronous Earth Orbit (GEO) platforms (classified GEO host). Together, these sensors and associated communications capability provided by the host satellites comprise the global NUDET space segment detection capability for the USNDS. Space sensors communicate NUDET indications to the fixed ground segment, the RADEC Data Processor (RDP), and the Integrated Correlation and Display System (ICADS), the five deployable mobile ground segment survivable Ground NDS Terminals (GNTs), and the survivable/endurable Universal Ground NDS Terminals (UGNTs), when fielded. The ground segment provides ground receiving analysis and reporting capabilities to national authorities, commands, and forward users as well as Department of State (DOS) for the Treaty Monitoring and Verification mission. The ground control segment is being modernized and continuously improved through an incremental, evolutionary acquisition approach.

The upgrade to the GNT is the survivable/endurable UGNT which is funded with RDT&E in this PE. The UGNT provides NUDET Detection Reports to end users through survivable/endurable USNDS communications via Milstar/Advanced Extremely High Frequency (AEHF) circuits. The GNT supports ITW/AA and NFM missions. The UGNT program modifies the baseline of the GNT program and deploys as an integral part of the Space Based Infrared System (SBIRS) Survivable / Endurable Evolution

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i>
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(S2E2) Mobile Ground System (SMGS) units also in support of ITW/AA and NFM. The UGNT, when integrated with the SMGS, will perform NUDET event processing with fused NDS data from GPS and DSP. SMGS capability refers to the result of the S2E2 upgrade program for the Mobile Ground System (MGS) mission processing capability, including the integration of UGNT. The intended end state of UGNT integration is delivery of enhanced NUDET detection capabilities which meet survivable/ endurable attack assessment requirements directed by the President, Secretary of Defense (SECDEF), Joint Staff, and USSTRATCOM, delivering long-term, cost effective, multi-role, multi-mission space effects to the war fighter across the range of military operations.

This budget line includes systems engineering, research and development, on-orbit and field testing and end-to-end verification of USNDS space sensors, ground analysis and reporting systems in support of the five USNDS mission areas. Sensor integration for GPS IIF and GPS III are funded in their respective PEs.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This program element may include necessary civilian pay expenses required to manage, execute, and deliver NUDET Detection System (SPACE) weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	21.093	31.508	19.927	0.000	19.927
Current President's Budget	21.093	31.508	19.778	0.000	19.778
Total Adjustments	0.000	0.000	-0.149	0.000	-0.149
• 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	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.149	0.000	-0.149

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Title: UNIVERSAL GROUND NDS TERMINALS (UGNT)</p> <p>Description: The five UGNT trailers provide NUDET Detection Reports to end users through survivable/endurable USNDS communications via Milstar/Advanced Extremely High Frequency (AEHF) circuits. The UGNT program modifies the baseline of the GNT program and deploys as an integral part of the Space Based Infrared System (SBIRS) Survivable / Endurable Evolution (S2E2) Mobile Ground System (SMGS) units also in support of ITW/AA and NFM. UGNT delivers NUDET detection capabilities that meet survivable/endurable tactical warning and attack assessment requirements directed by the President, SECDEF, Joint Staff and USSTRATCOM delivering long-term, cost effective, multi-role, multi-mission space effects to the warfighter across the range of military operations.</p> <p>FY 2018 Plans: Deliver, Integrate, and Test two UGNT Trailers. Continue Development on another UGNT trailer. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> <p>FY 2019 Plans: Deliver the fifth UGNT trailer to the SBIRS S2E2 program for integration into the S2E2 Force Package (FPAK). Conduct integration and testing of UGNT vehicles one through four with S2E2. Continue program office support and other activities that may include, but are not limited to studies, technical analysis, etc. Rapidly respond to implement resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$10.204M. Justification for this decrease is described in plans above.</p>		12.902	21.655	11.451
<p>Title: Systems Engineering/On-Orbit Support & Testing</p> <p>Description: Support costs included such activities as, on-orbit NDS sensor integration, check-out/support, testing and system engineering.</p> <p>FY 2018 Plans: Deliver GBD for SV08. Launch activate/checkout NDS payloads on GPS III SV01.</p> <p>FY 2019 Plans: Launch and checkout of NDS payloads on GPS III SV02. Continue on-orbit system engineering analysis of the USNDS fleet. Provide Systems Engineering & Integration (SE&I), technical support and program technical support for the five NDS mission</p>		8.191	9.853	8.327

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
areas. In addition, with the introduction of Contingency Operations in FY2019, NDS on-orbit support will be required for check-out of all GPS III satellites already on orbit. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$1.526M. Justification for this decrease is described in plans above.			
Accomplishments/Planned Programs Subtotals	21.093	31.508	19.778

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF 03 Line Item NUDETS: <i>Nudet Detection Sys Space</i>	4.395	6.370	7.705	-	7.705	6.532	6.645	6.780	6.907	Continuing	Continuing

Remarks

E. Acquisition Strategy
 The USNDS Acquisition Strategy is to develop, integrate, field and sustain USNDS satellite sensors and USNDS ground data processing and distribution hardware and software as well as mission operational and technical program support to sustain the USNDS capability on GPS, DSP, and an Alternate Host; funding is sent by Military Interdepartmental Purchase Request (MIPR) from DoD and Department of Energy (DOE) to Sandia, Lawrence Livermore, Los Alamos National Laboratories and other agencies on existing DOE/NNSA contracts.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203913F / NUDET Detection System (SPACE)	Project (Number/Name) 672808 / Nuc Detonation Det Sys (sensors)
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
USNDS ICADS and GNT/UGNT	MIPR	Sandia National Laboratory : Albuquerque, NM	-	12.902	May 2017	21.655	Nov 2017	11.451	Nov 2018	-		11.451	Continuing	Continuing	-
USNDS Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	-	1.813	May 2017	1.882	Nov 2017	1.942	Nov 2018	-		1.942	Continuing	Continuing	-
USNDS Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	-	1.140	Dec 2016	1.140	Dec 2017	1.140	Dec 2018	-		1.140	Continuing	Continuing	-
Subtotal			-	15.855		24.677		14.533		-		14.533	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
USNDS Testing	Various	17th Test Squadron, JITC : Schriever AFB, CO	-	0.175	May 2017	0.692	Dec 2017	0.315	Dec 2018	-		0.315	Continuing	Continuing	-
USNDS On-orbit Sensor Testing	MIPR	Various : LANL, SNL, NM	-	2.900	Jun 2017	3.200	Dec 2017	3.100	Dec 2018	-		3.100	Continuing	Continuing	-
Subtotal			-	3.075		3.892		3.415		-		3.415	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
USNDS FFRDC	Various	Aerospace, MITRE : El Segundo, CA	-	0.457	May 2017	0.879	Nov 2017	0.761	Dec 2018	-		0.761	Continuing	Continuing	-
USNDS A&AS	Various	Various : Various	-	1.666	Jun 2017	1.980	Nov 2017	0.989	Nov 2018	-		0.989	Continuing	Continuing	-
USNDS Other Support	C/CPAF	Various : Various	-	0.040	Nov 2016	0.080	Nov 2017	0.080	Nov 2018	-		0.080	Continuing	Continuing	-
Subtotal			-	2.163		2.939		1.830		-		1.830	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force								Date: February 2018					
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 1203913F / NUDET Detection System (SPACE)				Project (Number/Name) 672808 / Nuc Detonation Det Sys (sensors)					
	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	21.093		31.508		19.778		-		19.778	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i>	Project (Number/Name) 672808 / <i>Nuc Detonation Det Sys (sensors)</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UGNT																												
UGNT 3 Integration & Delivery																												
UGNT 3 to SBIRS Mobile Ground System																												
UGNT 4-5 Integration & Delivery																												
UGNT Initial Operations Capability																												
USNDS																												
NDS Payload Checkout and Activation																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i>	Project (Number/Name) 672808 / <i>Nuc Detonation Det Sys (sensors)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
UGNT				
UGNT 3 Integration & Delivery	1	2017	4	2017
UGNT 3 to SBIRS Mobile Ground System	2	2018	2	2018
UGNT 4-5 Integration & Delivery	4	2018	3	2019
UGNT Initial Operations Capability	2	2020	2	2020
USNDS				
NDS Payload Checkout and Activation	1	2018	1	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	92.482	99.984	19.572	0.000	19.572	20.314	20.689	19.750	20.110	Continuing	Continuing
670004: <i>Other STRATCOM Activities</i>	-	71.118	71.340	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A017: <i>Sensor Service Life Extension Program</i>	-	21.364	28.644	19.572	0.000	19.572	20.314	20.689	19.750	20.110	Continuing	Continuing

A. Mission Description and Budget Item Justification

Space Situational Awareness (SSA) is knowledge of all aspects of space related to operations. As the foundation for space control, SSA encompasses surveillance of all space objects and activities; detailed reconnaissance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; gathering intelligence on adversary space operations; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities. SSA also encompasses the integration, exploitation and delivery of data sources to facilitate the battle management and command and control of space forces. This program element fields, upgrades, modifies, modernizes, operationalizes, operates and maintains Air Force sensors and information integration capabilities within the SSA Space Surveillance network (SSN) while companion program element 1206425F, Space Situational Awareness Systems, develops new network sensors and improved information integration capabilities across the network. Activities funded in this program element (1203940F) focus on surveillance of objects in earth orbit to aid tasks including satellite tracking; space object identification; tracking and cataloging; satellite attack warning; notification of satellite flyovers to U.S. forces; space treaty monitoring; and technical intelligence gathering.

The 67A017 project funds efforts to upgrade, operationalize and extend the life of operational SSA sensors, as needed. Through Service Life Extension Programs (SLEPs) the following types of activities are performed, but are not limited to, programs that extend the serviceable life of assets and maintain critical capability by replacing aging and increasingly unsustainable components with modern and sustainable equipment. In addition, the SLEP itself may be designed to increase capabilities not currently realized. As the need arises in the execution year, funds in this project may be used to begin SLEPs on additional efforts. These efforts may include prototyping and technology demonstrations.

Global Sensor Watch Program provides an integrated SSA Tip and Cue capability that implements a survivable architecture which provides overlapping, assured, and viable surveillance options for executing event response (demonstrated by the SSA Ops Demo), multiple level security processing of SSA data and automated cross-sensor tipping and cueing around the globe. Other efforts to support Battle Management Command & Control (BMC2) in space include developing & deploying advanced software algorithms to identify, acquire, characterize, and maintain custody of deep space (S)High Inclination Orbits(HIO); optimizing intelligence community & Missile Defense Agency (MDA) sensors to better support BMC2; developing & executing Joint Functional Component Command (JFCC) for Space exercises such as Joint Space Operations Center (JSPOC) Experimentation, Test and Training Initiative (JETTI) to test & optimize Space Control capabilities, concept of operations (CONOPS) development to increase probability of survival for blue assets, and refining requirements across space enterprise; enhancing sensor performance to close the solar exclusion gap leveraging technologies such as optical daylight tracking; and improving legacy communication paths to support bi-directional machine-to-machine sensor communications enabling a more complete BMC2 capability.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>
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Ground Based Radar Upgrades improve the sensitivity, search capabilities and CONOPS of existing SSA sensors to better support custody and fire control timelines.

The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."

This program element may include necessary civilian pay expenses required to manage, execute, and deliver X-XX weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	93.802	99.984	50.241	0.000	50.241
Current President's Budget	92.482	99.984	19.572	0.000	19.572
Total Adjustments	-1.320	0.000	-30.669	0.000	-30.669
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	1.907	0.000			
• SBIR/STTR Transfer	-3.227	0.000			
• Other Adjustments	0.000	0.000	-30.669	0.000	-30.669

Change Summary Explanation

FY 2017: +\$1.907M increase to fully fund Ground-Based Electro Optics Deep Space Surveillance (GEODSS) Phase II SLEP

FY 2019: \$30.522M transferred to PE 1203620F to consolidate National Space Defense Center (NSDC) funds

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>			Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i>				
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
670004: <i>Other STRATCOM Activities</i>	-	71.118	71.340	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The National Space Defense Center (NSDC), formerly the Joint Interagency Combined Space Operations Center (JICSpOC), seeks to improve unity of effort and information sharing across the national security space community to effectively respond to potential future space threat events. The NSDC requires effective battle management, command and control (BMC2) to integrate and synchronize space and cyber forces and the intelligence community with efforts across all domains and to execute unity of effort through the core command and control functions of: situation monitoring, planning, decision making, space force management and space force direction. The NSDC will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community (IC) operations. Lessons learned from NSDC experimentation will inform requirements development for future BMC2 architectures.

Beginning with FY2019, NSDC funding in PE 1203940F is transferred to PE 1203620F, National Space Defense Center.

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

	FY 2017	FY 2018	FY 2019
<p>Title: NSDC Infrastructure</p> <p>Description: Develop and field space battle management, command and control (BMC2) infrastructure.</p> <p>FY 2018 Plans: Conduct space defense experimentation and exercises to further refine necessary capabilities and tactics, techniques, and procedures to enable the NSDC to conduct the space defense mission. Continue prototyping efforts to develop tools to fill capability gaps uncovered in experimentation.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>	71.118	31.340	-
<p>Title: SpODC Development</p> <p>Description: Development of the Space Operations Development Center (SpODC) modeling and simulation infrastructure</p> <p>FY 2018 Plans: Build hardware and software applications to create capability to perform future space experimentation, technology maturation, and operating training.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>	-	40.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
N/A			
Accomplishments/Planned Programs Subtotals	71.118	71.340	-

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

N/A

Remarks

D. Acquisition Strategy

The Accelerated Space BMC2 JEON (ST-0006) is led by AFRL/RV and will utilize existing contracts (e.g. Space Security and Defense Program (SSDP) and SMC/SY) and provide funds to other AF/DoD organizations to execute on their contracts. Additionally, AFRL/RV will initiate and utilize commercial consortiums to deliver capabilities.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SYSTEM ENGINEERING AND INTEGRATION	Various	VARIOUS : COLORADO SPRINGS, CO	-	3.425	Oct 2016	6.425	Oct 2017	-		-		-	Continuing	Continuing	-
SPACE OPERATIONAL DEVELOPMENT CENTER DESIGN AND EXPERIMENTATION	Various	VARIOUS : COLORADO SPRINGS, CO	-	62.118	Oct 2016	34.590	Oct 2017	-		-		-	Continuing	Continuing	-
COMMUNICATIONS ARCHITECTURE DESIGN AND DEVELOPMENT	Various	VARIOUS : COLORADO SPRINGS, CO	-	3.575	Oct 2016	4.575	Oct 2017	-		-		-	Continuing	Continuing	-
APPLICATION DEVELOPMENT	Various	VARIOUS : COLORADO SPRINGS, CO	-	-		22.750	Oct 2017	-		-		-	Continuing	Continuing	-
Subtotal			-	69.118		68.340		-		-		-	Continuing	Continuing	N/A

Remarks
FY17 includes \$58.8M Request for Additional Appropriations for emergency warfighting readiness requirements.

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	Various	VARIOUS : COLORADO SPRINGS, CO	-	0.500	May 2017	1.000	Oct 2017	-		-		-	Continuing	Continuing	-
FFRDC	SS/FP	MITRE : COLORADO SPRINGS, CO	-	1.500	Oct 2016	2.000	Oct 2017	-		-		-	Continuing	Continuing	-
Subtotal			-	2.000		3.000		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force							Date: February 2018				
Appropriation/Budget Activity 3600 / 7			R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>			Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i>					
	Prior Years	FY 2017	FY 2018		FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	-	71.118	71.340		-	-	-	Continuing	Continuing	N/A	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
No project title.																												
NSDC Infrastructure Development																												
NSDC Experimentation																												
NSDC Capabiity Development																												
SpODC Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
NSDC Infrastructure Development	1	2017	4	2022
NSDC Experimentation	1	2017	4	2022
NSDC Capabiity Development	1	2017	4	2022
SpODC Development	1	2017	4	2022

Note

NSDC efforts transferred to PE 1203620F beginning in FY2019.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>				Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A017: <i>Sensor Service Life Extension Program</i>	-	21.364	28.644	19.572	0.000	19.572	20.314	20.689	19.750	20.110	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Space Situational Awareness (SSA) is knowledge of all aspects of space related to operations. As the foundation for space control, SSA encompasses surveillance of all space objects and activities; detailed reconnaissance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; gathering intelligence on adversary space operations; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities. SSA also encompasses the integration, exploitation and delivery of data sources to facilitate the battle management and command and control of space forces. This program element fields, upgrades, modifies, modernizes, operationalizes, operates and maintains Air Force sensors and information integration capabilities within the SSA Space Surveillance network (SSN) while companion program element 1206425F, Space Situational Awareness Systems, develops new network sensors and improved information integration capabilities across the network. Activities funded in this program element (1203940F) focus on surveillance of objects in earth orbit to aid tasks including satellite tracking; space object identification; tracking and cataloging; satellite attack warning; notification of satellite flyovers to U.S. forces; space treaty monitoring; and technical intelligence gathering.

The 67A017 project funds efforts to upgrade, operationalize and extend the life of operational SSA sensors, as needed. Through Service Life Extension Programs (SLEPs) the following types of activities are performed, but is not limited to, programs that extend the serviceable life of assets and maintain critical capability by replacing aging and increasingly unsustainable components with modern and sustainable equipment. In addition, the SLEP itself may be designed to increase capabilities not currently realized. As the need arises in the execution year, funds in this project may be used to begin SLEPs on additional efforts. These efforts may include prototyping and technology demonstrations.

Global Sensor Watch Program provides an integrated SSA Tip and Cue capability that implements a survivable architecture which provides overlapping, assured, and viable surveillance options for executing event response (demonstrated by the SSA Ops Demo), multiple level security processing of SSA data and automated cross-sensor tipping and cueing around the globe. Other efforts to support Battle Management Command & Control (BMC2) in space include developing & deploying advanced software algorithms to identify, acquire, characterize, and maintain custody of deep space (S)High Inclination Orbits(HIO); optimizing intelligence community & Missile Defense Agency (MDA) sensors to better support BMC2; developing & executing Joint Functional Component Command (JFCC) for Space exercises such as Joint Space Operations Center (JSPOC) Experimentation, Test and Training Initiative (JETTI) to test & optimize Space Control capabilities, concept of operations (CONOPS) development to increase probability of survival for blue assets, and refining requirements across space enterprise; enhancing sensor performance to close the solar exclusion gap leveraging technologies such as optical daylight tracking; and improving legacy communication paths to support bi-directional machine-to-machine sensor communications enabling a more complete BMC2 capability.

Ground Based Radar Upgrades improve the sensitivity, search capabilities and CONOPS of existing SSA sensors to better support custody and fire control timelines.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<p>Title: Global Sensor Watch Program</p> <p>Description: Global Sensor Watch Program provides an integrated SSA Tip and Cue capability that implements a survivable architecture which provides overlapping, assured, and viable surveillance options for executing event response (demonstrated by the SSA Ops Demo), multiple level security processing of SSA data and automated cross-sensor tipping and cueing around the globe. Other efforts to support Battle Management Command & Control (BMC2) in space include developing & deploying advanced software algorithms to identify, acquire, characterize, and maintain custody of deep space (S)HIOs; optimizing intelligence community & MDA sensors to better support BMC2; developing & executing JFCC Space exercises such as JETTI to test & optimize Space Control capabilities, CONOPS development to increase probability of survival for blue assets, and refining requirements across space enterprise; enhancing sensor performance to close the solar exclusion gap leveraging technologies and improving legacy communication paths to support bi-directional machine-to-machine sensor communications enabling a more complete BMC2 capability.</p> <p>FY 2018 Plans: Provide findings from SSA Operations Demonstration to the office of the Secretary of Defense/Cost Assessment and Program Evaluation Office (OSD/CAPE), refine processing algorithms, address communications network findings , refine CONOPS/TTPs with operational community, and deliver final reports.</p> <p>FY 2019 Plans: Continue GSW operationalization effort for more situational sensors. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.956M. Justification for this increase is described in plans above.</p>	11.564	18.616	19.572
<p>Title: Ground Radar Upgrades</p> <p>Description: This effort improves the sensitivity, search capability and CONOPS of existing SSA sensors to better support fire control timelines.</p> <p>FY 2018 Plans: Field capability improvements for existing SSA sensors and system tactics to improve custody of resident space objects (RSOs). Continue GSW operationalization effort for more situational sensors. Continue program office support and other activities that may include, but are not limited to studies, technical analysis, etc. Rapidly respond to implement Space Warfighting Construct (SWC) system resiliency and situational awareness necessary to operate in the contested space domain. These activities may include, but are not limited studies, technical analysis, prototyping, etc. Continue GSW operationalization effort for more</p>	9.800	10.028	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
situational sensors. Continue program office support and other activities that may include, but are not limited to studies, technical analysis, etc. <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY 2019 decreased compared to FY 2018 by \$10.028M. Justification for decrease is that GRU is an RMD funded two-year effort with funding ending in FY18.			
Accomplishments/Planned Programs Subtotals	21.364	28.644	19.572

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

N/A

Remarks

D. Acquisition Strategy

The acquisition strategies for Global Sensor Watch program and Ground Radar Upgrades include a mix of modifications to existing Air Force contracts and directing funds to other AF or DoD organizations for contract support.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GEODSS SLEP	C/CPIF	Harris/TBD : Colorado Springs, CO	-	1.347	Sep 2017	0.000		0.000		0.000		0.000	Continuing	Continuing	-
GSW Operationalization	C/TBD	Multiple : Colorado Springs, CO	-	5.147	Jan 2017	11.044	Dec 2017	12.262	Dec 2018	-		12.262	Continuing	Continuing	-
GSW SW Development 1	Various	AFRL : Various	-	1.504	Mar 2017	2.500	Nov 2017	2.500	Nov 2018	-		2.500	Continuing	Continuing	-
GSW SW Development 2	Various	MIT/LL : Lexington, MA	-	2.200	Jan 2017	3.000	Nov 2017	2.500	Nov 2018	-		2.500	Continuing	Continuing	-
GSW SW Development 3	Various	Sandia National Labs : Albuquerque, NM	-	0.300	Sep 2017	0.500	Nov 2017	0.500	Nov 2018	-		0.500	Continuing	Continuing	-
Ground Radar Upgrades	Various	Multiple : Colorado Springs, CO	-	9.082	Sep 2017	8.990	Mar 2018	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	19.580		26.034		17.762		0.000		17.762	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	SS/FP	Multiple : Lexington, MA	-	0.637	Jun 2017	1.250	Oct 2017	0.690	Oct 2018	-		0.690	Continuing	Continuing	-
A&AS	C/Various	Multiple : Various	-	0.997	May 2017	1.200	Dec 2017	1.020	Dec 2018	-		1.020	Continuing	Continuing	7.788
Other Support	Various	Multiple : Lexington, MA ColSpgs, CO	-	0.150	Nov 2017	0.160	Oct 2017	0.100	Oct 2018	-		0.100	Continuing	Continuing	16.626
Subtotal			-	1.784		2.610		1.810		-		1.810	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		-	21.364	28.644	19.572	0.000	19.572	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Sensor SLEP																												
Global Sensor Watch (GSW) Program																												
GSW Operationalization																												
GSW SW Development 1																												
GSW SW Development 2																												
GSW SW Development 3																												
Ground Radar Upgrades																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i>	Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Sensor SLEP				
Global Sensor Watch (GSW) Program	1	2017	4	2023
GSW Operationalization	1	2018	4	2019
GSW SW Development 1	1	2018	1	2020
GSW SW Development 2	2	2020	4	2022
GSW SW Development 3	1	2023	4	2023
Ground Radar Upgrades	2	2017	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	3,267.825	376.645	510.938	513.235	0.000	513.235	402.102	411.240	432.736	274.666	46.113	6,235.500
67A021: OCX	2,922.750	316.931	447.382	449.342	0.000	449.342	337.142	344.435	367.816	208.564	46.113	5,440.475
67A025: <i>GPS Enterprise Integrator</i>	345.075	59.714	63.556	63.893	0.000	63.893	64.960	66.805	64.920	66.102	0.000	795.025

Program MDAP/MAIS Code: 456

Note

Prior Year funds were budgeted in Program Element (PE) 0603423F.

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space based positioning, navigation and timing distribution system which operates through all weather. GPS supports both civil and military users in air, space, sea and land operations. GPS is a satellite-based radio navigation system that serves military and civil users worldwide. GPS users process satellite signals to determine accurate position, velocity and time. GPS must comply with 10 United States Code (USC) sec 2281 which requires that the Secretary of Defense (SECDEF) ensures the continued sustainment and operation of GPS for military and civilian purposes, and 51 USC sec 50112, which requires that GPS complies with certain standards and facilitates international cooperation.

PE 1206423F funds Research, Development, Test and Evaluation (RDT&E) for the GPS Next Generation Operational Control System (OCX) and the GPS Enterprise Integrator (EI). This includes advanced concept development such as support for Regional Military Protection (RMP), systems analysis, modernized control segment development, modernization/deployment of 17 monitoring stations, mission planning development, training simulators, integrated logistics support products, test resources, systems engineering required to meet the Government's obligations to the international, military and civil communities, and system requirements verification. OCX acquisition was established to 1) provide command and control of legacy and GPS III satellites, 2) incorporate situational awareness to support Navigation Warfare (NAVWAR) and signal monitoring, 3) enable mission capability upgrades to support a warfighter effects-based approach to operations, and 4) integrate Department of Defense (DoD) information assurance and cybersecurity controls and capabilities. GPS EI is responsible for architecture and system definition (the analysis and definition, management, maintenance, and evolution of the GPS Enterprise requirements and interface technical documents) as well as for the planning, execution, and fielding of the GPS Enterprise.

OCX funds will support efforts such as engineering studies and analyses, architectural engineering studies, trade studies, technology needs forecasting, modernization initiatives, systems engineering, system development, resolving obsolescence issues, test and evaluation efforts, and mission operations. These activities support upgrades and product improvements for military and civil applications necessary to enable efforts to protect U.S. Military and Allies' use of GPS. Additionally, funds will ensure OCX efforts meet current and future Joint Requirements Oversight Council (JROC) approved required capabilities.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	
<p>The GPS Enterprise consists of Space, Ground Control, Nuclear Detonation (NUDET) Detection System (NDS) and User Equipment Segments. The Government is responsible for the integration of the GPS Segments such that they provide worldwide GPS capability to support the warfighter and over a billion national security, civil, Allied, and commercial GPS users.</p> <p>The GPS EI project includes the efforts associated with the Government's prime contract tasks necessary to accomplish this critical integrating function with the entire GPS user community. The GPS EI maintains the GPS current architecture and system definition, controls and validates interfaces, ensures compatibility of Generation II and III systems, and develops/manages plans for execution and fielding of the GPS Enterprise. Further, GPS EI provides modeling, simulation, and technical analyses of impacts for Government-directed enterprise-level trades among the GPS segments leading to definition, management, maintenance, and evolution of the GPS Enterprise requirements and interface technical documents to build and ensure the integrity of the enterprise technical baseline, and perform system requirements verification.</p> <p>In addition, the GPS EI project funds the technical evolution, risk reduction, enterprise-level testing and delivery of all GPS Enterprise capabilities. Examples for Generation II include electronic protection and additional civil signals; for Generation III, additional anti-jamming protection. To accomplish this, GPS EI delivers Test and Verification capabilities, Requirements and Interface Management, and Systems Integration support across the Space, Control, and User Segments. In this capacity, GPS EI is responsible for managing this cross-program work to provide these and other capabilities.</p> <p>GPS EI's analyses guides Government decisions to ensure efficient and effective synchronization and execution across all Generation II and III GPS programs. For Enterprise-wide integration to be successful, the GPS EI: works with the GPS and NDS prime contractor teams to develop plans for early risk reduction System Integration Demonstrations to ensure system interfaces and functionality meet user and system requirements; ensures all equipment and documentation is ready when needed; integrates and analyzes enterprise schedules; and conducts formal test and verification, including Requirement Verification Plans and System Test Plans and Procedures. GPS EI performs all these efforts across all GPS programs in all acquisition phases. The Government owns the GPS Enterprise system requirements and integration, and highly leverages the GPS EI team to eliminate the need to fund a development prime contractor to perform these functions. This enhances Government control, oversight and program accountability.</p> <p>The current and future space domain demands that space systems be responsive to new and changing threats, and can rapidly integrate new capabilities to make our warfighting force more resilient in a contested battlespace. This agility, survivability, and rapid reconstitution must extend through the entire space warfighting enterprise, to include how we learn about the threat; develop solutions; acquire, test, deploy, train, operate and integrate new systems into the greater system of systems; and ensure our space mission force is ready to defeat a thinking adversary in a complex, multi-domain battlespace. The enterprise will use all of its elements to accelerate decision-making, prototype potential solutions, rapidly integrate decision-making tools and sustain a war-winning capability by delivering multi-domain effects in, from, and through space and cyberspace enabling battle management and resilience options to "fight through."</p> <p>This PE may include necessary civilian pay expenses required to manage, execute, and deliver GPS III Operational Control Segment (OCS) weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in PEs 1206392F and 1206398F.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>
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This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that were fielded or received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	513.268	510.938	441.609	0.000	441.609
Current President's Budget	376.645	510.938	513.235	0.000	513.235
Total Adjustments	-136.623	0.000	71.626	0.000	71.626
• Congressional General Reductions	-2.906	0.000			
• Congressional Directed Reductions	0.000	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	-13.717	0.000			
• Other Adjustments	-120.000	0.000	71.626	0.000	71.626

Change Summary Explanation

FY2017: -\$120.000M FY17 Request for Additional Appropriations (RAA)

FY2019: -\$ 3.860M Inflation

FY2019: +\$75.486M Fund OCX to Service Cost Position

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	Project (Number/Name) 67A021 / OCX
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A021: OCX	2,922.750	316.931	447.382	449.342	0.000	449.342	337.142	344.435	367.816	208.564	46.113	5,440.475
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space based positioning, navigation and timing distribution system which operates through all weather. This project funds the research and development for the GPS Next Generation Operational Control System (OCX). This includes, but is not limited to, advanced concept development, systems engineering and analysis, modernized control segment and mission planning development, modernization/deployment of 17 monitoring stations, training simulators, integrated logistics support products, and test resources.

OCX acquisition was established to: 1) provide command and control of legacy and GPS III satellites; 2) incorporate situational awareness to support Navigation Warfare (NAVWAR) and signal monitoring; 3) enable mission capability upgrades to support a warfighter effects-based approach to operations; and 4) integrate DoD information assurance and cybersecurity controls and capabilities. OCX funds will support efforts such as engineering studies and analyses, architectural engineering studies, trade studies, technology needs forecasting, technology development, systems engineering, system development, test and evaluation efforts and mission operations in support of upgrades and product improvements for military and civil applications necessary to support efforts to protect U.S. military and Allies' use of GPS. Additionally, funds will ensure efforts to meet current and future Joint Requirements Oversight Council (JROC) approved required capabilities.

Funding will also support new capabilities being developed by the GPS III Follow-on production program along with Regional Military Protection (RMP). This effort will research potential impacts and develop solutions due to the GPS III Follow-On modifications, upgrade monitoring stations, and implement advances in collection and integration of RMP high-power regional Military-Code (M-Code) signals.

OCX Block 0 (through Iteration 1.5) is the Launch and Control System (LCS) intended to conduct Launch and Early Orbit (LEO) operations and the on-orbit checkout of all GPS III satellites. OCX Block 0 is a subset of OCX Block 1.

OCX Block 1 (adds Iterations 1.6, 1.7 and 2.1 to Block 0) fields the operational capability to control all legacy satellites and civil signals (L1C/A), military signals (L1P(Y), L2P(Y)) as well as the GPS III satellites and the modernized civil signal (L2C) and the aviation safety-of-flight signal (L5). In addition, Block 1 will field the basic operational capability to control the modernized military signals (L1M and L2M M-Code), and the globally compatible signal (L1C). It also fully meets information assurance/cyber defense requirements.

OCX Block 2 fields the advanced operational capability to control the advanced features of the modernized military signals (L1M and L2M M-Code). Blocks 1 & 2 are being delivered concurrently as a result of the Nunn-McCurdy review.

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

	FY 2017	FY 2018	FY 2019
Title: OCX Development	287.150	410.251	423.727

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	Project (Number/Name) 67A021 / OCX		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Description: Development of GPS OCX system to launch GPS III, operate a mixed GPS II and GPS III constellation, and provide for a robust Information Assurance system.</p> <p>FY 2018 Plans: Continue Iteration 1.7 and 2.1 software development and integration activities. Continue system simulator accreditation process. Continue installation and integration of the monitoring stations equipment and OCX Monitor Station Receiver Element (OMSRE). Continue testing and integration activities for Iteration 1.6. Continue security certification activities leading to Authority To Operate (ATO). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> <p>FY 2019 Plans: Continue contractor support of Block 0. Complete Iteration 1.7 and 2.1 software development and continue integration activities. Complete 1.7 and 2.1 Security Test and Evaluation activities. Complete installation and integration of the monitoring stations equipment and OMSRE. Begin OMSRE Positioning Signal Integrity Continuity Assurance (PSICA) data collecting and Network Interface Module (NIM) tuning. Continue security certification leading to ATO. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$13.476M. Justification for this increase is described in plans above.</p>				
<p>Title: Technical Support</p> <p>Description: Development of the Standardized Space Trainer (SST) to provide GPS III operator training. Development of Enterprise Mission Planning Systems. Facilities upgrades for Control Stations and associated equipment and servers. Systems Engineering (SE) including Technical Mission Analysis, Modernization SE and Technical Support, and Test and Evaluation.</p> <p>FY 2018 Plans: Continue work on the SST and develop demonstration capabilities; continue development of Enterprise Mission Planning Systems. Continue work on the facility upgrades to include the Mission Control Station (MCS), Alternate Mission Control Station (AMCS), and remote monitor station sites.</p> <p>FY 2019 Plans: Complete work on the SST and development demonstration of capabilities. Complete installation and integration. Continue data collection, and tuning of the monitoring stations equipment and OMSRE. Complete facility upgrades and testing to include the</p>		29.781	37.131	25.615

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	Project (Number/Name) 67A021 / OCX
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
MCS, AMCS, and remote monitor station sites. These activities may include, but are not limited to studies, technical analysis, prototyping, etc.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$11.516M. Justification for this decrease is described in plans above.			
Accomplishments/Planned Programs Subtotals	316.931	447.382	449.342

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• RDTE 07 PE 1203265F: <i>GPS III Space Segment</i>	165.794	243.435	144.543	-	144.543	42.440	10.780	7.296	8.893	12.008	635.189
• RDTE 05 PE 1203269F: <i>GPS III Follow-On</i>	-	-	451.889	-	451.889	474.235	435.063	371.441	306.158	1,193.184	3,231.970
• SPAF 01 Line Item GPSIII: <i>GPS III Space Segment</i>	33.974	85.894	69.386	-	69.386	773.398	782.838	1,152.975	1,152.796	4,185.159	8,236.420
• DOT: DOT (FAA) Civil Funding	13.300	11.400	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	24.700

Remarks

D. Acquisition Strategy
The Air Force is pursuing a "Block" approach for OCX in order to respond to warfighter capability requirements. The strategy calls for capability (e.g., better signal maintainability, Unified S-Band (USB), Search and Rescue (SAR) GPS, and near-real time Command and control (C2)) on-ramps for the follow-on contract for GPS III Space Vehicles (SVs) (starting no earlier than SV11) which will require updates to the OCX ground segment. Enterprise studies will ensure GPS Enterprise synchronization across space and ground segments.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	Project (Number/Name) 67A021 / OCX
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GPS OCX Phase B OCX Block 1 & 2 Development	C/CPAF	Raytheon : Aurora, CO	2,243.680	269.588	Dec 2016	382.642	Dec 2017	395.823	Dec 2018	-		395.823	1,132.478	4,424.211	3,621.000
GPS OCX Technical Mission Analysis	MIPR	Various : Various	15.103	16.511	Dec 2016	16.860	Dec 2017	17.365	Dec 2018	-		17.365	52.574	118.413	118.413
GPS OCX Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	49.440	4.063	Dec 2016	3.029	Dec 2017	3.029	Dec 2018	-		3.029	12.087	71.648	71.648
GPS OCX Modernization/ SE & Technical Support	Various	Various : Various	61.852	1.070	Dec 2016	0.450	Dec 2017	0.050	Dec 2018	-		0.050	22.435	85.857	-
GPS OCX AMCS Facility Dev	Various	Various : Various	0.373	0.400	Mar 2017	0.000	Mar 2018	-		-		-	0.000	0.773	-
GPS OCX Standard Space Trainer (SST)	C/CPAF	Sonalyt, Inc : Waterford, CT	16.500	2.500	Dec 2016	5.000	Dec 2017	5.000	Dec 2018	-		5.000	10.000	39.000	39.000
GPS OCX Enterprise Mission Planning	C/CPIF	Booz Allen Hamilton Eng Services : El Segundo, CA	10.000	6.300	Jan 2017	5.800	Jan 2018	3.200	Jan 2019	-		3.200	0.500	25.800	25.800
GPS OCX Phase A Development	Various	Various : Various	289.000	-		-		-		-		-	0.000	289.000	289.000
Subtotal			2,685.948	300.432		413.781		424.467		-		424.467	1,230.074	5,054.702	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GPS OCX T&E	C/CPAF	Various : Various	1.682	3.000	Mar 2017	9.021	Mar 2018	-		-		-	0.000	13.703	-
Subtotal			1.682	3.000		9.021		-		-		-	0.000	13.703	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GPS OCX FFRDC	MIPR	Various : Various	126.887	6.615	Oct 2016	7.773	Oct 2017	7.252	Oct 2018	-		7.252	24.563	173.090	-

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	Project (Number/Name) 67A021 / OCX

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
OCX				
OCX Milestone B	3	2018	3	2018
Block 0 Interim Contractor Support	1	2018	3	2022
Software Iteration 1.7 Incremental CDR (Include Iteration 1.6 CDR and update dates)	4	2018	4	2018
Software Iteration 2.1 Incremental CDR	4	2018	4	2018
1.7/2.1 Design, Code & Unit Test	2	2018	2	2019
1.7/2.1 Integration and Test	4	2018	1	2020
Block 1 FQT	2	2020	2	2020
SV01 Launch (LCS support)	4	2018	4	2018
Monitor Station /Legacy Ground Antenna Installs	2	2019	1	2020
GPS System Simulator (GSYS) Product Test	3	2018	2	2019
GSYS Factory Qualification Test (FQT)	1	2019	4	2019
GSYS Accreditation	1	2020	1	2020
Iteration 1.7/2.1 FQT TRR	2	2020	2	2020
DD 250	4	2021	4	2021
OCX Block 1 RTO	3	2022	3	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>				Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
67A025: <i>GPS Enterprise Integrator</i>	345.075	59.714	63.556	63.893	0.000	63.893	64.960	66.805	64.920	66.102	0.000	795.025
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) Enterprise Integrator (EI) is responsible for integrating, synchronizing, testing and verifying the three ACAT I Defense Acquisition Programs that constitute the GPS Enterprise. Moreover, GPS EI is responsible for delivering reliable Positioning, Navigation, and Timing (PNT) signal capability to military operators, the civil user community, and international partners. Similarly, the Government Joint Program Office owns and approves the technical baseline and is responsible for the successful fielding of all the GPS Segments (space, control, and user). In order to successfully execute its responsibilities, the Government relies on GPS EI's specific expertise to create an enterprise architecture, integrate segment products, and verify the enterprise requirements are adequately met.

The GPS EI is also responsible for developing and managing the Enterprise technical baseline, which reflects multiple stakeholders' requirements. Such stakeholders include the Department of Defense (DoD), foreign governments, industry, and the general public (through four Interface specifications). Furthermore, GPS EI ensures GPS capabilities meet the warfighter's, civil agencies', commercial entities', international treaties', and over four billion global GPS users' needs. The GPS EI also manages the process through which the JROC validated requirements are matured and flowed down to the system segments, while remaining consistent with various interfaces. This enables the GPS system to meet Title 10 of the U.S. Code, Section 2281, mandated GPS capabilities and various other obligations to the international community that provide inter-operable PNT signals. GPS EI is also responsible for all aspects of schedule and technical alignment across the segments. Additionally, GPS EI is responsible for creating and managing plans that provide early exercise of the products under development, compatibility analysis, and inter-segment testing, which result in risk reduction. The inter-segment tests are required to prove GPS Next Generation Operational Control System's (OCX) interoperability with GPS III satellites, and modernized user equipment. More importantly, it ensures backwards compatibility with GPS Block II satellites and legacy user equipment.

GPS EI activity supports the Government Joint Program Office's GPS spectrum protection at international forums such as the International Telecommunications Union. Such support consists of advocating on behalf of the United States Government when negotiating with foreign partners. In addition, GPS EI provides technical expertise to maintain relationships with other U.S. government agencies that include the Federal Aviation Administration (FAA), National Geospatial-Intelligence Agency (NGA), National Aeronautics and Space Administration (NASA), Departments of State (DOS), Transportation, Homeland Security, and Commerce.

Spectrum expertise also ensures GPS priority over eight essential spectrum signals required for civil air navigation such as the safety of life signal and L5. Spectrum Protection prevents encroachment from commercial or foreign entities, which results in the preservation of warfighter's reliable signal. As a result, military operations and the integrity of the global economic infrastructure are protected. GPS EI is also the GPS enterprise expert on Cybersecurity, System Safety, and System Security, which ultimately ensures a protected GPS Signal for both the military and civil users. GPS EI is accountable for the development, execution, and analysis of OCX, cybersecurity and associated test cases necessary to deliver a secure operational system.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i>
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GPS EI supports the Government development and implementation of various Systems Engineering documents, defines the methods of verification, conducts the analyses or tests, and assists the government in leading Integrated System Tests. In addition, GPS EI validates the system performance in various mission threat scenarios during its development. GPS EI provides in-depth technical expertise to enhance government control, oversight and program accountability.

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

	FY 2017	FY 2018	FY 2019
<p>Title: GPS Enterprise Integrator</p> <p>Description: The integration and technical baseline control of all elements of the GPS system (space/control/user) with one another in support of both military and civil users. Execute four major integration exercises, multiple mini-events, and five rehearsals between space and ground leading up to the launch of GPS III space vehicle (SV) 01.</p> <p>FY 2018 Plans: Support the Military Global Positioning System User Equipment (MGUE) operational test planning. Continued execution of MGUE Developmental Testing (DT) (Phases 2-4). Support launch of SV01. Selective Availability Anti-Spoofing Module (SAASM) Mission Planning System (SMPS) 5.B.3 testing will execute and complete. Plan and conduct test events for SV02. Cybersecurity testing for MGUE and SMPS will continue. Continue developing Military-Code (M-Code) monitoring for Early Use integration and Command and Control of M-Code on the existing Operational Control System (OCS) Architecture Evolution Plan (AEP). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> <p>FY 2019 Plans: Continue test planning for IST 3-1 (OCX Block 1 and GPS III) and IST 3-2 (OCX Block 1, satellite constellation, and MGUE). Support OCX Block 1 product test. Execute MGUE lead platform tests. Continue to support MGUE operational test planning. Continue execution of MGUE DT (IST 3-3 Phases 2-4). Continue to conduct test events for SV-05 and SV-06. Support launch of SVs -03, -04, and -05. Support integration efforts for M-Code Early Use (MCEU) milestone C. Test and integrate Contingency Operations (COps) into AEP as version 8.0. Support AEP ground antennas and Commercial over-the-counter (COTS) upgrades. Test and integrate M-Code monitoring stations upgrades. Continue cybersecurity tests across all GPS segments (space/control/ user). Continue tests and integration of M-Code monitoring for Early Use integration and Command and Control of M-Code on AEP. Continue tests, and analysis to protect GPS users from interference sources that threaten performance of GPS receivers. Participate in international Global Navigation Satellite System forums to advocate for GPS regulatory and technical interests. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.337M. Justification for this increase is described in plans above.</p>	59.714	63.556	63.893
Accomplishments/Planned Programs Subtotals	59.714	63.556	63.893

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018	
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>				Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i>			

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

Line Item	FY 2017	FY 2018	FY 2019	FY 2019	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Cost To	
			Base	OCO	Total					Complete	Total Cost
• RDTE 04 PE 1203164F: <i>NAVSTAR Global Positioning System (User Equipment) (Space)</i>	297.975	253.939	286.629	-	286.629	240.748	155.139	82.178	71.686	90.965	1,479.259
• RDTE 07 PE 1203265F: <i>GPS III Space Segment</i>	165.794	243.435	144.543	-	144.543	42.440	10.780	7.296	8.893	12.008	635.189
• RDTE 05 PE 1203269F: <i>GPS III Follow-On</i>	-	-	451.889	-	451.889	474.235	435.063	371.441	306.158	1,193.184	3,231.970
• RDTE 07 PE 1203913F: <i>NUDET Detection System</i>	21.093	31.508	19.778	-	19.778	16.972	14.162	14.456	14.719	Continuing	Continuing
• SPAF 01 Line Item MGPS00: <i>Global Positioning System (Space)</i>	13.171	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.171
• SPAF 01 Line Item GPSIII: <i>GPS III Space Segment</i>	33.974	85.894	69.386	-	69.386	773.398	782.838	1,152.975	1,152.796	4,185.159	8,236.420

Remarks

D. Acquisition Strategy

In accordance with a "back to basics" acquisition approach and exercise of strong oversight of development contractors, the Air Force is required to exercise complete ownership of the architecture, system definition, technical baseline, and integration of the GPS space, ground, and user segments. While this complex inter-segment integration is traditionally performed by a prime contractor under a systems development contract, for GPS, this approach requires the government to be the integrator. To execute this responsibility, the government leverages systems engineering and integration expertise from both Federally Funded Research and Development Center (FFRDC) contractors and a Systems Engineering & Integration (SE&I) contractor. The GPS EI function of the SE&I contractor is currently funded within this PE. The SE&I effort was originally procured in 2007 through a full and open competition, as was the new follow-on SE&I contract awarded in 2015. The SE&I follow-on strategy builds in year over year cost reductions as requirements stabilize.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i>
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GPS EI Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	174.427	20.038	Jun 2017	22.168	Oct 2017	22.383	Oct 2018	-		22.383	81.219	320.235	320.235
GPS EI Technical Mission Analysis 1	MIPR	Aerospace : El Segundo, CA	73.355	10.200	Jun 2017	11.536	Oct 2017	11.882	Oct 2018	-		11.882	51.045	158.018	158.018
GPS EI Technical Mission Analysis 2	RO	MITRE : Various	70.284	9.935	Jun 2017	10.440	Oct 2017	10.754	Oct 2018	-		10.754	46.926	148.339	148.339
GPS EI MRTA/MSTA	C/CPIF	Draper Labs : Cambridge, MA	4.025	3.421	May 2017	3.400	Dec 2017	3.400	Dec 2018	-		3.400	13.600	27.846	27.846
GPS EI Enterprise Mission Planning	C/CPIF	Various : El Segundo, CA	1.320	-		-		-		-		-	0.000	1.320	1.320
GPS EI Cybersecurity	Various	Various : El Segundo, CA	8.818	7.418	May 2017	8.863	Oct 2017	7.820	Oct 2018	-		7.820	38.200	71.119	71.119
GPS EI Additional Product Development	Various	Various : Various	2.831	1.251	Jul 2017	1.378	Oct 2017	2.074	Oct 2018	-		2.074	9.296	16.830	-
Subtotal			335.060	52.263		57.785		58.313		-		58.313	240.286	743.707	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EI Integrated Systems Test	Various	Various : El Segundo, CA	0.294	0.000		1.200	Apr 2018	1.350	Apr 2019	-		1.350	4.320	7.164	-
Subtotal			0.294	0.000		1.200		1.350		-		1.350	4.320	7.164	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GPS EI FFRDC	Various	Various : El Segundo, CA	0.178	0.405	Jun 2017	0.614	Oct 2017	0.470	Oct 2018	-		0.470	1.794	3.461	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GPS III AFL																												
GPS III SV01 Available for Launch				■																								
GPS III SV02 Available for Launch					■																							
IST																												
IST 3-3/MGUE Verification Testing (Phase II)					■																							
IST 3-3/MGUE Verification Testing (Phase III)					■																							
IST 3-3/MGUE Verification Testing (Phase IV)									■																			
IST 2-5/COps Verification Testing													■															
IST 2-6/MCEU Verification Testing																	■											
Enterprise																												
M-Code Early Use	■																											
Support OCX Blocks 1 & 2 Milestone C																					■							
Support OCX Block 1 Ready to Transition to Operations (RTO)																									■			

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
GPS III AFL				
GPS III SV01 Available for Launch	4	2017	4	2017
GPS III SV02 Available for Launch	4	2018	2	2019
IST				
IST 3-3/MGUE Verification Testing (Phase II)	2	2018	1	2020
IST 3-3/MGUE Verification Testing (Phase III)	2	2018	3	2020
IST 3-3/MGUE Verification Testing (Phase IV)	2	2019	4	2019
IST 2-5/COps Verification Testing	3	2019	3	2019
IST 2-6/MCEU Verification Testing	1	2020	1	2020
Enterprise				
M-Code Early Use	2	2017	1	2020
Support OCX Blocks 1 & 2 Milestone C	2	2021	2	2021
Support OCX Block 1 Ready to Transition to Operations (RTO)	3	2022	3	2022

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