

UNCLASSIFIED

**Department of Defense
Fiscal Year (FY) 2017 Amended Budget Estimates**

November 2016



Army

Justification Book of

Research, Development, Test & Evaluation, Army

RDT&E – Volume II, Budget Activity 5

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Department of Defense
 Budget Amendment to the FY 2017 President's Budget Request for Overseas Contingency Operations (OCO)
 Exhibit R-1 Budget Amendment to the FY 2017 President's Budget Request for Overseas Contingency Operations (OCO)
 Total Obligational Authority
 (Dollars in Thousands)

04 Nov 2016

Appropriation -----	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted -----
Research, Development, Test & Eval, Army	6,744,134	7,562,170	1,500	7,563,670
Total Research, Development, Test & Evaluation	6,744,134	7,562,170	1,500	7,563,670
 Other RDT&E Budget Activities Not Included in the Research, Development, Test and Evaluation Title -----				
Chem Agents & Munitions Destruction	595,913	579,342		579,342
Total Not in Research, Development, Test & Evaluation Title	595,913	579,342		579,342

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 Total Obligational Authority
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04 Nov 2016

Appropriation -----	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total
Research, Development, Test & Eval, Army	7,515,399	100,522	139,200	7,755,121
Total Research, Development, Test & Evaluation	7,515,399	100,522	139,200	7,755,121
Other RDT&E Budget Activities Not Included in the Research, Development, Test and Evaluation Title -----				
Chem Agents & Munitions Destruction	388,609			388,609
Total Not in Research, Development, Test & Evaluation Title	388,609			388,609

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04 Nov 2016

Summary Recap of Budget Activities -----	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted
Basic Research	447,868	469,079		469,079
Applied Research	964,085	1,092,885		1,092,885
Advanced Technology Development	1,089,087	1,127,304		1,127,304
Advanced Component Development & Prototypes	298,467	506,123	1,500	507,623
System Development & Demonstration	1,604,756	2,085,147		2,085,147
RDT&E Management Support	1,166,015	1,070,581		1,070,581
Operational Systems Development	1,173,856	1,211,051		1,211,051
Total Research, Development, Test & Evaluation	6,744,134	7,562,170	1,500	7,563,670
 Summary Recap of FYDP Programs -----				
General Purpose Forces	705,451	779,716		779,716
Intelligence and Communications	162,187	171,857		171,857
Research and Development	5,788,542	6,545,639	1,500	6,547,139
Central Supply and Maintenance	73,419	60,422		60,422
Administration and Associated Activities	233			
Classified Programs	14,302	4,536		4,536
Total Research, Development, Test & Evaluation	6,744,134	7,562,170	1,500	7,563,670
 Summary Recap of Non-RDT&E Title FYDP Programs -----				
Central Supply and Maintenance	595,913	579,342		579,342
Total Research, Development, Test & Evaluation	595,913	579,342		579,342

R-1C1A: Budget Amendment to the FY 2017 President's Budget Request for Overseas Contingency Operations (OCO), as of November 4, 2016 at 15:06:51

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04 Nov 2016

Summary Recap of Budget Activities -----	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total
Basic Research	428,943			428,943
Applied Research	907,574			907,574
Advanced Technology Development	930,065			930,065
Advanced Component Development & Prototypes	550,635	9,375		560,010
System Development & Demonstration	2,265,094	84,043	139,200	2,488,337
RDT&E Management Support	1,136,134			1,136,134
Operational Systems Development	1,296,954	7,104		1,304,058
Total Research, Development, Test & Evaluation	7,515,399	100,522	139,200	7,755,121
Summary Recap of FYDP Programs -----				
General Purpose Forces	618,038			618,038
Intelligence and Communications	238,711	7,104		245,815
Research and Development	6,591,738	93,418	139,200	6,824,356
Central Supply and Maintenance	62,287			62,287
Administration and Associated Activities				
Classified Programs	4,625			4,625
Total Research, Development, Test & Evaluation	7,515,399	100,522	139,200	7,755,121
Summary Recap of Non-RDT&E Title FYDP Programs -----				
Central Supply and Maintenance	388,609			388,609
Total Research, Development, Test & Evaluation	388,609			388,609

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Research and Development	5,788,542	6,545,639	1,500	6,547,139
Central Supply and Maintenance	73,419	60,422		60,422
Administration and Associated Activities	233			
Classified Programs	14,302	4,536		4,536
Total Research, Development, Test & Evaluation	6,744,134	7,562,170	1,500	7,563,670

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Applied Research	907,574			907,574
Advanced Technology Development	930,065			930,065
Advanced Component Development & Prototypes	550,635	9,375		560,010
System Development & Demonstration	2,265,094	84,043	139,200	2,488,337
RDT&E Management Support	1,136,134			1,136,134
Operational Systems Development	1,296,954	7,104		1,304,058
Total Research, Development, Test & Evaluation	7,515,399	100,522	139,200	7,755,121
 Summary Recap of FYDP Programs -----				
General Purpose Forces	618,038			618,038
Intelligence and Communications	238,711	7,104		245,815
Research and Development	6,591,738	93,418	139,200	6,824,356
Central Supply and Maintenance	62,287			62,287
Administration and Associated Activities				
Classified Programs	4,625			4,625
Total Research, Development, Test & Evaluation	7,515,399	100,522	139,200	7,755,121

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04 Nov 2016

Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	Se
1	0601101A	In-House Laboratory Independent Research	01	13,125	13,018		13,018	U
2	0601102A	Defense Research Sciences	01	249,855	279,118		279,118	U
3	0601103A	University Research Initiatives	01	79,122	72,603		72,603	U
4	0601104A	University and Industry Research Centers	01	105,766	104,340		104,340	U
		Basic Research		447,868	469,079		469,079	
5	0602105A	Materials Technology	02	45,563	68,314		68,314	U
6	0602120A	Sensors and Electronic Survivability	02	45,792	58,374		58,374	U
7	0602122A	TRACTOR HIP	02	16,358	6,879		6,879	U
8	0602211A	Aviation Technology	02	62,046	56,884		56,884	U
9	0602270A	Electronic Warfare Technology	02	19,333	19,243		19,243	U
10	0602303A	Missile Technology	02	61,144	53,553		53,553	U
11	0602307A	Advanced Weapons Technology	02	37,464	38,028		38,028	U
12	0602308A	Advanced Concepts and Simulation	02	26,505	27,862		27,862	U
13	0602601A	Combat Vehicle and Automotive Technology	02	71,811	98,439		98,439	U
14	0602618A	Ballistics Technology	02	83,610	117,801		117,801	U
15	0602622A	Chemical, Smoke and Equipment Defeating Technology	02	3,865	3,866		3,866	U
16	0602623A	Joint Service Small Arms Program	02	6,633	5,487		5,487	U
17	0602624A	Weapons and Munitions Technology	02	62,131	83,340		83,340	U
18	0602705A	Electronics and Electronic Devices	02	72,442	64,301		64,301	U
19	0602709A	Night Vision Technology	02	44,694	38,807		38,807	U
20	0602712A	Countermine Systems	02	28,597	36,568		36,568	U

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Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	Se
1	0601101A	In-House Laboratory Independent Research	01	12,381			12,381	U
2	0601102A	Defense Research Sciences	01	253,116			253,116	U
3	0601103A	University Research Initiatives	01	69,166			69,166	U
4	0601104A	University and Industry Research Centers	01	94,280			94,280	U
		Basic Research		428,943			428,943	
5	0602105A	Materials Technology	02	31,533			31,533	U
6	0602120A	Sensors and Electronic Survivability	02	36,109			36,109	U
7	0602122A	TRACTOR HIP	02	6,995			6,995	U
8	0602211A	Aviation Technology	02	65,914			65,914	U
9	0602270A	Electronic Warfare Technology	02	25,466			25,466	U
10	0602303A	Missile Technology	02	44,313			44,313	U
11	0602307A	Advanced Weapons Technology	02	28,803			28,803	U
12	0602308A	Advanced Concepts and Simulation	02	27,688			27,688	U
13	0602601A	Combat Vehicle and Automotive Technology	02	67,959			67,959	U
14	0602618A	Ballistics Technology	02	85,436			85,436	U
15	0602622A	Chemical, Smoke and Equipment Defeating Technology	02	3,923			3,923	U
16	0602623A	Joint Service Small Arms Program	02	5,545			5,545	U
17	0602624A	Weapons and Munitions Technology	02	53,581			53,581	U
18	0602705A	Electronics and Electronic Devices	02	56,322			56,322	U
19	0602709A	Night Vision Technology	02	36,079			36,079	U
20	0602712A	Countermine Systems	02	26,497			26,497	U

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Program Line Element No Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	S e c
21 0602716A	Human Factors Engineering Technology	02	23,434	23,681		23,681	U
22 0602720A	Environmental Quality Technology	02	15,288	20,850		20,850	U
23 0602782A	Command, Control, Communications Technology	02	33,117	36,160		36,160	U
24 0602783A	Computer and Software Technology	02	10,514	12,656		12,656	U
25 0602784A	Military Engineering Technology	02	66,582	80,909		80,909	U
26 0602785A	Manpower/Personnel/Training Technology	02	21,280	24,735		24,735	U
27 0602786A	Warfighter Technology	02	31,597	39,295		39,295	U
28 0602787A	Medical Technology	02	74,285	76,853		76,853	U
Applied Research			964,085	1,092,885		1,092,885	
29 0603001A	Warfighter Advanced Technology	03	75,833	55,973		55,973	U
30 0603002A	Medical Advanced Technology	03	104,997	108,584		108,584	U
31 0603003A	Aviation Advanced Technology	03	99,762	103,136		103,136	U
32 0603004A	Weapons and Munitions Advanced Technology	03	72,176	82,663		82,663	U
33 0603005A	Combat Vehicle and Automotive Advanced Technology	03	143,606	135,571		135,571	U
34 0603006A	Space Application Advanced Technology	03	6,664	5,554		5,554	U
35 0603007A	Manpower, Personnel and Training Advanced Technology	03	11,677	12,636		12,636	U
36 0603008A	Electronic Warfare Advanced Technology	03	43,416				U
37 0603009A	TRACTOR HIKE	03	7,492	7,502		7,502	U
38 0603015A	Next Generation Training & Simulation Systems	03	16,103	17,425		17,425	U
39 0603020A	TRACTOR ROSE	03	14,483	11,912		11,912	U
40 0603125A	Combating Terrorism - Technology Development	03	23,334	33,520		33,520	U

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Program Line Element No Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	S e c
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21 0602716A	Human Factors Engineering Technology	02	23,671			23,671	U
22 0602720A	Environmental Quality Technology	02	22,151			22,151	U
23 0602782A	Command, Control, Communications Technology	02	37,803			37,803	U
24 0602783A	Computer and Software Technology	02	13,811			13,811	U
25 0602784A	Military Engineering Technology	02	67,416			67,416	U
26 0602785A	Manpower/Personnel/Training Technology	02	26,045			26,045	U
27 0602786A	Warfighter Technology	02	37,403			37,403	U
28 0602787A	Medical Technology	02	77,111			77,111	U
	Applied Research		907,574			907,574	
29 0603001A	Warfighter Advanced Technology	03	38,831			38,831	U
30 0603002A	Medical Advanced Technology	03	68,365			68,365	U
31 0603003A	Aviation Advanced Technology	03	94,280			94,280	U
32 0603004A	Weapons and Munitions Advanced Technology	03	68,714			68,714	U
33 0603005A	Combat Vehicle and Automotive Advanced Technology	03	122,132			122,132	U
34 0603006A	Space Application Advanced Technology	03	3,904			3,904	U
35 0603007A	Manpower, Personnel and Training Advanced Technology	03	14,417			14,417	U
36 0603008A	Electronic Warfare Advanced Technology	03					U
37 0603009A	TRACTOR HIKE	03	8,074			8,074	U
38 0603015A	Next Generation Training & Simulation Systems	03	18,969			18,969	U
39 0603020A	TRACTOR ROSE	03	11,910			11,910	U
40 0603125A	Combating Terrorism - Technology Development	03	27,686			27,686	U

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Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	Se
41	0603130A	TRACTOR NAIL	03	3,440	2,381		2,381	U
42	0603131A	TRACTOR EGGS	03	2,406	2,431		2,431	U
43	0603270A	Electronic Warfare Technology	03	27,238	32,874		32,874	U
44	0603313A	Missile and Rocket Advanced Technology	03	78,302	104,449		104,449	U
45	0603322A	TRACTOR CAGE	03	11,105	10,999		10,999	U
46	0603461A	High Performance Computing Modernization Program	03	214,614	222,159		222,159	U
47	0603606A	Landmine Warfare and Barrier Advanced Technology	03	12,795	13,966		13,966	U
48	0603607A	Joint Service Small Arms Program	03	7,055	5,105		5,105	U
49	0603710A	Night Vision Advanced Technology	03	46,056	40,929		40,929	U
50	0603728A	Environmental Quality Technology Demonstrations	03	11,311	14,727		14,727	U
51	0603734A	Military Engineering Advanced Technology	03	17,124	26,845		26,845	U
52	0603772A	Advanced Tactical Computer Science and Sensor Technology	03	38,098	38,147		38,147	U
53	0603794A	C3 Advanced Technology	03		37,816		37,816	U
		Advanced Technology Development		1,089,087	1,127,304		1,127,304	
54	0603305A	Army Missile Defense Systems Integration	04	25,672	29,347		29,347	U
55	0603308A	Army Space Systems Integration	04	13,804	25,061		25,061	U
56	0603619A	Landmine Warfare and Barrier - Adv Dev	04		45,757		45,757	U
57	0603627A	Smoke, Obscurant and Target Defeating Sys-Adv Dev	04		13,426		13,426	U
58	0603639A	Tank and Medium Caliber Ammunition	04	25,317	46,749		46,749	U
59	0603747A	Soldier Support and Survivability	04	8,633	2,801	1,500	4,301	U
60	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	9,255	13,472		13,472	U

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41 0603130A	TRACTOR NAIL	03	2,340			2,340	U
42 0603131A	TRACTOR EGGS	03	2,470			2,470	U
43 0603270A	Electronic Warfare Technology	03	27,893			27,893	U
44 0603313A	Missile and Rocket Advanced Technology	03	52,190			52,190	U
45 0603322A	TRACTOR CAGE	03	11,107			11,107	U
46 0603461A	High Performance Computing Modernization Program	03	177,190			177,190	U
47 0603606A	Landmine Warfare and Barrier Advanced Technology	03	17,451			17,451	U
48 0603607A	Joint Service Small Arms Program	03	5,839			5,839	U
49 0603710A	Night Vision Advanced Technology	03	44,468			44,468	U
50 0603728A	Environmental Quality Technology Demonstrations	03	11,137			11,137	U
51 0603734A	Military Engineering Advanced Technology	03	20,684			20,684	U
52 0603772A	Advanced Tactical Computer Science and Sensor Technology	03	44,239			44,239	U
53 0603794A	C3 Advanced Technology	03	35,775			35,775	U
	Advanced Technology Development		930,065			930,065	
54 0603305A	Army Missile Defense Systems Integration	04	9,433			9,433	U
55 0603308A	Army Space Systems Integration	04	23,056	9,375		32,431	U
56 0603619A	Landmine Warfare and Barrier - Adv Dev	04	72,117			72,117	U
57 0603627A	Smoke, Obscurant and Target Defeating Sys-Adv Dev	04	28,244			28,244	U
58 0603639A	Tank and Medium Caliber Ammunition	04	40,096			40,096	U
59 0603747A	Soldier Support and Survivability	04	10,506			10,506	U
60 0603766A	Tactical Electronic Surveillance System - Adv Dev	04	15,730			15,730	U

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61	0603774A	Night Vision Systems Advanced Development	04	3,521	7,292		7,292	U
62	0603779A	Environmental Quality Technology - Dem/Val	04	7,529	8,813		8,813	U
63	0603790A	NATO Research and Development	04	2,839	6,075		6,075	U
64	0603801A	Aviation - Adv Dev	04					U
65	0603804A	Logistics and Engineer Equipment - Adv Dev	04	13,188	21,233		21,233	U
66	0603807A	Medical Systems - Adv Dev	04	22,825	31,962		31,962	U
67	0603827A	Soldier Systems - Advanced Development	04	9,194	22,994		22,994	U
68	0604100A	Analysis Of Alternatives	04	9,685	9,805		9,805	U
69	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04					U
70	0604115A	Technology Maturation Initiatives	04	43,083	35,917		35,917	U
71	0604120A	Assured Positioning, Navigation and Timing (PNT)	04	11,447	30,058		30,058	U
72	0604319A	Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)	04	92,475	155,361		155,361	U
73	0305251A	Cyberspace Operations Forces and Force Support	04					U
		Advanced Component Development & Prototypes		298,467	506,123	1,500	507,623	
74	0604201A	Aircraft Avionics	05	39,583	18,639		18,639	U
75	0604270A	Electronic Warfare Development	05	5,792	18,843		18,843	U
76	0604280A	Joint Tactical Radio	05	9,454	4,546		4,546	U
77	0604290A	Mid-tier Networking Vehicular Radio (MNVR)	05	9,355	8,763		8,763	U
78	0604321A	All Source Analysis System	05	5,532	4,309		4,309	U
79	0604328A	TRACTOR CAGE	05	19,929	15,138		15,138	U
80	0604601A	Infantry Support Weapons	05	36,826	89,661		89,661	U

R-1C1A: Budget Amendment to the FY 2017 President's Budget Request for Overseas Contingency Operations (OCO), as of November 4, 2016 at 15:06:51

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Appropriation: 2040A Research, Development, Test & Eval, Army

Program Line Element No Number	Item -----	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	S e c
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61 0603774A	Night Vision Systems Advanced Development	04	10,321			10,321	U
62 0603779A	Environmental Quality Technology - Dem/Val	04	7,785			7,785	U
63 0603790A	NATO Research and Development	04	2,300			2,300	U
64 0603801A	Aviation - Adv Dev	04	10,014			10,014	U
65 0603804A	Logistics and Engineer Equipment - Adv Dev	04	20,834			20,834	U
66 0603807A	Medical Systems - Adv Dev	04	33,503			33,503	U
67 0603827A	Soldier Systems - Advanced Development	04	31,120			31,120	U
68 0604100A	Analysis Of Alternatives	04	6,608			6,608	U
69 0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04	35,132			35,132	U
70 0604115A	Technology Maturation Initiatives	04	70,047			70,047	U
71 0604120A	Assured Positioning, Navigation and Timing (PNT)	04	83,279			83,279	U
72 0604319A	Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)	04					U
73 0305251A	Cyberspace Operations Forces and Force Support	04	40,510			40,510	U
	Advanced Component Development & Prototypes		550,635	9,375		560,010	
74 0604201A	Aircraft Avionics	05	83,248			83,248	U
75 0604270A	Electronic Warfare Development	05	34,642			34,642	U
76 0604280A	Joint Tactical Radio	05					U
77 0604290A	Mid-tier Networking Vehicular Radio (MNVR)	05	12,172			12,172	U
78 0604321A	All Source Analysis System	05	3,958			3,958	U
79 0604328A	TRACTOR CAGE	05	12,525			12,525	U
80 0604601A	Infantry Support Weapons	05	66,943			66,943	U

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Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	Se
81	0604604A	Medium Tactical Vehicles	05	202				U
82	0604611A	JAVELIN	05	4,006	3,945		3,945	U
83	0604622A	Family of Heavy Tactical Vehicles	05	12,768				U
84	0604633A	Air Traffic Control	05	17,066	10,076		10,076	U
85	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05	2,663	15,374		15,374	U
86	0604642A	Light Tactical Wheeled Vehicles	05					U
87	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05					U
88	0604710A	Night Vision Systems - Eng Dev	05	58,997	67,582		67,582	U
89	0604713A	Combat Feeding, Clothing, and Equipment	05	2,983	1,763		1,763	U
90	0604715A	Non-System Training Devices - Eng Dev	05	8,775	27,155		27,155	U
91	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	15,294	34,569		34,569	U
92	0604742A	Constructive Simulation Systems Development	05	4,394	23,364		23,364	U
93	0604746A	Automatic Test Equipment Development	05	10,685	8,960		8,960	U
94	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	9,699	9,138		9,138	U
95	0604780A	Combined Arms Tactical Trainer (CATT) Core	05	33,422	21,622		21,622	U
96	0604798A	Brigade Analysis, Integration and Evaluation	05	82,957	99,242		99,242	U
97	0604802A	Weapons and Munitions - Eng Dev	05	17,312	21,379		21,379	U
98	0604804A	Logistics and Engineer Equipment - Eng Dev	05	23,652	46,039		46,039	U
99	0604805A	Command, Control, Communications Systems - Eng Dev	05	5,116	2,683		2,683	U
100	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	29,441	45,412		45,412	U
101	0604808A	Landmine Warfare/Barrier - Eng Dev	05	53,579	55,215		55,215	U

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Program Line Element No Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	S e c
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81 0604604A	Medium Tactical Vehicles	05					U
82 0604611A	JAVELIN	05	20,011			20,011	U
83 0604622A	Family of Heavy Tactical Vehicles	05	11,429			11,429	U
84 0604633A	Air Traffic Control	05	3,421			3,421	U
85 0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05	39,282			39,282	U
86 0604642A	Light Tactical Wheeled Vehicles	05	494			494	U
87 0604645A	Armored Systems Modernization (ASM) - Eng Dev	05	9,678			9,678	U
88 0604710A	Night Vision Systems - Eng Dev	05	84,519			84,519	U
89 0604713A	Combat Feeding, Clothing, and Equipment	05	2,054			2,054	U
90 0604715A	Non-System Training Devices - Eng Dev	05	30,774	33		30,807	U
91 0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	53,332		78,700	132,032	U
92 0604742A	Constructive Simulation Systems Development	05	17,887			17,887	U
93 0604746A	Automatic Test Equipment Development	05	8,813			8,813	U
94 0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	10,487			10,487	U
95 0604780A	Combined Arms Tactical Trainer (CATT) Core	05	15,068			15,068	U
96 0604798A	Brigade Analysis, Integration and Evaluation	05	89,716			89,716	U
97 0604802A	Weapons and Munitions - Eng Dev	05	80,365			80,365	U
98 0604804A	Logistics and Engineer Equipment - Eng Dev	05	75,098			75,098	U
99 0604805A	Command, Control, Communications Systems - Eng Dev	05	4,245			4,245	U
100 0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	41,124			41,124	U
101 0604808A	Landmine Warfare/Barrier - Eng Dev	05	39,630			39,630	U

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Program Line Element No Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	S e c
102 0604818A	Army Tactical Command & Control Hardware & Software	05	29,690	131,639		131,639	U
103 0604820A	Radar Development	05	5,022	12,309		12,309	U
104 0604822A	General Fund Enterprise Business System (GFEBBS)	05	5,500	21,155		21,155	U
105 0604823A	Firefinder	05	22,587	2,967		2,967	U
106 0604827A	Soldier Systems - Warrior Dem/Val	05	5,942	18,776		18,776	U
107 0604854A	Artillery Systems - EMD	05	1,838	1,953		1,953	U
108 0605013A	Information Technology Development	05	64,982	60,358		60,358	U
109 0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	62,831	121,011		121,011	U
110 0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	88,797	226,210		226,210	U
111 0605029A	Integrated Ground Security Surveillance Response Capability (IGSSR-C)	05					U
112 0605030A	Joint Tactical Network Center (JTNC)	05	8,615	13,357		13,357	U
113 0605031A	Joint Tactical Network (JTN)	05	17,305	18,055		18,055	U
114 0605032A	TRACTOR TIRE	05		5,677		5,677	U
115 0605033A	Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)	05					U
116 0605034A	Tactical Security System (TSS)	05					U
117 0605035A	Common Infrared Countermeasures (CIRCM)	05	169,196	101,570		101,570	U
118 0605036A	Combating Weapons of Mass Destruction (CWMD)	05					U
119 0605041A	Defensive CYBER Tool Development	05					U
120 0605042A	Tactical Network Radio Systems (Low-Tier)	05					U
121 0605047A	Contract Writing System	05					U
122 0605051A	Aircraft Survivability Development	05		78,112		78,112	U

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Line No	Program Element Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	Se
102	0604818A	Army Tactical Command & Control Hardware & Software	05	205,590			205,590	U
103	0604820A	Radar Development	05	15,983			15,983	U
104	0604822A	General Fund Enterprise Business System (GFEBs)	05	6,805			6,805	U
105	0604823A	Firefinder	05	9,235			9,235	U
106	0604827A	Soldier Systems - Warrior Dem/Val	05	12,393			12,393	U
107	0604854A	Artillery Systems - EMD	05	1,756			1,756	U
108	0605013A	Information Technology Development	05	74,236			74,236	U
109	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	155,584			155,584	U
110	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	184,221			184,221	U
111	0605029A	Integrated Ground Security Surveillance Response Capability (IGSSR-C)	05	4,980			4,980	U
112	0605030A	Joint Tactical Network Center (JTNC)	05	15,041			15,041	U
113	0605031A	Joint Tactical Network (JTN)	05	16,014			16,014	U
114	0605032A	TRACTOR TIRE	05	27,254		10,000	37,254	U
115	0605033A	Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)	05	5,032			5,032	U
116	0605034A	Tactical Security System (TSS)	05	2,904			2,904	U
117	0605035A	Common Infrared Countermeasures (CIRCM)	05	96,977	10,900		107,877	U
118	0605036A	Combating Weapons of Mass Destruction (CWMD)	05	2,089			2,089	U
119	0605041A	Defensive CYBER Tool Development	05	33,836		50,500	84,336	U
120	0605042A	Tactical Network Radio Systems (Low-Tier)	05	18,824			18,824	U
121	0605047A	Contract Writing System	05	20,663			20,663	U
122	0605051A	Aircraft Survivability Development	05	41,133	73,110		114,243	U

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Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	Se c
123	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05					U
124	0605350A	WIN-T Increment 3 - Full Networking	05	108,851	33,515		33,515	U
125	0605380A	AMF Joint Tactical Radio System (JTRS)	05	6,616	11,455		11,455	U
126	0605450A	Joint Air-to-Ground Missile (JAGM)	05	80,585	83,054		83,054	U
127	0605456A	PAC-3/MSE Missile	05	33,709	2,272		2,272	U
128	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05	147,250	222,075		222,075	U
129	0605625A	Manned Ground Vehicle	05	47,265	39,247		39,247	U
130	0605626A	Aerial Common Sensor	05	20,328	2		2	U
131	0605766A	National Capabilities Integration (MIP)	05	18,254	10,599		10,599	U
132	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05	43,302	32,486		32,486	U
133	0605830A	Aviation Ground Support Equipment	05	9,655	13,880		13,880	U
134	0210609A	Paladin Integrated Management (PIM)	05	77,210	152,288		152,288	U
135	0303032A	TROJAN - RH12	05	983	5,022		5,022	U
136	0304270A	Electronic Warfare Development	05	8,961	12,686		12,686	U
		System Development & Demonstration		1,604,756	2,085,147		2,085,147	
137	0604256A	Threat Simulator Development	06	21,691	27,535		27,535	U
138	0604258A	Target Systems Development	06	9,778	16,684		16,684	U
139	0604759A	Major T&E Investment	06	54,281	66,580		66,580	U
140	0605103A	Rand Arroyo Center	06	19,817	19,382		19,382	U
141	0605301A	Army Kwajalein Atoll	06	169,699	203,905		203,905	U
142	0605326A	Concepts Experimentation Program	06	18,757	19,430		19,430	U

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Line No	Program Element Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	Se
123	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05	83,995			83,995	U
124	0605350A	WIN-T Increment 3 - Full Networking	05					U
125	0605380A	AMF Joint Tactical Radio System (JTRS)	05	5,028			5,028	U
126	0605450A	Joint Air-to-Ground Missile (JAGM)	05	42,972			42,972	U
127	0605456A	PAC-3/MSE Missile	05					U
128	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05	252,811			252,811	U
129	0605625A	Manned Ground Vehicle	05					U
130	0605626A	Aerial Common Sensor	05					U
131	0605766A	National Capabilities Integration (MIP)	05	4,955			4,955	U
132	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05	11,530			11,530	U
133	0605830A	Aviation Ground Support Equipment	05	2,142			2,142	U
134	0210609A	Paladin Integrated Management (PIM)	05	41,498			41,498	U
135	0303032A	TROJAN - RH12	05	4,273			4,273	U
136	0304270A	Electronic Warfare Development	05	14,425			14,425	U
		System Development & Demonstration		2,265,094	84,043	139,200	2,488,337	
137	0604256A	Threat Simulator Development	06	25,675			25,675	U
138	0604258A	Target Systems Development	06	19,122			19,122	U
139	0604759A	Major T&E Investment	06	84,777			84,777	U
140	0605103A	Rand Arroyo Center	06	20,658			20,658	U
141	0605301A	Army Kwajalein Atoll	06	236,648			236,648	U
142	0605326A	Concepts Experimentation Program	06	25,596			25,596	U

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Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	Se
143	0605502A	Small Business Innovative Research	06	172,658				U
144	0605601A	Army Test Ranges and Facilities	06	271,377	279,896		279,896	U
145	0605602A	Army Technical Test Instrumentation and Targets	06	43,961	51,550		51,550	U
146	0605604A	Survivability/Lethality Analysis	06	33,210	33,246		33,246	U
147	0605606A	Aircraft Certification	06	4,667	4,760		4,760	U
148	0605702A	Meteorological Support to RDT&E Activities	06	6,289	8,303		8,303	U
149	0605706A	Materiel Systems Analysis	06	20,578	20,403		20,403	U
150	0605709A	Exploitation of Foreign Items	06	8,418	10,396		10,396	U
151	0605712A	Support of Operational Testing	06	48,953	49,337		49,337	U
152	0605716A	Army Evaluation Center	06	54,468	52,694		52,694	U
153	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	1,081	938		938	U
154	0605801A	Programwide Activities	06	63,687	60,319		60,319	U
155	0605803A	Technical Information Activities	06	28,781	28,478		28,478	U
156	0605805A	Munitions Standardization, Effectiveness and Safety	06	62,168	64,604		64,604	U
157	0605857A	Environmental Quality Technology Mgmt Support	06	2,512	3,186		3,186	U
158	0605898A	Army Direct Report Headquarters - R&D - MHA	06	48,951	48,955		48,955	U
159	0303260A	Defense Military Deception Initiative	06					U
160	0909999A	Financing for Cancelled Account Adjustments	06	233				U
		RDT&E Management Support		1,166,015	1,070,581		1,070,581	
161	0603778A	MLRS Product Improvement Program	07	17,852	18,397		18,397	U
162	0603813A	TRACTOR PULL	07		9,461		9,461	U

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Line No	Program Element Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	Se
143	0605502A	Small Business Innovative Research	06					U
144	0605601A	Army Test Ranges and Facilities	06	293,748			293,748	U
145	0605602A	Army Technical Test Instrumentation and Targets	06	52,404			52,404	U
146	0605604A	Survivability/Lethality Analysis	06	38,571			38,571	U
147	0605606A	Aircraft Certification	06	4,665			4,665	U
148	0605702A	Meteorological Support to RDT&E Activities	06	6,925			6,925	U
149	0605706A	Materiel Systems Analysis	06	21,677			21,677	U
150	0605709A	Exploitation of Foreign Items	06	12,415			12,415	U
151	0605712A	Support of Operational Testing	06	49,684			49,684	U
152	0605716A	Army Evaluation Center	06	55,905			55,905	U
153	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	7,959			7,959	U
154	0605801A	Programwide Activities	06	51,822			51,822	U
155	0605803A	Technical Information Activities	06	33,323			33,323	U
156	0605805A	Munitions Standardization, Effectiveness and Safety	06	40,545			40,545	U
157	0605857A	Environmental Quality Technology Mgmt Support	06	2,130			2,130	U
158	0605898A	Army Direct Report Headquarters - R&D - MHA	06	49,885			49,885	U
159	0303260A	Defense Military Deception Initiative	06	2,000			2,000	U
160	0909999A	Financing for Cancelled Account Adjustments	06					U
		RDT&E Management Support		1,136,134			1,136,134	
161	0603778A	MLRS Product Improvement Program	07	9,663			9,663	U
162	0603813A	TRACTOR PULL	07	3,960			3,960	U

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163	0605024A	Anti-Tamper Technology Support	07					U
164	0607131A	Weapons and Munitions Product Improvement Programs	07		4,945		4,945	U
165	0607133A	TRACTOR SMOKE	07		7,569		7,569	U
166	0607134A	Long Range Precision Fires (LRPF)	07					U
167	0607135A	Apache Product Improvement Program	07	86,099	65,562		65,562	U
168	0607136A	Blackhawk Product Improvement Program	07	48,406	66,653		66,653	U
169	0607137A	Chinook Product Improvement Program	07	35,424	32,407		32,407	U
170	0607138A	Fixed Wing Product Improvement Program	07	819	1,151		1,151	U
171	0607139A	Improved Turbine Engine Program	07	49,328	51,164		51,164	U
172	0607140A	Emerging Technologies from NIE	07	4,916	2,481		2,481	U
173	0607141A	Logistics Automation	07	3,513	1,673		1,673	U
174	0607665A	Family of Biometrics	07	1,332	13,237		13,237	U
175	0607865A	Patriot Product Improvement	07	57,962	89,816		89,816	U
176	0202429A	Aerostat Joint Project - COCOM Exercise	07	43,248	10,565		10,565	U
177	0203726A	Adv Field Artillery Tactical Data System	07	1,224				U
178	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07	33,996	35,719		35,719	U
179	0203735A	Combat Vehicle Improvement Programs	07	297,423	354,667		354,667	U
180	0203740A	Maneuver Control System	07	43,453	15,408		15,408	U
181	0203744A	Aircraft Modifications/Product Improvement Programs	07	40				U
182	0203752A	Aircraft Engine Component Improvement Program	07	372	364		364	U
183	0203758A	Digitization	07	5,765	4,361		4,361	U

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 (Dollars in Thousands)

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Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	Se
163	0605024A	Anti-Tamper Technology Support	07	3,638			3,638	U
164	0607131A	Weapons and Munitions Product Improvement Programs	07	14,517			14,517	U
165	0607133A	TRACTOR SMOKE	07	4,479			4,479	U
166	0607134A	Long Range Precision Fires (LRPF)	07	39,275			39,275	U
167	0607135A	Apache Product Improvement Program	07	66,441			66,441	U
168	0607136A	Blackhawk Product Improvement Program	07	46,765			46,765	U
169	0607137A	Chinook Product Improvement Program	07	91,848			91,848	U
170	0607138A	Fixed Wing Product Improvement Program	07	796			796	U
171	0607139A	Improved Turbine Engine Program	07	126,105			126,105	U
172	0607140A	Emerging Technologies from NIE	07	2,369			2,369	U
173	0607141A	Logistics Automation	07	4,563			4,563	U
174	0607665A	Family of Biometrics	07	12,098			12,098	U
175	0607865A	Patriot Product Improvement	07	49,482			49,482	U
176	0202429A	Aerostat Joint Project - COCOM Exercise	07	45,482			45,482	U
177	0203726A	Adv Field Artillery Tactical Data System	07					U
178	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07	30,455			30,455	U
179	0203735A	Combat Vehicle Improvement Programs	07	316,857			316,857	U
180	0203740A	Maneuver Control System	07	4,031			4,031	U
181	0203744A	Aircraft Modifications/Product Improvement Programs	07	35,793			35,793	U
182	0203752A	Aircraft Engine Component Improvement Program	07	259			259	U
183	0203758A	Digitization	07	6,483			6,483	U

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Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	Se
184	0203801A	Missile/Air Defense Product Improvement Program	07	4,917	3,154		3,154	U
185	0203802A	Other Missile Product Improvement Programs	07	40,468	35,951		35,951	U
186	0203808A	TRACTOR CARD	07	19,347	34,686		34,686	U
187	0205402A	Integrated Base Defense - Operational System Dev	07	4,196	10,750		10,750	U
188	0205410A	Materials Handling Equipment	07	802	402		402	U
189	0205412A	Environmental Quality Technology - Operational System Dev	07	270				U
190	0205456A	Lower Tier Air and Missile Defense (AMD) System	07	78,720	64,159		64,159	U
191	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	43,791	36,727		36,727	U
192	0208053A	Joint Tactical Ground System	07	10,209	20,515		20,515	U
194	0303028A	Security and Intelligence Activities	07	12,518	6,998		6,998	U
195	0303140A	Information Systems Security Program	07	13,627	31,154		31,154	U
196	0303141A	Global Combat Support System	07	5,225	21,574		21,574	U
197	0303142A	SATCOM Ground Environment (SPACE)	07	9,978	9,355		9,355	U
198	0303150A	WWMCCS/Global Command and Control System	07	2,493	7,034		7,034	U
201	0305179A	Integrated Broadcast Service (IBS)	07		750		750	U
202	0305204A	Tactical Unmanned Aerial Vehicles	07	20,290	13,225		13,225	U
203	0305206A	Airborne Reconnaissance Systems	07		22,870		22,870	U
204	0305208A	Distributed Common Ground/Surface Systems	07	20,155	25,592		25,592	U
205	0305219A	MQ-1C Gray Eagle UAS	07	46,472				U
206	0305232A	RQ-11 UAV	07					U
207	0305233A	RQ-7 UAV	07	16,389	11,797		11,797	U

R-1C1A: Budget Amendment to the FY 2017 President's Budget Request for Overseas Contingency Operations (OCO), as of November 4, 2016 at 15:06:51

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Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	Sec
184	0203801A	Missile/Air Defense Product Improvement Program	07	5,122			5,122	U
185	0203802A	Other Missile Product Improvement Programs	07	7,491			7,491	U
186	0203808A	TRACTOR CARD	07	20,333			20,333	U
187	0205402A	Integrated Base Defense - Operational System Dev	07					U
188	0205410A	Materials Handling Equipment	07	124			124	U
189	0205412A	Environmental Quality Technology - Operational System Dev	07					U
190	0205456A	Lower Tier Air and Missile Defense (AMD) System	07	69,417			69,417	U
191	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	22,044			22,044	U
192	0208053A	Joint Tactical Ground System	07	12,649			12,649	U
194	0303028A	Security and Intelligence Activities	07	11,619			11,619	U
195	0303140A	Information Systems Security Program	07	38,280			38,280	U
196	0303141A	Global Combat Support System	07	27,223			27,223	U
197	0303142A	SATCOM Ground Environment (SPACE)	07	18,815			18,815	U
198	0303150A	WWMCCS/Global Command and Control System	07	4,718			4,718	U
201	0305179A	Integrated Broadcast Service (IBS)	07					U
202	0305204A	Tactical Unmanned Aerial Vehicles	07	8,218			8,218	U
203	0305206A	Airborne Reconnaissance Systems	07	11,799			11,799	U
204	0305208A	Distributed Common Ground/Surface Systems	07	32,284			32,284	U
205	0305219A	MQ-1C Gray Eagle UAS	07	13,470			13,470	U
206	0305232A	RQ-11 UAV	07	1,613			1,613	U
207	0305233A	RQ-7 UAV	07	4,597			4,597	U

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Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	Se
208	0307665A	Biometrics Enabled Intelligence	07	1,973				U
209	0310349A	Win-T Increment 2 - Initial Networking	07	3,123	3,800		3,800	U
210	0708045A	End Item Industrial Preparedness Activities	07	73,419	60,422		60,422	U
9999	9999999999	Classified Programs		14,302	4,536		4,536	U
		Operational Systems Development		1,173,856	1,211,051		1,211,051	
Total Research, Development, Test & Eval, Army				6,744,134	7,562,170	1,500	7,563,670	

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Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	Se
208	0307665A	Biometrics Enabled Intelligence	07		7,104		7,104	U
209	0310349A	Win-T Increment 2 - Initial Networking	07	4,867			4,867	U
210	0708045A	End Item Industrial Preparedness Activities	07	62,287			62,287	U
9999	9999999999	Classified Programs		4,625			4,625	U
		Operational Systems Development		1,296,954	7,104		1,304,058	
Total Research, Development, Test & Eval, Army				7,515,399	100,522	139,200	7,755,121	

Department of the Army
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 Non RDT&E Title
 (Dollars in Thousands)

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Summary Recap of Budget Activities -----	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted
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Research, Development, Test, And Evaluation	595,913	579,342		579,342
Total Research, Development, Test & Evaluation	595,913	579,342		579,342
 Summary Recap of Non-RDT&E Title FYDP Programs -----				
Central Supply and Maintenance	595,913	579,342		579,342
Total Research, Development, Test & Evaluation	595,913	579,342		579,342

Department of the Army
 Budget Amendment to the FY 2017 President's Budget Request for Overseas Contingency Operations (OCO)
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 Non RDT&E Title
 (Dollars in Thousands)

04 Nov 2016

Summary Recap of Budget Activities	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total

Research, Development, Test, And Evaluation	388,609			388,609
Total Research, Development, Test & Evaluation	388,609			388,609
Summary Recap of Non-RDT&E Title FYDP Programs				

Central Supply and Maintenance	388,609			388,609
Total Research, Development, Test & Evaluation	388,609			388,609

Department of the Army
 Budget Amendment to the FY 2017 President's Budget Request for Overseas Contingency Operations (OCO)
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 Non RDT&E Title
 (Dollars in Thousands)

04 Nov 2016

Appropriation: 0390D Chem Agents & Munitions Destruction

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	Se
1	0708081D	Chemical Materials Agency	02	20,105	10,003		10,003	U
2	0708083D	Assembled Chemical Weapons Alternatives	02	575,808	569,339		569,339	U
		Research, Development, Test, And Evaluation		595,913	579,342		579,342	
Total Chem Agents & Munitions Destruction				595,913	579,342		579,342	

Department of the Army
 Budget Amendment to the FY 2017 President's Budget Request for Overseas Contingency Operations (OCO)
 Exhibit R-1 Budget Amendment to the FY 2017 President's Budget Request for Overseas Contingency Operations (OCO)
 Non RDT&E Title
 (Dollars in Thousands)

04 Nov 2016

Appropriation: 0390D Chem Agents & Munitions Destruction

Line No	Program Element Number	Item	Act	FY 2017 Base	FY 2017 OCO	FY 2017 OCO Amendment	FY 2017 Total	Se
1	0708081D	Chemical Materials Agency	02	7,717			7,717	U
2	0708083D	Assembled Chemical Weapons Alternatives	02	380,892			380,892	U
		Research, Development, Test, And Evaluation		388,609			388,609	
Total Chem Agents & Munitions Destruction				388,609			388,609	

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Appropriation 2040: Research, Development, Test & Evaluation, Army

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Defensive CYBER Tool Development	0605041A	119	05.....	45
TRACTOR TIRE	0605032A	114	05.....	

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Exhibit R-2, RDT&E Budget Item Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	15.294	34.569	53.332	78.700	132.032	25.950	41.477	23.566	33.477	Continuing	Continuing
126: FAAD C2 ED	-	0.000	0.000	17.076	-	17.076	5.809	21.819	5.828	21.826	Continuing	Continuing
146: Air & Msl Defense Planning Control Sys	-	13.018	15.757	15.561	-	15.561	15.914	16.108	14.294	8.325	Continuing	Continuing
149: Counter-Rockets, Artillery & Mortar	-	2.276	18.812	20.695	-	20.695	4.227	3.550	3.444	3.326	Continuing	Continuing
FG5: Counter Unmanned Aerial Systems (CUAS)	-	0.000	0.000	0.000	78.700	78.700	0.000	0.000	0.000	0.000	0.000	78.700

Note

FY 2017 funding increase of \$26.201 million includes \$17.076 million of AEPE funds transitioned from APE 655457 DU4 to APE 0604741A, project 126, to respond to an OSD directive. The remainder of the increase supports completion of an LPWS cruise missile capability study and modification development effort.

FY 2017 Overseas Contingency Operations (OCO) Amendment in the amount of \$78.700 million supports Joint Urgent Operational Needs Statement (JUONS) CC-0558 addressing Counter Unmanned Aerial Systems (CUAS) emerging threats in the operational environment posed by enemy UAS.

A. Mission Description and Budget Item Justification

The Advanced Electronic Protection Enhancement (AEPE) Program funds efforts to assess and initiate development of solutions to Army Air and Missile Defense (AMD) vulnerabilities from Advanced Electronic Attack (AEA). Army AMD sensors, Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS) Command and Control (C2), and Radio Frequency (RF) data and voice networks will be assessed against current and postulated AEA systems and techniques. Potential Electronic Protection (EP) solutions developed by the Army will be demonstrated and assessed in live and simulated AEA environments. Similarly, EP solutions developed by the Joint services and other Agencies (e.g., the Missile Defense Agency) will also be assessed for potential incorporation into Army AMD systems.

Note: AEPE funds transitioned from APE 655457 DU4 to APE 0604741A, Proj. 126, to respond to an OSD directive. AEPE is a new start in FY 2017. The last funding associated with AEPE was in FY 2013. The AEPE effort crosses all AMD System efforts of which only a portion is Air Defense Command and Control.

The Air and Missile Defense Planning and Control System (AMDPCS) is an Army Objective Force System that provides integration of Air and Missile Defense (AMD) operations at all echelons. AMDPCS systems are deployed with Air Defense Artillery (ADA) brigades, Army Air and Missile Defense Commands (AAMDCs), and Air Defense and Airspace Management (ADAM) Cells at the Brigade Combat Teams (BCT's), Multi Functional Support Brigades and Divisions/Corps. AMDPCS systems also provide air defense capabilities to Homeland Defense systems. ADAM Cells provide the Commander at BCTs, Brigades and Divisions with air defense situational awareness and airspace management capabilities. They also provide the interoperability link with Joint, multinational and coalition forces. AMDPCS components are vital in the transformation of ADA units and the activation of the Air & Missile Defense (AMD) Battalions. AMDPCS has three major components: (1) The Air and

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Exhibit R-2, RDT&E Budget Item Justification: PB Amended 2017 Army Date: November 2016

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev
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Missile Defense Workstation (AMDWS) is an automated defense and staff planning tool that displays the common tactical and operational 3-dimensional air picture. AMDWS is the air picture provider for the Army, producing an integrated and correlated air picture at all tactical levels and locations. AMDWS is also an integral component of Integrated Base Defense. AMDWS provides an interoperability link to multinational air defense forces; (2) The Air Defense System Integrator (ADSI) is a communications data link processor and display system that provides near-real time, 3-dimensional, joint airspace situational awareness and fire direction command and control for AMD forces; (3) The Army Air Defense shelter configurations use automated data processing equipment, tactical communications, Common Hardware Systems, standard vehicles and tactical power to provide AMD unit commanders and staffs with the capabilities to plan missions, direct forces, and control the airspace.

The Counter-Rocket, Artillery, Mortar (C-RAM) system-of-systems (SoS) is an evolutionary, non-developmental program that detects RAM launches; provides localized warning to the defended area, with sufficient time for personnel to take appropriate action; intercepts rounds in flight, thus preventing damage to ground forces or facilities; and enhances response to and defeat of enemy forces. The C-RAM capability is comprised of a combination of multi-service fielded and non-developmental item (NDI) sensors, command and control (C2) equipment, warning systems, and a modified U.S. Navy intercept system (Land-based Phalanx Weapon System (LPWS)), with a commercial off-the-shelf (COTS) wireless local area network. The Forward Area Air Defense Command and Control (FAAD C2) system, also under the management of the C-RAM Program Directorate, has been enhanced to integrate the sensors, weapons, and warning systems to provide C2 for the C-RAM SoS. The C-RAM SoS capability is currently deployed at multiple sites in Afghanistan, Iraq, and Egypt, providing correlated air and ground pictures, linking units to the Army Mission Command and the Joint Defense Network, and using various forms of communications to provide situational awareness and exchange of timely and accurate information to synchronize and optimize automated Shape, Sense, Warn, Intercept, Respond, and Protect decisions.

Multiple acquisition efforts are associated with the C-RAM program, including C-RAM Intercept, which fields existing LPWS guns to two Indirect Fire Protection Capability (IFPC)/Avenger composite Battalions, and RAM Warn, a horizontal technology insertion, using current C-RAM warning capability to provide early, localized warning to all Maneuver Brigade Combat Teams (BCT).

FY 2017 Overseas Contingency Operations (OCO) Amendment in the amount of \$78.700 million supports Joint Urgent Operational Needs Statement (JUONS) CC-0558 addressing Counter Unmanned Aerial Systems (CUAS) emerging threats in the operational environment posed by enemy UAS.

The total estimated cost of the CUAS Baseline effort is \$278.000 million. Rapid Acquisition Authority (RAA) was approved for the first quarter FY 2017 research and development efforts in the amount of \$65.500 million and was sourced by FY 2017 OCO Operations and Maintenance, Army (OMA) funds. Funding for FY2017 Procurement efforts are requested in the Indirect Fire Protection Family of Systems Line 080 in Other Procurement, Army (OPA) (SSN BZ0501A).

An additional RAA package in the amount of \$76.000 million will be provided to support the CUAS Acceleration plan which fields existing capability and provides immediate protection to the most at risk sites in the shortest time frame and in accordance with Office of the Secretary of Defense (OSD) direction.

For transparency and in support of the Counter Unmanned Aerial System (UAS) Joint Operational Needs For Statement (JUONS) CC-0558, Project FG5 was created to support the identification, development, testing, evaluation and integration of technologies to provide an overall evolutionary capability to defeat small Unmanned Aerial systems (UAS) threats. The CUAS effort will provide the capability for the warfighter to comprehensively detect, identify and defeat enemy Group 1 and 2 light weight, low altitude UAS.

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Exhibit R-2, RDT&E Budget Item Justification: PB Amended 2017 Army	Date: November 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>
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The CUAS effort involves a four phased development and testing approach of Counter UAS systems:

- Phase 0: Deploys available/interim capabilities to three high priority sites, conducts Operational Assessment in Theater. Systems will be stand-alone with full system characterization, operational and spectrum impacts evaluated in Phase 1. Phase 0 efforts have been funded by Joint Improvised-Threat Defeat Agency (JIDA).
- Phase 1: Limited Test at Yuma Proving Ground (YPG) takes an initial look at available systems on the network, development for sensors and other mature systems, experimental segment for emerging technology and initial fielding of selected sites.
- Phase 1a: Test multiple systems on the network, tests mature solutions and down selects the best solutions that will participate in Phase 2 (full JUON capability) and fielding to identified locations.
- Phase 2: Test fully networked, fixed/mobile capability, sustainable solution and deploy full JUON capability to all locations.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	15.898	24.569	27.131	-	27.131
Current President's Budget	15.294	34.569	53.332	78.700	132.032
Total Adjustments	-0.604	10.000	26.201	78.700	104.901
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	10.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-0.604	0.000	0.000	-	0.000
• Other Adjustments	0.000	0.000	26.201	-	26.201
• FY 2017 Overseas Contingency Operations Amendment	0.000	0.000	0.000	78.700	78.700

Change Summary Explanation

FY 2016 funding increase of \$10.000 million is a Congressional add to increase the overall effectiveness of the C-RAM system-of-systems through the integration of sensor communications and legacy systems and the development and integration of C-RAM network security enhancements.

FY 2017 funding increase of \$26.201 million includes \$17.076 million of AEPE funds transitioned from APE 655457 DU4 to APE 0604741A, project 126, to respond to an OSD directive. The remainder of the increase supports completion of an LPWS cruise missile capability study and modification development effort.

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Exhibit R-2, RDT&E Budget Item Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	

FY 2017 Overseas Contingency Operations (OCO) Amendment in the amount of \$78.700 million supports Joint Urgent Operational Needs Statement (JUONS) CC-0558 addressing Counter Unmanned Aerial Systems (CUAS) emerging threats in the operational environment posed by enemy UAS. Project FG5 was created to support JUONS CC-0558 and provide transparency of this effort.

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 126 / FAAD C2 ED
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
126: FAAD C2 ED	-	0.000	0.000	17.076	-	17.076	5.809	21.819	5.828	21.826	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Advanced Electronic Protection Enhancements (AEPE) funds transitioned from APE 655457 DU4 to respond to OSD directive. AEPE is a new start in FY 2017. The last funding associated with AEPE was in FY 2013.

A. Mission Description and Budget Item Justification

The Advanced Electronic Protection Enhancement (AEPE) Program funds efforts to assess and initiate development of solutions to Army Air and Missile Defense (AMD) vulnerabilities from Advanced Electronic Attack (AEA). Army AMD sensors, Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS) Command and Control (C2), and Radio Frequency (RF) data and voice networks will be assessed against current and postulated AEA systems and techniques. Potential Electronic Protection (EP) solutions developed by the Army will be demonstrated and assessed in live and simulated AEA environments. Similarly, EP solutions developed by the Joint services and other Agencies (e.g., the Missile Defense Agency) will also be assessed for potential incorporation into Army AMD systems.

The initial assessment event was conducted in 2QFY15. Subsequent events will be conducted approximately every two (2) years. Analysis and implementation that provide AEA solutions will occur between events and will be assessed at the next event after implementation.

The following tasks were developed based on previous AEPE demonstration results and the following planned activities will assess the AEA impacts on AMD components and development of countermeasures. The tasks for AEPE are: (1) Plan and execute periodic AEPE demonstrations with Army AMD systems and perform post-demonstration analysis. Integrate Joint service and other Agency AMD systems into AEPE demonstrations as appropriate. (2) Upon completion of AEPE demonstration analyses, create EP concepts to mitigate Army AMD sensor, C2, and RF data link vulnerabilities. (3) Develop EP tools for use by Army AMD systems to improve overall system performance in AEA environments. (4) Develop effects-based AEA Modeling and Simulation (M&S) to assess Army AMD EP concepts in Hardware-In-The-Loop (HWIL) environment. (5) Continue to collaborate with United States Strategic Command (USSTRATCOM) Joint Electromagnetic Preparedness for Advanced Combat (JEPAC) to evaluate, modify, and field existing Army AMD EP Tactics, Techniques, and Procedures (TTPs) in a Joint environment. Evaluate and modify applicable Joint EP TTPs for use in Army AMD systems. (6) Continually interface with intelligence communities to maintain cognizance of emerging AEA threats and incorporate these threats in future AEPE demonstrations. (7) Develop a time-phased EP roadmap that identifies the investments needed to improve the EP capabilities of Army AMD sensors, C2, and RF data and voice networks.

The AEPE effort crosses all AMD System efforts of which only a portion is Air Defense Command and Control.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Advanced Electronic Protection Enhancements	-	-	17.076	-	17.076

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 126 / <i>FAAD C2 ED</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Funding is provided for conduct of AEPE planning efforts, conduct of demonstrations and post-mission analysis.					
FY 2017 Base Plans: Funding is provided for conduct of AEPE planning efforts, conduct of demonstrations and post-mission analysis.					
Accomplishments/Planned Programs Subtotals	-	-	17.076	-	17.076

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

Remarks
Not applicable for this item.

D. Acquisition Strategy
Not applicable for this item.

E. Performance Metrics
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB Amended 2017 Army												Date: November 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev				126 / FAAD C2 ED								
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Other Government Agencies & Government Program Management	Various	Various : Various	2.252	-		-		0.692		-		0.692	Continuing	Continuing	Continuing	
Subtotal			2.252	-		-		0.692		-		0.692	-	-	-	
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
System Integration Assessment	Various	Various : Various	1.218	-		-		2.013		-		2.013	Continuing	Continuing	Continuing	
Concept Solutions	Various	Various : Various	1.531	-		-		3.905		-		3.905	Continuing	Continuing	Continuing	
Subtotal			2.749	-		-		5.918		-		5.918	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Component Assessments & Research and Trade Studies	Various	Various : Various	5.137	-		-		3.918		-		3.918	Continuing	Continuing	Continuing	
Modeling and Simulation	Various	Various : Various	3.377	-		-		-		-		-	Continuing	Continuing	Continuing	
Subtotal			8.514	-		-		3.918		-		3.918	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Demonstration Planning and Execution	Various	Various : Various	0.000	-		-		6.548		-		6.548	Continuing	Continuing	Continuing	
Subtotal			0.000	-		-		6.548		-		6.548	-	-	-	

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Exhibit R-4, RDT&E Schedule Profile: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 126 / <i>FAAD C2 ED</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
P-11 Demonstration Planning Efforts																																
P-11 Demonstration																																
P-11 Analysis Efforts, Trade Studies, and Implementation																																
P-12 Demonstration Planning Efforts																																
P-12 Demonstration																																
P-12 Analysis Efforts, Trade Studies, and Implementation																																
P-13 Demonstration Planning Efforts																																
P-13 Demonstration																																
P-13 Analysis Efforts, Trade Studies, and Implementation																																

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Exhibit R-4A, RDT&E Schedule Details: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 126 / <i>FAAD C2 ED</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
P-11 Demonstration Planning Efforts	1	2017	4	2017
P-11 Demonstration	4	2017	1	2018
P-11 Analysis Efforts, Trade Studies, and Implementation	2	2018	4	2018
P-12 Demonstration Planning Efforts	3	2018	3	2019
P-12 Demonstration	3	2019	4	2019
P-12 Analysis Efforts, Trade Studies, and Implementation	1	2020	4	2020
P-13 Demonstration Planning Efforts	4	2020	2	2021
P-13 Demonstration	3	2021	3	2021
P-13 Analysis Efforts, Trade Studies, and Implementation	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army										Date: November 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev				Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
146: Air & Msl Defense Planning Control Sys	-	13.018	15.757	15.561	-	15.561	15.914	16.108	14.294	8.325	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Air and Missile Defense Planning and Control System (AMDPCS) is an Army Objective Force System that provides integration of Air and Missile Defense (AMD) operations at all echelons. AMDPCS systems are deployed with Air Defense Artillery (ADA) brigades, Army Air and Missile Defense Commands (AAMDCs), and Air Defense and Airspace Management (ADAM) Cells at the Brigade Combat Teams (BCT's), Multi Functional Support Brigades and Divisions/Corps. AMDPCS systems also provide air defense capabilities to Homeland Defense systems. ADAM Cells provide the Commander at BCTs, Brigades and Divisions with air defense situational awareness and airspace management capabilities. They also provide the interoperability link with Joint, multinational and coalition forces. AMDPCS components are vital in the transformation of ADA units and the activation of the Air & Missile Defense (AMD) Battalions. AMDPCS has three major components: (1) The Air and Missile Defense Workstation (AMDWS) is an automated defense and staff planning tool that displays the common tactical and operational 3-dimensional air picture. AMDWS is the air picture provider for the Army, producing an integrated and correlated air picture at all tactical levels and locations. AMDWS is also an integral component of Integrated Base Defense. AMDWS provides an interoperability link to multinational air defense forces; (2) The Air Defense System Integrator (ADSI) is a communications data link processor and display system that provides near-real time, 3-dimensional, joint airspace situational awareness and fire direction command and control for AMD forces; (3) The Army Air Defense shelter configurations use automated data processing equipment, tactical communications, Common Hardware Systems, standard vehicles and tactical power to provide AMD unit commanders and staffs with the capabilities to plan missions, direct forces, and control the airspace.

FY17 funds the development, software engineering, testing and certification of the AMDWS, ADSI, and sheltered subsystem software as described below.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: AMDWS Software Development	10.024	11.975	12.335	-	12.335
Description: Continue AMDWS development and support of LandWarNet as well as various Common Operating Environments (COEs). Complete AMDWS software engineering and development consistent with COE requirements, evolving the air and missile defense planning and control requirements to a net-centric environment, and fulfilling the air defense force operations capabilities identified in the AMD TRADOC capabilities requirement list. Virtualize AMDWS software development and rehost onto COE Real-Time Computing Environment common hardware systems. Support the evolving development of the Force Operations portion of the Integrated Air and Missile Defense (IAMD) System of Systems.					
FY 2015 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 146 / <i>Air & Msl Defense Planning Control Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Continued AMDWS software engineering consistent with Capability Set 15-16 / COE v2 requirements. Continued to develop interfaces with IAMD systems. Support testing of defense design planning with C2BMC and THAAD. Maintain interconnectivity with PATRIOT. Develop Fires Gateway Modularization of AMDPCS External Interfaces and integrate it with IAMD.</p> <p>FY 2016 Plans: Begin AMDWS software engineering consistent with Capability Set 17-18 / COE v3 requirements. Support test of COE product. Work user requirements from 32nd, 94th, and 10th AAMDCs and ADA Brigades. Implement interface to the Cooperative Aircraft Surveillance System (CASS) in support of commercial aircraft de-confliction.</p> <p>FY 2017 Base Plans: Continue AMDWS software engineering consistent with Capability Set 17-18 / COE v3 requirements. Integrate COE AMDWS version, which is the initial Server-client Capability. Integrate the COE AMDWS with the ADAM. Update Air Force interfaces.</p>					
<p>Title: ADSI Software Engineering and Development</p> <p>Description: Continue ADSI software engineering and development in software versions 15, including testing and certification of capabilities for TacView Situational Awareness, with air control support, scenario generation and 3-dimensional capability across various tactical data links. The version 15 software upgrades the ADSI OS to use Windows 7 and Red Hat Linux.</p> <p>FY 2015 Accomplishments: Conducted Authority to Operate (ATO) and Army Interoperability Certification (AIC) of version 15.0 software. Continued to work virtual ADSI solution to keep ADSI common with COE software architecture strategy as a Real Time, Safety Critical, Embedded (RTSCE CE) system.</p> <p>FY 2016 Plans: Begin ADSI version 15.1 software development. Begin version 15.1 test activities. Complete implementation of baseline updates.</p> <p>FY 2017 Base Plans: Continue ADSI version 15.1 software development. Continue version 15.1 test activities, including certification.</p>	0.651	0.788	0.515	-	0.515
<p>Title: Engineering, Development, Test and Evaluation</p> <p>Description: Continued engineering, development, test and evaluation of the AMDPCS Family of Shelter (FoS) subsystems Objective configuration; continued evaluation and definitization of the AMDPCS tactical</p>	1.562	2.048	1.855	-	1.855

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 146 / <i>Air & Msl Defense Planning Control Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
communications, data processing and vehicle/shelter/power generation/environmental system block upgrade program for fielded systems. FY 2015 Accomplishments: Continued evaluation of AMDPCS FoS configurations. Further assessed and tested power system technologies. Evaluated the Cooperative Air Surveillance System (CASS) as a technology insertion. Continued evaluation of emerging secure wireless, secure VTC and data processing technologies. Supported ADAM at NIE 15.1. Supported IBCS-ADAM participation at NIE 15.2. FY 2016 Plans: Continue evaluation of emerging technologies for future application in AMDPCS. Support IBCS-ADAM COE configurations at NIE 16.1 and 16.2. Continue CASS development. Continue to work closely with PM IAMD to identify the ADAM cell configuration to support IBCS Fire Control Network (FCN). FY 2017 Base Plans: Continue evaluations of emerging technologies. Continue support of IBCS-ADAM COE configurations and CASS evaluations at NIE 17.1 and 17.2.					
Title: Software System Certification Testing, Accreditation, and Approval of Authority-to-Operate (ATO) Description: Continue software system certification testing, accreditation, and approval of ATOs for the various software systems; continue pursuit of approval of Host Based Security System (HBSS) or other authorized G6 systems; continue Army and Joint integration and interoperability assessments. FY 2015 Accomplishments: Continued software system certification testing, accreditation, and approval of ATOs. Continued Army and Joint integration and interoperability assessments. FY 2016 Plans: Continue software systems certification testing, accreditation, and approval of ATOs as required by the DOD Risk Management Framework process. Continue Army and Joint integration and interoperability assessments. FY 2017 Base Plans: Continue software systems certification testing, accreditation, and approval of ATOs as required by the DOD Risk Management Framework process. Continue Army and Joint integration and interoperability assessments.	0.781	0.946	0.856	-	0.856
Accomplishments/Planned Programs Subtotals	13.018	15.757	15.561	-	15.561

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• AD5070: AD5070, AMDPCS	27.374	28.176	54.376	69.958	124.334	17.005	17.960	6.366	6.951	Continuing	Continuing
• PE 0604741A, Proj 149: PE 0604741A, Proj 149, Counter- Rockets, Artillery & Mortar	2.276	18.812	20.695	-	20.695	4.227	3.550	3.444	3.326	Continuing	Continuing
• SSN H30503: SSN H30503, Rocket, Artillery, Mortar (RAM) Warn (Parent is IFPC Family of Systems: BZ0501)	27.652	42.458	25.410	4.270	29.680	11.380	3.472	-	-	0	114.642
• SSN H30504: SSN H30504, C- RAM Enhancements (Parent is IFPC Family of Systems: BZ0501)	40.644	18.221	23.017	-	23.017	-	-	-	-	0	81.882
• PE 06043019A, Proj DU3: PE 06043019A, Proj DU3, IFPC (FY12 PE0603305A IFPC II - Intercept)	92.475	155.361	-	-	-	40.003	80.004	12.004	12.006	Continuing	Continuing
• PE 0605457A, Proj S40: PE 0605457A, Proj S40, Army Integrated Air and Missile Defense (AIAMD)	147.250	220.075	252.811	-	252.811	169.070	152.942	32.914	34.447	Continuing	Continuing
• SSN BZ5075: SSN BZ5075, IAMD Battle Command System	-	20.917	204.969	-	204.969	287.220	372.916	440.567	439.780	Continuing	Continuing
• PE 060482A, Proj E10: PE 060482A, Proj E10, Sentinel	5.022	12.309	15.983	-	15.983	20.844	20.612	30.106	41.402	Continuing	Continuing

Remarks

This program is an integral part of the Army Integrated Air and Missile Defense (IAMD) architecture.

D. Acquisition Strategy

The acquisition strategy relies on non-development items (NDI) and evolutionary software development to rapidly meet the demands of air defense battle management command, control, communications, computers, and intelligence (BM/C4I) requirements and to keep pace with automated information technologies. The concept of evolutionary software development will be accomplished in a series of AMDWS and ADSI Block releases and upgrades. AMDPCS is being developed for both the Army's Active and Reserve components.

AMDWS is a prime component of C-RAM. It provides the Forward Operating Base (FOB) commander with clearance of fires display and enemy munitions flight paths.

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 146 / <i>Air & Msl Defense Planning Control Sys</i>

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Various	26.491	1.640	Dec 2014	1.757	Dec 2015	1.727	Dec 2017	-		1.727	Continuing	Continuing	0
Subtotal			26.491	1.640		1.757		1.727		-		1.727	-	-	0.000

Remarks
Not Applicable

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AMDWS Software Development and Engineering	SS/CPFF	Northrop Grumman : Huntsville AL	110.804	9.951	Oct 2014	11.660	Oct 2015	11.604	Oct 2016	-		11.604	Continuing	Continuing	Continuing
ADSI Software Development and Engineering	SS/T&M	Ultra Electronics : Austin, TX	6.642	0.089	Feb 2015	0.112	Feb 2016	0.078	Feb 2017	-		0.078	Continuing	Continuing	Continuing
Developmental Engineering	Various	Various : Various	36.339	1.211	Dec 2014	2.071	Dec 2015	2.020	Dec 2016	-		2.020	Continuing	Continuing	Continuing
Subtotal			153.785	11.251		13.843		13.702		-		13.702	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Certification/Testing	Various	JITC : Ft Huachuca, AZ	1.021	0.053	Feb 2015	0.073	Feb 2016	0.054	Feb 2017	-		0.054	Continuing	Continuing	Continuing
Interoperability Assessment	Various	CTSF : Ft Hood, TX	1.338	0.074	May 2015	0.084	May 2016	0.078	May 2017	-		0.078	Continuing	Continuing	Continuing
Subtotal			2.359	0.127		0.157		0.132		-		0.132	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB Amended 2017 Army							Date: November 2016						
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev				Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys						
	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	182.635	13.018		15.757		15.561		-		15.561	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AMDWS Block IV Contract	AMDWS Block IV																											
AMDWS Block V Contract					AMDWS Contract																							
AMDWS Contract																					AMDWS Contract							
AMDWS Software Block Development, Testing, Certification					AMDWS Software Block Testing (Includes Intra-Army Interoperability Cert)																							
AMDWS Capability Set and COE Development and Test					AMDWS CS & COE Development & Test																							
AMDWS AMD Interfaces: C2BMC, C2IS, C2AOS, AOC WS, Patriot, IB					C2BMC, C2IS, C2AOS, AOC WS, Patriot, IBCS, THAAD, C-RAM C2, TBMCS, COE, ABCS																							
ADSI Software Service Level Testing, Interoperability Certification					ADSI SW SLT, Interoperability Cert																							
COE ADAM Shelter in Army Warfighting Assessment (AWA) 16.1 DOT					AWA 16.1																							
AWA 17.1					17.1																							
AWA 18.1									18.1																			
AWA 19.1													19.1															
AWA 20.1																	20.1											
AWA 21.1																					21.1							

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Exhibit R-4, RDT&E Schedule Profile: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 146 / <i>Air & Msl Defense Planning Control Sys</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AWA 22.1																					22.1							
NIE 16.2																					NIE 16.2							
NIE 17.2																					17.2							
NIE 18.2																					18.2							
NIE 19.2																					19.2							
NIE 20.2																					20.2							
NIE 21.2																					21.2							

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Exhibit R-4A, RDT&E Schedule Details: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AMDWS Block IV Contract	2	2011	2	2016
AMDWS Block V Contract	2	2016	2	2021
AMDWS Contract	2	2021	2	2026
AMDWS Software Block Development, Testing, Certification	3	2007	4	2021
AMDWS Capability Set and COE Development and Test	1	2013	1	2022
AMDWS AMD Interfaces: C2BMC, C2IS, C2AOS, AOC WS, Patriot, IBCS, THAAD, C-RAM C2	4	2012	4	2021
ADSI Software Service Level Testing, Interoperability Certification	1	2005	4	2021
COE ADAM Shelter in Army Warfighting Assessment (AWA) 16.1 DOTMLPF Evaluation	4	2015	1	2016
AWA 17.1	4	2016	1	2017
AWA 18.1	4	2017	1	2018
AWA 19.1	4	2018	1	2019
AWA 20.1	4	2019	1	2020
AWA 21.1	4	2020	1	2021
AWA 22.1	4	2021	1	2022
NIE 16.2	2	2016	3	2016
NIE 17.2	2	2017	3	2017
NIE 18.2	2	2018	3	2018
NIE 19.2	2	2019	3	2019
NIE 20.2	2	2020	3	2020
NIE 21.2	2	2021	3	2021

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army										Date: November 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>				Project (Number/Name) 149 / <i>Counter-Rockets, Artillery & Mortar</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
149: <i>Counter-Rockets, Artillery & Mortar</i>	-	2.276	18.812	20.695	-	20.695	4.227	3.550	3.444	3.326	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Counter-Rocket, Artillery, Mortar (C-RAM) system-of-systems (SoS) is an evolutionary, non-developmental program that detects RAM launches; provides localized warning to the defended area, with sufficient time for personnel to take appropriate action; intercepts rounds in flight, thus preventing damage to ground forces or facilities; and enhances response to and defeat of enemy forces. The C-RAM capability is comprised of a combination of multi-service fielded and non-developmental item (NDI) sensors, command and control (C2) equipment, warning systems, and a modified U.S. Navy intercept system (Land-based Phalanx Weapon System (LPWS)), with a commercial off-the-shelf (COTS) wireless local area network. The Forward Area Air Defense Command and Control (FAAD C2) system, also under the management of the C-RAM Program Directorate, has been enhanced to integrate the sensors, weapons, and warning systems to provide C2 for the C-RAM SoS. The C-RAM SoS capability is currently deployed at multiple sites in Afghanistan, Iraq, and Egypt, providing correlated air and ground pictures, linking units to the Army Mission Command and the Joint Defense Network, and using various forms of communications to provide situational awareness and exchange of timely and accurate information to synchronize and optimize automated Shape, Sense, Warn, Intercept, Respond, and Protect decisions.

The deployment of the C-RAM SoS was accomplished through an incremental acquisition process driven by urgent operational needs, theater priorities, and emerging capability requirements to provide a counter-RAM capability to combat forces. The C-RAM SoS approach was initially validated by a Proof of Principle demonstration in December 2004 and has undergone more than 25 Army Test and Evaluation Command (ATEC)-supported operational assessments to incorporate multiple improvements in response to changes in threat tactics and lessons learned. C-RAM capabilities are currently deployed to locations in support of Operation Freedom's Sentinel (OFS), Operation Inherent Resolve (OIR), and Task Force Sinai (TFS). Continuing C-RAM SoS improvement efforts, required to meet emerging theater requirements, include C2 and LPWS software upgrades as well as integration and deployment of Ku band Radio Frequency System (KuRFS) radars for an enhanced detection capability against stressing threats. Base RDTE funding for FY 2015 and beyond supports maintenance of C-RAM C2 basic Air Defense functionality. Support of the existing C-RAM SoS capability deployed in theater has been through the Overseas Contingency Operations (OCO) process.

Recent directed enhancements to the C-RAM SoS capability included use of Army tactical communications rather than commercial systems; integration of Warn functionality into the C2 workstation to reduce complexity and footprint; and integration with Unmanned Aircraft Systems (UAS) Universal Ground Control Station (UGCS) for enhanced situational awareness, combat identification, and response options. FY16-17 enhancements include testing and upgrade of dynamic clearance of unplanned fires (DCUF) in conjunction with the Advanced Field Artillery Tactical Data System (AFATDS) V2 for rapid and enhanced response, integration of sensor communications and legacy systems, development and integration of C-RAM network security enhancements, and completion of an LPWS cruise missile capability study and modification development effort.

FY 2017 Base RDT&E dollars in the amount of \$20.695 million provide C-RAM C2 development and upgrades, including an automated unplanned fires clearance capability, as well as an LPWS cruise missile capability study and modification development.

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 149 / Counter-Rockets, Artillery & Mortar

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: C-RAM C2 Software Development and Enhancements</p> <p>Description: Funds system-of-systems development and upgrades based on changes in threat, integration of emerging requirements from external PMs (Mission Command) and other Services/agencies, technology insertions (IP-based communications), and interoperability requirements (Joint interoperability, MIL Standard), and provides development and regression testing to ensure C-RAM C2 enhancements do not negatively impact the performance of the other C-RAM pillars. Includes Host Based Security System (HBSS) (Information Assurance compliance).</p> <p>FY 2015 Accomplishments: Completed development of Land-based Phalanx Weapon System (LPWS) enhanced battle management and improved cueing for C-RAM C2 control over LPWS (increases overall system effectiveness). Began Multi-Mission Launcher (MML) integration for FY16 demonstration.</p> <p>FY 2016 Plans: Complete integration into C-RAM architecture for demonstration of MML capability. Incorporate LPWS advanced battle management upgrades, support C-RAM C2 v5.5C Materiel Release, and initiate C-RAM convergence with Integrated Air and Missile Defense (IAMD).</p> <p>FY 2017 Base Plans: Conduct C-RAM Sensor Resource Management effort to optimize the use of C-RAM system-of-systems sensors to increase overall system effectiveness (includes C-RAM sensor high priority sector search, target cueing, and fire control support). Continue advanced battle management updates for LPWS. Incorporate sensor measurement report processing for improved target tracking, and continue C-RAM convergence with IAMD.</p>	2.276	4.377	4.465	-	4.465
<p>Title: Dynamic Clearance of Unplanned Fires (DCUF)</p> <p>Description: Provides an automated unplanned fires clearance capability, enabling the safe engagement of targets that would not be possible with current, manual procedures. Provides more rapid clearance of airspace and more effective engagements of unplanned targets.</p> <p>FY 2016 Plans:</p>	-	4.435	6.701	-	6.701

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 149 / <i>Counter-Rockets, Artillery & Mortar</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Funds DCUF participation within the Maneuver Fires Integration Experiment (MFI) for the purpose of demonstrating the effectiveness of the DCUF contribution to the Brigade Combat Team (BCT) warfight and informing the TRADOC requirements generation process. FY 2017 Base Plans: Complete DCUF software development and Materiel Release activities based on the DCUF requirements established during FY16.					
Title: C-RAM Capability Enhancements Description: Funds capability enhancements to increase the overall effectiveness of the C-RAM system-of-systems through the integration of sensor communications and legacy systems and the development and integration of C-RAM network security enhancements. Completes LPWS cruise missile capability study and modification development efforts. FY 2016 Plans: Integrate sensor communications and legacy systems. Develop and integrate C-RAM network security enhancements. FY 2017 Base Plans: Complete LPWS cruise missile capability study and modification development efforts.	-	10.000	9.529	-	9.529
Accomplishments/Planned Programs Subtotals	2.276	18.812	20.695	-	20.695

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	<u>Cost To Complete</u>	<u>Total Cost</u>
• SSN H30503: <i>SSN H30503, Rocket, Artillery, Mortar (RAM) Warn (Parent is IFPC Family of Systems: BZ0501)</i>	27.652	42.458	25.410	4.270	29.680	11.380	3.472	-	-	0.000	114.642
• SSN H30504: <i>SSN H30504, C-RAM Enhancements (Parent is IFPC Family of Systems: BZ0501)</i>	40.644	18.221	23.017	-	23.017	-	-	-	-	0.000	81.882
• PE 0604741A, Proj 146: <i>PE 0604741A, Proj 146,</i>	13.018	15.757	15.561	-	15.561	15.914	16.108	14.294	8.325	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 149 / Counter-Rockets, Artillery & Mortar
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
<i>Air & Missile Defense</i>											
<i>Planning and Control System</i>											
• SSN AD5070: SSN 5070, <i>Air & Missile Defense</i>	27.374	28.176	54.376	69.958	124.334	17.005	17.960	6.366	6.951	Continuing	Continuing
<i>Planning and Control System</i>											
• PE 0604319A, Proj DU3: PE 0604319A, Proj DU3, IFPC2 (FY12 PE0603305A IFPC II - Intercept)	92.475	155.361	-	-	-	40.003	80.004	12.004	12.006	Continuing	Continuing
• PE 0605457A, Proj S40: PE 0605457A, Proj S40, <i>Army Integrated Air and</i> <i>Missile Defense (AIAMD)</i>	147.250	222.075	252.811	-	252.811	169.070	152.942	32.914	34.447	Continuing	Continuing
• SSN BZ5075: SSN BZ5075, <i>IAMD Battle Command System</i>	-	20.917	204.969	-	204.969	287.220	372.916	440.567	439.780	Continuing	Continuing
• PE 060482A, Proj E10: PE 060482A, Proj E10, Sentinel	5.022	12.309	15.983	-	15.983	20.844	20.612	30.106	41.402	Continuing	Continuing
• PE 0604823A, Proj L86: PE 0604823A, Proj L86, Lightweight <i>Counter Mortar Radar (LCMR)</i>	-	2.967	3.187	-	3.187	3.463	3.500	-	-	0.000	13.117
• PE 0604823A, Proj L88: PE 0604823A, Proj L88, <i>Enhanced AN/TPQ-36</i>	22.587	-	6.048	-	6.048	7.351	6.670	8.415	9.104	Continuing	Continuing
• SSN B05201: SSN B05201, Lightweight Counter <i>Mortar Radar (LCMR)</i>	29.358	63.472	74.038	25.892	99.930	10.855	9.618	-	-	0.000	213.233
• SSN B05310: SSN B05310, <i>Enhanced AN/TPQ-36</i>	154.520	198.379	314.509	-	314.509	214.357	98.940	86.986	14.893	Continuing	Continuing
• SSN BZ7325: SSN BZ7325, Mod of In-Svc Equip (Firefinder Radars)	4.186	-	-	-	-	-	-	-	-	0.000	4.186

Remarks

This program is an integral part of the Army Integrated Air and Missile Defense (IAMD) architecture.

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 149 / <i>Counter-Rockets, Artillery & Mortar</i>

D. Acquisition Strategy

The C-RAM program is following an evolutionary acquisition strategy for rapid fielding of mature technology to the user. The objective of the strategy is to balance needs, available technology, and resources to quickly provide a robust capability to engage RAM threats. Both C-RAM Intercept (LPWS) and RAM Warn have transitioned to acquisition programs and continue to capitalize on RDTE investments (e.g., reuse/repurpose of Navy interceptor, Future Combat Systems (FCS) sensor technology development for Ku band Radio Frequency System (KuRFS) radar, etc.).

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB Amended 2017 Army												Date: November 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev				149 / Counter-Rockets, Artillery & Mortar							
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration	Various	Various : Various	22.685	0.211		1.706		1.876		-		1.876	Continuing	Continuing	Continuing
Subtotal			22.685	0.211		1.706		1.876		-		1.876	-	-	-
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Northrop Grumman	C/CPIF	C-RAM C2 Development and Enhancements : Redondo Beach, CA	91.739	2.065	Apr 2015	15.156	Apr 2016	9.591	Apr 2017	-		9.591	Continuing	Continuing	Continuing
Raytheon Company	C/CPIF	Improved Interceptor : Tucson, AZ	77.675	-		-		-		-		-	0	77.675	0
Raytheon Company	C/CPIF	LPWS Enhancements : Tucson, AZ	3.500	-		-		6.807	Aug 2017	-		6.807	0	10.307	0
Northrop Grumman	C/CPFF	Modeling and Simulation : Redondo Beach, CA	1.800	-		-		-		-		-	0	1.800	0
Subtotal			174.714	2.065		15.156		16.398		-		16.398	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
OGA	Various	TBD : TBD	28.354	-		1.950		2.421		-		2.421	Continuing	Continuing	Continuing
Subtotal			28.354	-		1.950		2.421		-		2.421	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 149 / Counter-Rockets, Artillery & Mortar
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	225.753	2.276	18.812	20.695	-	20.695	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 149 / <i>Counter-Rockets, Artillery & Mortar</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Develop/Enhance C-RAM SoS (Sense & Warn, Intercept) per Theater ONS / JUON																											
C-RAM C2 Development, Updates, Virtualization, & Integration w/IAMD																												
C-RAM System-of-Systems (SoS)																												
C-RAM C2 Development																												
(1) C-RAM C2					v5.5C-2.0 FMR ▲ ₁																							
(2) Full Materiel Release (FMR)									▲ ₂ v5.5C-2.2 FMR																			
C2 & Warn Improvements, DCUF Upgrades																												
Sensor Integ., LPWS CMD Study																												
C-RAM Directed Enhancements - Integration & Test																												
C-RAM FY16-FY17 Enhancements - Integration & Test																												
(3) C-RAM Intercept Operational Assessment (OA)	▲ ₃ C-RAM Intercept OA																											
(4) C-RAM Intercept (LPWS Spiral 6.0) Materiel Release					▲ ₄ C-RAM Intercept Materiel Release																							
C-RAM Intercept Logistics Demonstration					C-RAM Intercept Log Demo																							

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Exhibit R-4A, RDT&E Schedule Details: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 149 / <i>Counter-Rockets, Artillery & Mortar</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
C-RAM System-of-Systems (SoS)	1	2007	4	2021
C-RAM C2 Development	1	2013	4	2021
C-RAM C2	2	2016	2	2016
Full Materiel Release (FMR)	3	2016	3	2016
C-RAM Directed Enhancements - Integration & Test	1	2012	4	2017
C-RAM FY16-FY17 Enhancements - Integration & Test	1	2016	4	2017
C-RAM Intercept Operational Assessment (OA)	2	2015	2	2015
C-RAM Intercept (LPWS Spiral 6.0) Materiel Release	2	2016	2	2016
C-RAM Intercept Logistics Demonstration	4	2017	1	2018

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army										Date: November 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>			Project (Number/Name) FG5 / <i>Counter Unmanned Aerial Systems (CUAS)</i>				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
FG5: <i>Counter Unmanned Aerial Systems (CUAS)</i>	-	0.000	0.000	0.000	78.700	78.700	0.000	0.000	0.000	0.000	0.000	78.700
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project FG5 has been created for transparency and in support the Counter Aerial Unmanned Systems Joint Operational Needs Statement (JUONS) CC-0558.

A. Mission Description and Budget Item Justification

FY 2017 Overseas Contingency Operations (OCO) Amendment in the amount of \$78.700 million supports Joint Urgent Operational Needs Statement (JUONS) CC-0558 addressing Counter Unmanned Aerial Systems (CUAS) emerging threats in the operational environment posed by enemy UAS.

The total estimated cost of the CUAS Baseline effort is \$278.000 million. Rapid Acquisition Authority (RAA) was approved for the first quarter FY 2017 research and development efforts in the amount of \$65.500 million and was sourced by FY 2017 OCO Operations and Maintenance, Army (OMA) funds and funding for procurement efforts are requested in Indirect Fire Protection Family of Systems Line 080 in Other Procurement, Army (OPA) (SSN BZ0501A).

An additional RAA package in the amount of \$76.000 million will be provided to support the CUAS Acceleration plan which fields existing capability and provides immediate protection to the most at risk sites in the shortest time frame and in accordance with Office of the Secretary of Defense (OSD) direction.

For transparency and in support of the Counter Unmanned Aerial System (UAS) Joint Operational Needs for Statement (JUONS) CC-0558, Project FG5 was created to support the identification, development, testing, evaluation and integration of technologies to provide an overall evolutionary capability to defeat small Unmanned Aerial systems (UAS) threats. The CUAS effort will provide the capability for the warfighter to comprehensively detect, identify and defeat enemy Group 1 and 2 light weight, low altitude UAS.

The CUAS effort involves a four phased development and testing approach of Counter UAS systems:

- Phase 0: Deploys available/interim capabilities to three high priority sites, conducts Operational Assessment in Theater. Systems will be stand-alone with full system characterization, operational and spectrum impacts evaluated in Phase 1. Phase 0 efforts have been funded by Joint Improvised-Threat Defeat Agency (JIDA).
- Phase 1: Limited Test at Yuma Proving Ground (YPG) takes an initial look at available systems on the network, development for sensors and other mature systems, experimental segment for emerging technology and initial fielding of selected sites.
- Phase 1a: Test multiple systems on the network, tests mature solutions and down selects the best solutions that will participate in Phase 2 (full JUON capability) and fielding to identified locations.

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) FG5 / <i>Counter Unmanned Aerial Systems (CUAS)</i>

- Phase 2: Test fully networked, fixed/mobile capability, sustainable solution and deploy full JUON capability to all locations.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Counter Unmanned Aerial System Phase 1a Baseline Efforts Description: Phase 1a – Test systems on the network, tests mature solutions and down selects the best solutions that will participate in Phase 2 (full JUON capability). Completion of fielding at all identified locations. FY 2017 Base Plans: This is no base funding for this project. FY 2017 OCO Plans: Phase 1a efforts include engineering, integration and test. Algorithms, signal processing and library software. Library and System of Systems Integration and assessment support. Non-Program of Record Prototype development after selection for maturation and fielding. Obsolescence design and integration.	-	-	0.000	41.190	41.190
Title: Counter Unmanned Aerial System Phase 2 Baseline RDT&E Efforts Description: Phase 2 – Test fully networked, fixed/mobile capability, sustainable solution and deploy full JUON capability. FY 2017 Base Plans: There is no base funding for this project. FY 2017 OCO Plans: Phase 2 RDT&E efforts include test site support, engineering, integration and test and non-program of record prototype development after selection for maturation and fielding.	-	-	0.000	37.510	37.510
Accomplishments/Planned Programs Subtotals	-	-	0.000	78.700	78.700

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• Rapid Acquisition Authority (RAA) 1: <i>Rapid Acquisition Authority (RAA) 1 for Baseline Plan. Source: FY 2017 OCO OMA</i>	-	-	0.000	65.500	65.500	-	-	-	-	0.000	65.500

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army	Date: November 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (CUAS)
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• BZ0501A - Other Procurement, Army: FY17 Other Procurement, Army OCO Amendment funds to support hardware and equipment required for material solution.	-	-	0.000	72.000	72.000	62.000	-	-	-	0	134.000
• Rapid Acquisition Authority (RAA) 2: Rapid Acquisition Authority (RAA) 2 for Acceleration Plan. Source: FY 2017 OCO OMA	-	-	0.000	76.000	76.000	-	-	-	-	0	76.000

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (CUAS)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Phase 1a Engineering, Integration and Test	MIPR	Various : Various	0.000	-		-		0.000		4.320		4.320	0	4.320	0
Phase 1a Algorithms, Signal Processing and Library Software	MIPR	Various : Various	0.000	-		-		0.000		4.000		4.000	0	4.000	0
Phase 1a Library and System of Systems Integration and Assessment Support	MIPR	Various : Various	0.000	-		-		0.000		4.000		4.000	0	4.000	0
Phase 1a Non-Program of Record Prototype Development after selection for maturation and fielding	MIPR	Various : Various	0.000	-		-		0.000		26.370		26.370	0	26.370	0
Phase 1a Obsolescence Design and Integration	MIPR	Various : Various	0.000	-		-		0.000		2.500		2.500	0	2.500	0
Phase 2 Test Site Support	MIPR	Various : Various	0.000	-		-		0.000		7.000		7.000	0	7.000	0
Phase 2 Engineering, Integration and Test	MIPR	Various : Various	0.000	-		-		0.000		4.150		4.150	0	4.150	0
Phase 2 Non-Program of Record Prototype Development after selection for maturation and fielding	MIPR	Various : Various	0.000	-		-		0.000		26.360		26.360	0	26.360	0
Subtotal			0.000	-		-		0.000		78.700		78.700	0.000	78.700	0.000

Remarks
 FY 2017 Overseas Contingency Operations (OCO) Amendment in the amount of \$78.700 million supports Joint Urgent Operational Needs Statement (JUONS) CC-0558 addressing Counter Unmanned Aerial Systems (CUAS) emerging threats in the operational environment posed by enemy UAS.

Phase 0 efforts have been funded by Joint Improvised-Threat Defeat Agency (JIDA). Rapid Acquisition Authority (RAA) was approved for the first quarter FY 2017 research and development efforts in the amount of \$65.500 million and was sourced by FY 2017 OCO Operations and Maintenance, Army (OMA) funds and funding for procurement efforts are requested in Indirect Fire Protection Family of Systems Line 080 in Other Procurement, Army (OPA) (SSN BZ0501A).

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Exhibit R-4, RDT&E Schedule Profile: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (CUAS)
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Phase 0 Deployment of Interim Capability																																
Phase 1 Limited Test and Evaluation of Available Systems																																
Phase 1a Test and Evaluation of Emerging Technology and Available Ma																																
Phase 2 Test and Evaluation																																

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Exhibit R-4A, RDT&E Schedule Details: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) FG5 / <i>Counter Unmanned Aerial Systems (CUAS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Phase 0 Deployment of Interim Capability	4	2016	2	2017
Phase 1 Limited Test and Evaluation of Available Systems	1	2017	4	2017
Phase 1a Test and Evaluation of Emerging Technology and Available Mature Systems	2	2017	2	2017
Phase 2 Test and Evaluation	2	2017	2	2018

Note

FY 2017 Overseas Contingency Operations (OCO) Amendment in the amount of \$78.700 million supports Joint Urgent Operational Needs Statement (JUONS) CC-0558 addressing Counter Unmanned Aerial Systems (CUAS) emerging threats in the operational environment posed by enemy UAS.

The total estimated cost of the CUAS Baseline effort is \$278.000 million. Rapid Acquisition Authority (RAA) was approved for the first quarter FY 2017 research and development efforts in the amount of \$65.500 million and was sourced by FY 2017 OCO Operations and Maintenance, Army (OMA) funds. Funding for FY2017 Procurement efforts are requested in the Indirect Fire Protection Family of Systems Line 080 in Other Procurement, Army (OPA) (SSN BZ0501A).

An additional RAA package in the amount of \$76.000 million will be provided to support the CUAS Acceleration plan which fields existing capability and provides immediate protection to the most at risk sites in the shortest time frame and in accordance with Office of the Secretary of Defense (OSD) direction.

This project supports the Counter Unmanned Aerial System (UAS) Joint Operational Needs Statement (JUONS) CC-0558. Project FG5 has been implemented to support the identification, development, testing, evaluation and integration of technologies to provide an overall evolutionary capability to defeat small Unmanned Aerial systems (UAS) threats. The CUAS effort will provide the capability for the warfighter to comprehensively detect, identify and defeat enemy Group 1 and 2 light weight, low altitude UAS.

The CUAS effort involves a four phased development and testing approach of Counter UAS systems:

- Phase 0: Deploys available/interim capabilities to three high priority sites, conducts Operational Assessment in Theater. Systems will be stand-alone with full system characterization, operational and spectrum impacts evaluated in Phase 1. Phase 0 efforts have been funded by Joint Improvised-Threat Defeat Agency (JIDA).

- Phase 1: Limited Test at Yuma Proving Ground (YPG) takes an initial look at available systems on the network, development for sensors and other mature systems, experimental segment for emerging technology. Initial fielding of selected sites.

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Exhibit R-4A, RDT&E Schedule Details: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	FG5 / <i>Counter Unmanned Aerial Systems (CUAS)</i>

- Phase 1a: Test systems on the network, tests mature solutions and down selects the best solutions that will participate in Phase 2 (full JUON capability). Completion of fielding at all identified locations.

- Phase 2: Test fully networked, fixed/mobile capability, sustainable solution and deploy full JUON capability.

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Exhibit R-2, RDT&E Budget Item Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605032A / <i>TRACTOR TIRE</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	5.677	27.254	10.000	37.254	26.945	28.389	30.951	32.655	Continuing	Continuing
ET3: <i>Tractor Trick</i>	-	0.000	5.677	27.254	10.000	37.254	26.945	28.389	30.951	32.655	Continuing	Continuing

Note

FY17 OCO Amendment funding in the amount of \$10.0 million supports JUONS ST-0007. Details are classified. Effort is not executing Rapid Acquisition Authority for this program line at this time.

TOTAL CYBER JUONS FY17 OCO Amendment is \$87.0 million, arrayed into three lines of effort: this line, RDTE BLIN 119 Defense Cyber Operations 0605041A, and OPA BLIN 52 Defensive Cyber Operations B63000. Total Rapid Acquisition Authority (RAA) being executed against this effort in OPA/RDTE lines is \$37.96 million. An additional \$.5 million is for OMA requirements, for a total RAA effort of \$38.46 million. RAA was sourced with OMA OCO.

A. Mission Description and Budget Item Justification

The details of this program are reported in accordance with Title 10, United States Code, Section 119(a)(1).

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	5.677	6.192	-	6.192
Current President's Budget	0.000	5.677	27.254	10.000	37.254
Total Adjustments	0.000	0.000	21.062	10.000	31.062
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	21.062	10.000	31.062

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

Project: ET3: *Tractor Trick*

Congressional Add: *Tractor Trick*

Congressional Add Subtotals for Project: ET3

	FY 2015	FY 2016
	-	5.677
	-	5.677

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Exhibit R-2, RDT&E Budget Item Justification: PB Amended 2017 Army	Date: November 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605032A / <i>TRACTOR TIRE</i>
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Congressional Add Details (\$ in Millions, and Includes General Reductions)

	FY 2015	FY 2016
Congressional Add Totals for all Projects	-	5.677

Change Summary Explanation

The details of this program are reported in accordance with Title 10, United States Code, Section 119(a)(1).

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army										Date: November 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605032A / TRACTOR TIRE				Project (Number/Name) ET3 / Tractor Trick			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
ET3: <i>Tractor Trick</i>	-	0.000	5.677	27.254	10.000	37.254	26.945	28.389	30.951	32.655	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY17 OCO Amendment funding in the amount of \$10.0 million supports JUONS ST-0007. Details are classified. Effort is not executing Rapid Acquisition Authority for this program line at this time.

TOTAL CYBER JUONS FY17 OCO Amendment is \$87.0 million, arrayed into three lines of effort: this line, RDTE BLIN 119 Defense Cyber Operations 0605041A, and OPA BLIN 52 Defensive Cyber Operations B63000. Total Rapid Acquisition Authority (RAA) being executed against this effort in OPA/RDTE lines is \$37.96 million. An additional \$.5 million is for OMA requirements, for a total RAA effort of \$38.46 million. RAA was sourced with OMA OCO.

A. Mission Description and Budget Item Justification

The details of this program are reported in accordance with Title 10, United States Code, Section 119(a)(1).

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Tractor Trick Development	-	-	27.254	10.000	37.254
Description: The details for this program are reported in accordance with Title 10, United States Code, Section 119(a)(1).					
FY 2017 Base Plans: The details for this program are reported in accordance with Title 10, United States Code, Section 119(a)(1).					
FY 2017 OCO Plans: CLASSIFIED					
Accomplishments/Planned Programs Subtotals	-	-	27.254	10.000	37.254
	FY 2015	FY 2016			
Congressional Add: Tractor Trick	-	5.677			
FY 2016 Plans: The details for this program are reported in accordance with Title 10, United States Code, Section 119(a)(1).					
Congressional Adds Subtotals	-	5.677			

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army Date: November 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0605032A / TRACTOR TIRE	ET3 / Tractor Trick

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605032A / TRACTOR TIRE	Project (Number/Name) ET3 / Tractor Trick
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Classified	TBD	Classified : Classified	0.000	-		5.677		27.254		10.000		37.254	0	42.931	0
Subtotal			0.000	-		5.677		27.254		10.000		37.254	0.000	42.931	0.000

Remarks
The details of this program are reported in accordance with Title 10, United States Code, Section 119(a)(1).

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-	5.677	27.254	10.000	37.254	0.000	42.931	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0605032A / <i>TRACTOR TIRE</i>	ET3 / <i>Tractor Trick</i>

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Exhibit R-4A, RDT&E Schedule Details: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605032A / <i>TRACTOR TIRE</i>	Project (Number/Name) ET3 / <i>Tractor Trick</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Classified Event	1	2017	4	2017

Note
The details of this program are reported in accordance with Title 10, United States Code, Section 119(a)(1).

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Exhibit R-2, RDT&E Budget Item Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	33.836	50.500	84.336	26.585	17.820	11.484	8.478	0.000	148.703
EV5: <i>Defensive Cyber</i>	-	0.000	0.000	33.836	50.500	84.336	26.585	17.820	11.484	8.478	0.000	148.703

Note

This program element is a continuation of efforts funded in FY 2016 in PE 0303140, project 491.

A. Mission Description and Budget Item Justification

The Defensive Cyber Tool Development group of programs designs, builds, and tests the advanced Cyber tools and infrastructure that enables active defense of the network from Tactical Command Posts up through Post Camps and Station Home Station Mission Command. This capability will enable integration of the Cyber Mission Force with the Regional and Local Cyber Network Defense elements. These tools will provide cutting edge hardware and software, integrated with existing infrastructure and tools to facilitate Active Defensive Cyber operations. Cyber Tool Development will include Big Data Analytics solutions to enable the ability to correlate and analyze the massive amount of data coming across the network and provide timely situational awareness. It will also include development, integration, and testing of Defensive Cyber Tool and Infrastructure that will facilitate pushing Cyber sensor data to the Big Data analytics as well as support remote access to prevent or react to a Cyber incident. The Cyber Tool Development includes test and assessment of emerging Commercial Cyber tools for inclusion in the Defensive Cyber Operations Infrastructure. This tool development will include enhancements and testing of existing systems by enabling such capabilities as Public Key Infrastructure and enhancing mission assurance profiles of existing software that will heighten the Defensive Cyber posture.

This Program Element will support the Defensive Cyber Operations Infrastructure (DCO-I) program starting in FY17 to integrate and deliver key hardware and software that enables the Cyber Mission Forces to protect, search and discover, maneuver and engage, and mitigate and respond to enemy cyberspace operations. DCO-I will allow near real-time employment of defensive measures that will allow friendly cyber forces to maintain advantage. DCO-I will consist of a combination of hardware computing infrastructure along with advanced software fielded to units from Army Service Component Commands down to Brigade Combat Team level. DCO-I directly supports US Cyber Command Integrated Priority List #2 Produce Advanced Cyberspace Infrastructure and #5 defensive forces to execute passive and active defense operations at net-speed.

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Exhibit R-2, RDT&E Budget Item Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	33.836	50.500	84.336
Total Adjustments	0.000	0.000	33.836	50.500	84.336
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	33.836	50.500	84.336

Change Summary Explanation

Funds previously executed in PE 0303140, Project 491.

Justification: FY17 OCO Amendment funding in the amount of \$50.5 million supports JUONS ST-007. Details are classified. Effort is executing \$16.98 million OMA OCO via Rapid Acquisition Authority properly identified under this program line.

TOTAL CYBER JUONS FY17 OCO Amendment is \$87.0 million, arrayed into three lines of effort: this line, RDTE BLIN 114 TRACTOR TIRE 0605032A, and OPA BLIN 52 Defensive Cyber Operations B63000. Total Rapid Acquisition Authority (RAA) being executed against this effort in OPA/RDTE lines is \$37.96 million. An additional \$.5 million is for OMA requirements, for a total RAA effort of \$38.46 million. RAA was sourced with OMA OCO.

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
<i>EV5: Defensive Cyber</i>	-	0.000	0.000	33.836	50.500	84.336	26.585	17.820	11.484	8.478	0.000	148.703
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Defensive Cyberspace Operations (DCO) - Big Data Pilot (PEO EIS, Product Director Enterprise Services-CYBER)
 Defensive Cyberspace Operations - Infrastructure (DCO-I) Tactical - PEO C3T
 Defensive Cyberspace Operations -Infrastructure (DCO-I) Enterprise - PEO C3T
 Infrastructure Communications and Capabilities - Defense Cyber Operations (PEO EIS, Project Manager Installation Information Infrastructure - Communications and Capabilities (I3C2-DCO)
 Cyber Protection Team Support (DCO Platforms) (PEO EIS, PM I3C2-DCO)

A. Mission Description and Budget Item Justification

The Defensive Cyber Tool Development group of programs designs, builds, and tests the advanced Cyber tools and infrastructure that enables active defense of the network from Tactical Command Posts through Post Camps and Station and Home Station Mission Command. This capability will enable integration of the Cyber Mission Force with the Regional and Local Cyber Network Defense elements. These tools will provide cutting edge hardware and software, integrated with existing infrastructure and tools to facilitate Active Defensive Cyber operations. Cyber Tool Development will include Big Data Analytics solutions to enable the ability to correlate and analyze the massive amount of data coming across the network and provide timely situational awareness. It will also include development, integration, and testing of Defensive Cyber Tools and Infrastructure that will facilitate pushing Cyber sensor data to the Big Data analytics as well as support remote access to prevent or react to a Cyber incident. The Cyber Tool Development includes test and assessment of emerging Commercial Cyber tools for inclusion in the Defensive Cyber Operations Infrastructure. This tool development will include enhancements and testing of existing systems by enabling such capabilities as Public Key Infrastructure and enhancing mission assurance profiles of existing software that will heighten the Defensive Cyber posture.

This Program Element will support the DCO-I program starting in FY17 to integrate and deliver key hardware and software that enables the Cyber Mission Forces to protect, search and discover, maneuver and engage, and mitigate and respond to enemy cyberspace operations. DCO-I will allow near real-time employment of defensive measures that will allow friendly cyber forces to maintain advantage. DCO-I will consist of a combination of hardware computing infrastructure along with advanced software fielded to units from Army Service Component Commands down to Brigade Combat Team level. DCO-I directly supports US Cyber Command Integrated Priority List #2 Produce Advanced Cyberspace Infrastructure and #5 defensive forces to execute passive and active defense operations at net-speed.

The DCO program provides initial capabilities to Cyber Protection Teams. Team enable passive and active cyberspace defensive operations to preserve friendly cyberspace capabilities, and protect data, networks, net-centric capabilities, and other designated systems. DCO consists of four critical capabilities:

1. DCO-I Enterprise: the hardware and software baseline for remote cyber maneuver based on the Defense Advanced Research Projects Agency (DARPA) Plan X
2. Cyber Protection Team (CPT) Support (now called DCO Platforms): tools reside inside DCO-I
3. Web Vulnerability: Scanning software baseline to secure key cyber terrain and protect DoD websites

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>
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4. Big Data Analytics: analytics that leverage Defense Information Security Agency (DISA) Acropolis analytics (PEO C3T)

RDTE BLIN 119 Defense Cyber Operations 0605041A

Justification: FY17 OCO Amendment funding in the amount of \$50.5 million supports JUONS ST-0007. Details are classified. Effort is executing \$16.98 million OMA OCO via Rapid Acquisition Authority properly identified under this program line.

TOTAL CYBER JUONS FY17 OCO Amendment is \$87.0 million, arrayed into three lines of effort: this line, RDTE BLIN 114 TRACTOR TIRE 0605032A, and OPA BLIN 52 Defensive Cyber Operations B63000. Total Rapid Acquisition Authority (RAA) being executed against this effort in OPA/RDTE lines is \$37.96 million. An additional \$.5 million is for OMA requirements, for a total RAA effort of \$38.46 million. RAA was sourced with OMA OCO.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: The Defensive Cyberspace Operations (DCO) - Tactical Infrastructure (PEO C3T)</p> <p>Description: DCO-I program integrates and delivers key hardware and software that enables the Cyber Mission Forces to protect, search and discover, maneuver and engage, and mitigate and respond to enemy cyberspace operations.</p> <p>FY 2017 Base Plans: FY17 initiates the Engineering Design and Development for Network Operations software in support of the Defensive Cyber Operations Infrastructure (DCO-I) Information Systems Initial Capabilities Document (IS ICD) which further integrates existing capability and extends that capability down to the Battalion Level. This funding initializes the program and funds the development effort for the first build cycle. FY17 also funds initial delivery of architecture products that help drive subsequent builds. DCO-I testing will include developmental events conducted on lab configurations and networks followed by an Operational Evaluation using Soldiers and live equipment.</p>	-	-	17.714	-	17.714
<p>Title: The Defensive Cyberspace Operations (DCO) - Big Data Pilot (PEO EIS, PD ES-CYBER)</p> <p>Description: FY17 initiates Big Data Pilot which provides an advanced analytics capability capable of ingesting structured, semi-structured, and unstructured data from multiple data sources (e.g., Joint Regional Security Stacks (JRSS), intrusion detection systems, intrusion prevention systems, network device log files, trouble tickets, firewalls, proxies, web and applications server log files, etc) and proves situational awareness of cyberspace battlefield. It provides the computer network defense provider with common analytic platform which informs and reduces risk associated with future material solutions and forms a blueprint for future Big Data Analytics. Big Data (analysis-of-all DoD Information Network sensor data) provides two optimized and</p>	-	-	6.970	-	6.970

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>		
B. Accomplishments/Planned Programs (\$ in Millions)				
accredited cluster deployed in support of JRSS and Defense Research and Engineering Network (DREN) with a tools suite accessible to Cyber Mission Forces via secure remote access.				
FY 2017 Base Plans: FY17 initiates Big Data Pilot cyber funding encompasses design and development that is focused on getting the core platform to threshold capability and certified. Equipment would be purchased for the first 22 instances located at 11 of the JRSS locations with installation in FY18 after type certification is completed.				
Title: Defensive Cyberspace Operations –Infrastructure (DCO-I) Enterprise (PEO EIS, PM I3C2-DCO)				
Description: DCO-I Engineering Design, Development, and Software maintenance of standardized cloud infrastructure software to include deployment and build platforms for three primary environmental configurations (garrison, deployable and tactical). Additionally, providing advanced hypervisor, cloud deployment, security and integration and development.				
FY 2017 Base Plans: FY17 provides advanced security of infrastructure software for government managed purposes. Government unique cloud environment and management for infrastructure software facilitating collaboration and enhanced security to protect the abstraction layer of the infrastructure. Also begin Cyberspace Mission Command / Battle management Platform (Plan X) efforts. The foundational mission command platform for the conduct of cyberspace operations based on the transition of advanced technologies from the DARPA Foundational Cyberwarfare Program (Plan X). The platform includes battlespace awareness (SA), mission planning, course of action development, wargaming and execution capabilities. The platform will be developed in a continuous delivery methodology utilizing DevOps-like paradigms to ensure continued integration of new technological advances. Lastly, DevOps development for a centralized collaboration environment and repository including test and continuous delivery components. Facilitating license management, compilation and hosting of new platforms, centralized deployment/integration/hosting of products, synchronization of software tools developed by cyber forces; including tool development chain with integrated test capability and deployment by cyber mission effectiveness (existing DCO systems to be managed within - Log Collector & Q-tip).				
-	-	5.300	-	5.300
Title: Cyber Protection Team Support (DCO Platforms) (PEO EIS, PM I3C2-DCO)				
Description: FY17 initiates the DCO-I Engineering Design, Development, and Software maintenance of standardized cloud infrastructure software to include deployment and build platforms for three primary				
-	-	3.852	-	3.852

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
environmental configurations (garrison, deployable and tactical). Additionally, providing advanced hypervisor, cloud deployment, security and integration and development.					
<p><i>FY 2017 Base Plans:</i> The capability that provide advanced security of infrastructure software for government managed purposes. Government unique cloud environment and management for infrastructure software facilitating collaboration and enhanced security to protect the abstraction layer of the infrastructure. Also begin Cyberspace Mission Command / Battle management Platform (Plan X) efforts. The foundational mission command platform for the conduct of cyberspace operations based on the transition of advanced technologies from the DARPA Foundational Cyberwarfare Program (Plan X). The platform includes battlespace awareness (SA), mission planning, course of action development, wargaming and execution capabilities. The platform will be developed in a continuous delivery methodology utilizing DevOps-like paradigms to ensure continued integration of new technological advances. Lastly, DevOps development for a centralized collaboration environment and repository including test and continuous delivery components. Facilitating license management, compilation and hosting of new platforms, centralized deployment/integration/hosting of products, synchronization of software tools developed by cyber forces; including tool development chain with integrated test capability and deployment by cyber mission effectiveness (existing DCO systems to be managed within - Log Collector & Q-tip).</p>					
<p><i>Title:</i> CLASSIFIED <i>Description:</i> CLASSIFIED</p> <p><i>FY 2017 Base Plans:</i> N/A</p> <p><i>FY 2017 OCO Plans:</i> CLASSIFIED</p>	-	-	0.000	50.500	50.500
Accomplishments/Planned Programs Subtotals	-	-	33.836	50.500	84.336

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

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Exhibit R-2A, RDT&E Project Justification: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>

D. Acquisition Strategy

The Defensive Cyber Tool Development line will support multiple Information System - Requirement Development Packages that result in multiple programs. The Army will conduct a Materiel Development Decisions in late FY16 based upon the Defensive Cyberspace Operations – Infrastructure (DCO-I), Big Data Analytics, and Cyber Protect Team Tools Requirements Development Packages to initiate these programs.

The DCO-I Tactical program is expected to be an Acquisition Category III program using the Department of Defense Instruction 5000.02 Model 3: Incrementally Deployed Software Intensive approach. The DCO-I capability will primarily use commercial off the shelf (or slightly modified commercial off the shelf) hardware and software integrated with components of the Warfighter Information Network – Tactical and Mission Command programs. The functionality of DCO-I will integrate with the Command Post Computing Environment to support Commanders from Brigade up to Army Component Command level. Execution of the DCO-I program will be a combination of Government Labs (COMMUNICATIONS-ELECTRONICS RESEARCH, DEVELOPMENT AND ENGINEERING CENTER) and Contractor support.

The Defensive Cyberspace Operations (DCO) program provides initial capabilities that enable passive and active cyberspace defense operations to preserve friendly cyberspace capabilities and protect data, networks, net-centric capabilities, and other designated systems. Big Data Pilot provides an advanced analytics capability capable of ingesting structured, semi-structured, and unstructured data from multiple data sources (e.g., Joint Regional Security Stacks (JRSS), intrusion detection systems, intrusion prevention systems, network device log files, trouble tickets, firewalls, proxies, web and applications server log files, etc) and provides situational awareness of cyberspace battlefield. It provides the computer network defense provider with common analytic platform which informs and reduces risk associated with future material solutions and forms a blueprint for future Big Data Analytics. Big Data (analysis-of-all DoD Information Network sensor data) provides two optimized and accredited cluster deployed in support of JRSS and Defense Research and Engineering Network (DREN) with a tools suite accessible to Cyber Mission Forces via secure remote access. The Army's DCO activities is a construct of active cyberspace defense which provides synchronized, real-time capability to discover, detect, analyze, and mitigate threats and vulnerability to DoD networks and systems.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Defensive Cyber Operations-Infrastructure (DCO-I) Tactical (PEO C3T)	C/TBD	Aberdeen Proving Ground : MD	0.000	-		-		1.732		-		1.732	0	1.732	0
Big Data Pilot (PEO EIS, PD ES - CYBER)	TBD	PD ES : Ft Belvoir, VA	0.000	-		-		0.131		-		0.131	0	0.131	0
Subtotal			0.000	-		-		1.863		-		1.863	0.000	1.863	0.000

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Big Data Pilot (PEO EIS, PD ES - CYBER)	C/TBD	Ft. Belvoir : VA	0.000	-		-		6.839		-		6.839	0	6.839	0
Defensive Cyberspace Operations -Infrastructure (DCO-I) Enterprise (PEO EIS, PM I3C2-DCO)	C/TBD	ACC-RI : IL	0.000	-		-		5.300		-		5.300	0	5.300	0
Defensive Cyber Operations-Infrastructure (DCO-I) Tactical (PEO C3T)	C/TBD	Aberdeen Proving Ground : MD	0.000	-		-		13.408		-		13.408	0	13.408	0
Cyber Protection Team (PEO EIS, PEO I3C2)	C/TBD	ACC-RI : IL	0.000	-		-		3.852		-		3.852	0	3.852	0
Classified	TBD	Various : Various	0.000	-		-		0.000		50.500		50.500	0	50.500	0
Subtotal			0.000	-		-		29.399		50.500		79.899	0.000	79.899	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) DCO IS ICD Approval					IS-ICD Approval ▲ ¹																							
(2) DCO-I Tactical Requirements Definition Package													DCO-I Tactical RDP ▲ ²															
(3) DCO-I Tactical MDD													DCO-I Tactical MDD ▲ ³															
(4) DCO-I Tactical Milestone C													DCO-I Tactical MS C ▲ ⁴															
(5) DCO-I Tactical Acquisition Decision Memorandum													DCO-I Tactical ADM ▲ ⁵															
(6) DCO-I Tactical Contract Award													DCO-I Tactical Contract Award ▲ ⁶															
DCO-I Tactical Build													DCO-I Tactical Build															
DCO-I Tactical Developmental Test													DCO-I Tactical DT															
(7) DCO-I Tactical Initial Operational Test																	DCO-I Tactical IOT ▲ ⁷											
(8) DCO-I Tactical Full Rate Production																					DCO-I Tactical FRP ▲ ⁸							
(9) DCO-I Tactical Production Award																					DCO-I Tactical Proc ▲ ⁹							
(10) DCO - Data Mining and Cyber Analytics (DMCA)					DCO- Data Mining and Cyber Analytics (DMCA)				DMCA ▲ ¹⁰																			
(11) DCO - DMCA Materiel Development Decision					DCO-DMCA MDD ▲ ¹¹																							

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Exhibit R-4, RDT&E Schedule Profile: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) DCO - DMCA Milestone B					DCO - DMCA Milestone B																							
(2) DCO - DMCA Acquisition Decision Memorandum					DCO - DMCA ADM																							
(3) DCO - DMCA Contract Award					DCO - DMCA Contract Award																							
(4) DCO - DMCA Build					DCO - DMCA Build																							
(5) DCO - DMCA Developmental Test					DCO - DMCA DT																							
DCO - DMCA - Initial Operational Test					DCO - DMCA - IOT																							
(6) DCO - DMCA - Full Deployment					DCO - DMCA - Full Deployment																							
(7) DCO - DMCA - Production Award	DCO - DMCA - Production Award																											
DCO-I Enterprise GDI Cloud Infrastructure	Procurement and fielding of stacks																											
Plan X Transition From DARPA	transition from DARPA 4Q; AWA requirem																											
DCO Platforms (garrison, deployable and tactical)	DEV Ops, Centralization of initial platforms																											
DCO-I Enterprise MDD	MDD																											
DCO-I Enterprise (Plan X) Milestone C	Milestone C																											

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Exhibit R-4A, RDT&E Schedule Details: PB Amended 2017 Army		Date: November 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DCO IS ICD Approval	3	2016	3	2016
DCO-I Tactical Requirements Definition Package	4	2017	4	2017
DCO-I Tactical MDD	4	2017	4	2017
DCO-I Tactical Milestone C	1	2018	1	2018
DCO-I Tactical Acquisition Decision Memorandum	1	2018	1	2018
DCO-I Tactical Contract Award	1	2018	1	2018
DCO-I Tactical Build	1	2018	3	2019
DCO-I Tactical Developmental Test	3	2018	3	2018
DCO-I Tactical Initial Operational Test	3	2019	3	2019
DCO-I Tactical Full Rate Production	4	2020	4	2020
DCO-I Tactical Production Award	4	2020	4	2020
DCO - Data Mining and Cyber Analytics (DMCA)	1	2018	1	2018
DCO - DMCA Materiel Development Decision	2	2017	2	2017
DCO - DMCA Milestone B	2	2017	2	2017
DCO - DMCA Acquisition Decision Memorandum	2	2017	2	2017
DCO - DMCA Contract Award	3	2018	3	2018
DCO - DMCA Build	3	2019	3	2019
DCO - DMCA Developmental Test	2	2019	2	2019
DCO - DMCA - Initial Operational Test	3	2019	3	2019
DCO - DMCA - Full Deployment	4	2020	4	2020
DCO - DMCA - Production Award	4	2020	4	2020
DCO-I Enterprise GDI Cloud Infrastructure	1	2017	4	2021

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Exhibit R-4A, RDT&E Schedule Details: PB Amended 2017 Army **Date:** November 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Plan X Transition From DARPA	2	2017	4	2017
DCO Platforms (garrison, deployable and tactical)	2	2017	4	2021
DCO-I Enterprise MDD	1	2017	1	2017
DCO-I Enterprise (Plan X) Milestone C	4	2017	4	2017