

UNCLASSIFIED

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

February 2016



Army

Justification Book of

Research, Development, Test & Evaluation, Army

RDT&E – Volume III, Budget Activity 7

UNCLASSIFIED

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY

APPROPRIATION LANGUAGE

For expenses necessary for basic and applied scientific research, development, test and evaluation, including maintenance, rehabilitation, lease, and operation of facilities and equipment, \$7,615,921,000.00 to remain available for obligation until September 30, 2018.

The following Justification Books were prepared at a cost of \$1,209,553: Aircraft (ACFT), Missile (MSLS), Weapons & Tracked Combat Vehicles (WTCV), Ammunition (AMMO), Other Procurement Army (OPA) 1 - Tactical & Support Vehicles, Other Procurement Army (OPA) 2 – Communications & Electronics, Other Procurement Army (OPA) 3 & 4 - Other Support Equipment & Spares, Research, Development, Test and Evaluation (RDTE) for: Budget Activity 1, Budget Activity 2, Budget Activity 3, Budget Activity 4, Budget Activity 5A, Budget Activity 5B, Budget Activity 6, and Budget Activity 7.

UNCLASSIFIED

Intentionally Left Blank

UNCLASSIFIED

UNCLASSIFIED

FY 2017 RDT&E, ARMY
PROGRAM ELEMENT DESCRIPTIVE SUMMARIES

Introduction and Explanation of Contents

- 1. General.** The purpose of this document is to provide summary information concerning the Research, Development, Test and Evaluation, Army program. The descriptive summaries are comprised of R-2 (Army RDT&E Budget Item Justification – program element level), R-2A (Army RDT&E Budget Item Justification – project level), R-3 (Army RDT&E Cost Analysis), R-4 (Schedule Profile Detail) and R-5 (Termination Liability Funding for MDAPs) Exhibits, which provide narrative information on all RDT&E program elements and projects through FY 2017.
- 2. Relationship of the FY 2017 Budget Submitted to Congress to the FY 2016 Budget Submitted to Congress.** This paragraph provides a list of program elements/projects that are major new starts, restructures, developmental transitions, and terminated programs. Explanations for these changes can be found in the narrative sections of the Program Element R-2A Exhibits.

A. New Start Programs:

<u>PE/Project</u>	<u>PE Title</u>	<u>Project Title</u>
345251/FA8	Cyberspace Operations Forces and Force Support	Cyberspace Operations Forces and Force Support
363326/FA9	Security Initiatives	Security Initiatives
373150/EA5	Army Global Command & Control System	Strategic and Joint Mission Command
643308/EB7	Army Missile Defense Systems Integration	Army Space System Enhancement/Integration
643619/606	Close Combat Systems Adv Dev	Cntrmn/Barrier Adv Dev
643801/B47	Aviation Advanced Development	Future Vertical Lift Medium
654270/ET7	EW Development	Radio Frequency Interference Mitigation
654270/DX6	EW Development	Radio Frequency Interference Mitigation
654622/659	Family of Heavy Tactical Vehicles	Family of Hvy Tac Veh
654622/E40	Light Tactical Wheeled Vehicle	LTV Prototype
654645/EV8	Armored Systems Modernization on End Dev	Mobile Protected Firepower
654818/EW3	Army Tac Comm & Cont Hardware & Software	Unit Task Reorganization (UTR) Development
654822/EV4	General Fund Enterprise Business System (GFEBs)	General Fund Enterprise Business System Inc 2
664759/FA4	Major Test & Evaluation Investment	Warrior Injury Assessment Manikin (WIAMan)
675024/FB1	Anti-Tamper Technology Support	Anti-Tamper Technology Support
654818/EW3	Army Tac Comm &Cont Hardware & Software	Unit Task Reorganization (UTR) Development

B. Program Element/Project Restructures:

Old		New
<u>PE/Project</u>	<u>New Project Title</u>	<u>PE/Project</u>
0205778/EG2	Long Range Precision Fires (LRPF)	0607134/ES1
0303140/501	Army Key Mgmt System	0303140/DV4
0305204/D10	MQ-1C Gray Eagle	0203744/EB6
0601102/S14	Basic Resch in Clinical & Rehabilitative Med	0601102/ET6
0602787/874	Appl Resch in Clinical and Rehabilitative Med	0602787/ET4
0603002/840	Medical Advance Technology	0603002/ET5
0603827/S53	Personnel Airdrop System Development	0603827/ET8
0604120/ED5	Mounted	0604120/EH8
0604120/ED5	Dismounted	0604120/EJ2
0604280/DZ5	Manpack Radio	0605042/FA1
0604280/DZ5	Rifleman Radio	0605042/FA2
0604622/659	TWV Protection Kits	0604622/VR5
0604759/984	Range Radar Replacement Program (RRRP)	0604759/EY9
0604798/DY4	Network Integration Support	0604798/DY3
0604798/DY6	Brigade and Platform Integration Support	0604798/DY3
0604818/S75	Tactical Network Operations and Management	0604818/EK9
0604827/S75	Ground Soldier Ensemble	0604818/EQ8
0605031/EF5	Waveforms	0605031/EX6
0605457/DU4	FAAD C2 ED	0604741/126

C. Developmental Transitions:

Old		New
<u>PE/Project</u>	<u>New Project Title</u>	<u>PE/Project</u>
0204502/EF2	Integ/GrdSecSurv RespC	0605029/EQ2
0204502/EF2	Grnd-Based Opnl Surv Sys Expend (GBOSS-E)	0605033/EQ3
0303140/491	Defensive Cyber Operations	0605041/EV5
0603639/EC2	Adv Armor-Piercing (ADVAP)	0604802/EP5
0603639/EL8	Lightweight Cartridge Case for Small Caliber Ammo	0604802/EP6
0603639/656	120mm Cartridge (Advanced Multipurpose AMP)	0604802/ED7
0603782/372	Warfighter Information Network	0605535/EE8
0603827S54	Crew Served Weapons Engineering Development	0604601/EW4
0603850/472	Integrated Broadcast System	0305179/EF4
0605626/AC5	Enhanced Medium Alt Recon Surv Sys	0305206/EH3
0605898/M65	ATEC Joint	0605712/001
0606801/M46	AMCOM Cmd/Ctr Spt	0602705/H94
0606801/M46	AMCOM Cmd/Ctr Spt	0605024/FB1
0607865/DV8	Lower Tier Missile Defense (LTAMD) Capability	0604114/EX2
0604319/DU3	IFPC2	0605052/EY7

D. Program Terminations:

PE Title

Aircrew Integrated Sys Ad
PAC-3/MSE Missile

PE/Project

0603827/152
0605456/PA3

- 3. Classification:** This document contains no classified data. Appropriately cleared individuals can obtain further information on Classified/Special Access Programs by contacting the Department of the Army (ASA(ALT)) Special Programs Office.

UNCLASSIFIED

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

14 Jan 2016

Appropriation	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Research, Development, Test & Eval, Army	6,744,134	7,562,170	1,500	7,563,670	7,515,399	100,522	7,615,921
Total Research, Development, Test & Evaluation	6,744,134	7,562,170	1,500	7,563,670	7,515,399	100,522	7,615,921

UNCLASSIFIED

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

14 Jan 2016

Summary Recap of Budget Activities	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Basic Research	447,868	469,079		469,079	428,943		428,943
Applied Research	964,085	1,092,885		1,092,885	907,574		907,574
Advanced Technology Development	1,089,087	1,127,304		1,127,304	930,065		930,065
Advanced Component Development & Prototypes	298,467	506,123	1,500	507,623	550,635	9,375	560,010
System Development & Demonstration	1,604,756	2,085,147		2,085,147	2,265,094	84,043	2,349,137
RDT&E Management Support	1,166,015	1,070,581		1,070,581	1,136,134		1,136,134
Operational Systems Development	1,173,856	1,211,051		1,211,051	1,296,954	7,104	1,304,058
Total Research, Development, Test & Evaluation	6,744,134	7,562,170	1,500	7,563,670	7,515,399	100,522	7,615,921
Summary Recap of FYDP Programs							
General Purpose Forces	705,451	779,716		779,716	618,038		618,038
Intelligence and Communications	162,187	171,857		171,857	238,711	7,104	245,815
Research and Development	5,788,542	6,545,639	1,500	6,547,139	6,591,738	93,418	6,685,156
Central Supply and Maintenance	73,419	60,422		60,422	62,287		62,287
Administration and Associated Activities	233						
Classified Programs	14,302	4,536		4,536	4,625		4,625
Total Research, Development, Test & Evaluation	6,744,134	7,562,170	1,500	7,563,670	7,515,399	100,522	7,615,921

UNCLASSIFIED

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

14 Jan 2016

Summary Recap of Budget Activities	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total

Basic Research	447,868	469,079		469,079	428,943		428,943
Applied Research	964,085	1,092,885		1,092,885	907,574		907,574
Advanced Technology Development	1,089,087	1,127,304		1,127,304	930,065		930,065
Advanced Component Development & Prototypes	298,467	506,123	1,500	507,623	550,635	9,375	560,010
System Development & Demonstration	1,604,756	2,085,147		2,085,147	2,265,094	84,043	2,349,137
RDT&E Management Support	1,166,015	1,070,581		1,070,581	1,136,134		1,136,134
Operational Systems Development	1,173,856	1,211,051		1,211,051	1,296,954	7,104	1,304,058
Total Research, Development, Test & Evaluation	6,744,134	7,562,170	1,500	7,563,670	7,515,399	100,522	7,615,921
Summary Recap of FYDP Programs							

General Purpose Forces	705,451	779,716		779,716	618,038		618,038
Intelligence and Communications	162,187	171,857		171,857	238,711	7,104	245,815
Research and Development	5,788,542	6,545,639	1,500	6,547,139	6,591,738	93,418	6,685,156
Central Supply and Maintenance	73,419	60,422		60,422	62,287		62,287
Administration and Associated Activities	233						
Classified Programs	14,302	4,536		4,536	4,625		4,625
Total Research, Development, Test & Evaluation	6,744,134	7,562,170	1,500	7,563,670	7,515,399	100,522	7,615,921

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	S e c
1	0601101A	In-House Laboratory Independent Research	01	13,125	13,018		13,018	12,381		12,381	U
2	0601102A	Defense Research Sciences	01	249,855	279,118		279,118	253,116		253,116	U
3	0601103A	University Research Initiatives	01	79,122	72,603		72,603	69,166		69,166	U
4	0601104A	University and Industry Research Centers	01	105,766	104,340		104,340	94,280		94,280	U
		Basic Research		447,868	469,079		469,079	428,943		428,943	
5	0602105A	Materials Technology	02	45,563	68,314		68,314	31,533		31,533	U
6	0602120A	Sensors and Electronic Survivability	02	45,792	58,374		58,374	36,109		36,109	U
7	0602122A	TRACTOR HIP	02	16,358	6,879		6,879	6,995		6,995	U
8	0602211A	Aviation Technology	02	62,046	56,884		56,884	65,914		65,914	U
9	0602270A	Electronic Warfare Technology	02	19,333	19,243		19,243	25,466		25,466	U
10	0602303A	Missile Technology	02	61,144	53,553		53,553	44,313		44,313	U
11	0602307A	Advanced Weapons Technology	02	37,464	38,028		38,028	28,803		28,803	U
12	0602308A	Advanced Concepts and Simulation	02	26,505	27,862		27,862	27,688		27,688	U
13	0602601A	Combat Vehicle and Automotive Technology	02	71,811	98,439		98,439	67,959		67,959	U
14	0602618A	Ballistics Technology	02	83,610	117,801		117,801	85,436		85,436	U
15	0602622A	Chemical, Smoke and Equipment Defeating Technology	02	3,865	3,866		3,866	3,923		3,923	U
16	0602623A	Joint Service Small Arms Program	02	6,633	5,487		5,487	5,545		5,545	U
17	0602624A	Weapons and Munitions Technology	02	62,131	83,340		83,340	53,581		53,581	U
18	0602705A	Electronics and Electronic Devices	02	72,442	64,301		64,301	56,322		56,322	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Se
19	0602709A	Night Vision Technology	02	44,694	38,807		38,807	36,079		36,079	U
20	0602712A	Countermine Systems	02	28,597	36,568		36,568	26,497		26,497	U
21	0602716A	Human Factors Engineering Technology	02	23,434	23,681		23,681	23,671		23,671	U
22	0602720A	Environmental Quality Technology	02	15,288	20,850		20,850	22,151		22,151	U
23	0602782A	Command, Control, Communications Technology	02	33,117	36,160		36,160	37,803		37,803	U
24	0602783A	Computer and Software Technology	02	10,514	12,656		12,656	13,811		13,811	U
25	0602784A	Military Engineering Technology	02	66,582	80,909		80,909	67,416		67,416	U
26	0602785A	Manpower/Personnel/Training Technology	02	21,280	24,735		24,735	26,045		26,045	U
27	0602786A	Warfighter Technology	02	31,597	39,295		39,295	37,403		37,403	U
28	0602787A	Medical Technology	02	74,285	76,853		76,853	77,111		77,111	U
	Applied Research			964,085	1,092,885		1,092,885	907,574		907,574	
29	0603001A	Warfighter Advanced Technology	03	75,833	55,973		55,973	38,831		38,831	U
30	0603002A	Medical Advanced Technology	03	104,997	108,584		108,584	68,365		68,365	U
31	0603003A	Aviation Advanced Technology	03	99,762	103,136		103,136	94,280		94,280	U
32	0603004A	Weapons and Munitions Advanced Technology	03	72,176	82,663		82,663	68,714		68,714	U
33	0603005A	Combat Vehicle and Automotive Advanced Technology	03	143,606	135,571		135,571	122,132		122,132	U
34	0603006A	Space Application Advanced Technology	03	6,664	5,554		5,554	3,904		3,904	U
35	0603007A	Manpower, Personnel and Training Advanced Technology	03	11,677	12,636		12,636	14,417		14,417	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

Page A-3

xi

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Sec
36	0603008A	Electronic Warfare Advanced Technology	03	43,416							U
37	0603009A	TRACTOR HIKE	03	7,492	7,502		7,502	8,074		8,074	U
38	0603015A	Next Generation Training & Simulation Systems	03	16,103	17,425		17,425	18,969		18,969	U
39	0603020A	TRACTOR ROSE	03	14,483	11,912		11,912	11,910		11,910	U
40	0603125A	Combating Terrorism - Technology Development	03	23,334	33,520		33,520	27,686		27,686	U
41	0603130A	TRACTOR NAIL	03	3,440	2,381		2,381	2,340		2,340	U
42	0603131A	TRACTOR EGGS	03	2,406	2,431		2,431	2,470		2,470	U
43	0603270A	Electronic Warfare Technology	03	27,238	32,874		32,874	27,893		27,893	U
44	0603313A	Missile and Rocket Advanced Technology	03	78,302	104,449		104,449	52,190		52,190	U
45	0603322A	TRACTOR CAGE	03	11,105	10,999		10,999	11,107		11,107	U
46	0603461A	High Performance Computing Modernization Program	03	214,614	222,159		222,159	177,190		177,190	U
47	0603606A	Landmine Warfare and Barrier Advanced Technology	03	12,795	13,966		13,966	17,451		17,451	U
48	0603607A	Joint Service Small Arms Program	03	7,055	5,105		5,105	5,839		5,839	U
49	0603710A	Night Vision Advanced Technology	03	46,056	40,929		40,929	44,468		44,468	U
50	0603728A	Environmental Quality Technology Demonstrations	03	11,311	14,727		14,727	11,137		11,137	U
51	0603734A	Military Engineering Advanced Technology	03	17,124	26,845		26,845	20,684		20,684	U
52	0603772A	Advanced Tactical Computer Science and Sensor Technology	03	38,098	38,147		38,147	44,239		44,239	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Se
53	0603794A	C3 Advanced Technology	03		37,816		37,816	35,775		35,775	U
		Advanced Technology Development		1,089,087	1,127,304		1,127,304	930,065		930,065	
54	0603305A	Army Missile Defense Systems Integration	04	25,672	29,347		29,347	9,433		9,433	U
55	0603308A	Army Space Systems Integration	04	13,804	25,061		25,061	23,056	9,375	32,431	U
56	0603619A	Landmine Warfare and Barrier - Adv Dev	04		45,757		45,757	72,117		72,117	U
57	0603627A	Smoke, Obscurant and Target Defeating Sys-Adv Dev	04		13,426		13,426	28,244		28,244	U
58	0603639A	Tank and Medium Caliber Ammunition	04	25,317	46,749		46,749	40,096		40,096	U
59	0603747A	Soldier Support and Survivability	04	8,633	2,801	1,500	4,301	10,506		10,506	U
60	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	9,255	13,472		13,472	15,730		15,730	U
61	0603774A	Night Vision Systems Advanced Development	04	3,521	7,292		7,292	10,321		10,321	U
62	0603779A	Environmental Quality Technology - Dem/Val	04	7,529	8,813		8,813	7,785		7,785	U
63	0603790A	NATO Research and Development	04	2,839	6,075		6,075	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	13,188	21,233		21,233	20,834		20,834	U
66	0603807A	Medical Systems - Adv Dev	04	22,825	31,962		31,962	33,503		33,503	U
67	0603827A	Soldier Systems - Advanced Development	04	9,194	22,994		22,994	31,120		31,120	U
68	0604100A	Analysis Of Alternatives	04	9,685	9,805		9,805	6,608		6,608	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Sec
69	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04					35,132		35,132	U
70	0604115A	Technology Maturation Initiatives	04	43,083	35,917		35,917	70,047		70,047	U
71	0604120A	Assured Positioning, Navigation and Timing (PNT)	04	11,447	30,058		30,058	83,279		83,279	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					40,510		40,510	U
	Advanced Component Development & Prototypes			298,467	506,123	1,500	507,623	550,635	9,375	560,010	
74	0604201A	Aircraft Avionics	05	39,583	18,639		18,639	83,248		83,248	U
75	0604270A	Electronic Warfare Development	05	5,792	18,843		18,843	34,642		34,642	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	12,172		12,172	U
78	0604321A	All Source Analysis System	05	5,532	4,309		4,309	3,958		3,958	U
79	0604328A	TRACTOR CAGE	05	19,929	15,138		15,138	12,525		12,525	U
80	0604601A	Infantry Support Weapons	05	36,826	89,661		89,661	66,943		66,943	U
81	0604604A	Medium Tactical Vehicles	05	202							U
82	0604611A	JAVELIN	05	4,006	3,945		3,945	20,011		20,011	U
83	0604622A	Family of Heavy Tactical Vehicles	05	12,768				11,429		11,429	U
84	0604633A	Air Traffic Control	05	17,066	10,076		10,076	3,421		3,421	U
85	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05	2,663	15,374		15,374	39,282		39,282	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	S e c
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	58,997	67,582		67,582	84,519		84,519	U
89	0604713A	Combat Feeding, Clothing, and Equipment	05	2,983	1,763		1,763	2,054		2,054	U
90	0604715A	Non-System Training Devices - Eng Dev	05	8,775	27,155		27,155	30,774	33	30,807	U
91	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	15,294	34,569		34,569	53,332		53,332	U
92	0604742A	Constructive Simulation Systems Development	05	4,394	23,364		23,364	17,887		17,887	U
93	0604746A	Automatic Test Equipment Development	05	10,685	8,960		8,960	8,813		8,813	U
94	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	9,699	9,138		9,138	10,487		10,487	U
95	0604780A	Combined Arms Tactical Trainer (CATT) Core	05	33,422	21,622		21,622	15,068		15,068	U
96	0604798A	Brigade Analysis, Integration and Evaluation	05	82,957	99,242		99,242	89,716		89,716	U
97	0604802A	Weapons and Munitions - Eng Dev	05	17,312	21,379		21,379	80,365		80,365	U
98	0604804A	Logistics and Engineer Equipment - Eng Dev	05	23,652	46,039		46,039	75,098		75,098	U
99	0604805A	Command, Control, Communications Systems - Eng Dev	05	5,116	2,683		2,683	4,245		4,245	U
100	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	29,441	45,412		45,412	41,124		41,124	U
101	0604808A	Landmine Warfare/Barrier - Eng Dev	05	53,579	55,215		55,215	39,630		39,630	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

Page A-7

XV

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Sec
102	0604818A	Army Tactical Command & Control Hardware & Software	05	29,690	131,639		131,639	205,590		205,590	U
103	0604820A	Radar Development	05	5,022	12,309		12,309	15,983		15,983	U
104	0604822A	General Fund Enterprise Business System (GFEBS)	05	5,500	21,155		21,155	6,805		6,805	U
105	0604823A	Firefinder	05	22,587	2,967		2,967	9,235		9,235	U
106	0604827A	Soldier Systems - Warrior Dem/Val	05	5,942	18,776		18,776	12,393		12,393	U
107	0604854A	Artillery Systems - EMD	05	1,838	1,953		1,953	1,756		1,756	U
108	0605013A	Information Technology Development	05	64,982	60,358		60,358	74,236		74,236	U
109	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	62,831	121,011		121,011	155,584		155,584	U
110	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	88,797	226,210		226,210	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	8,615	13,357		13,357	15,041		15,041	U
113	0605031A	Joint Tactical Network (JTN)	05	17,305	18,055		18,055	16,014		16,014	U
114	0605032A	TRACTOR TIRE	05		5,677		5,677	27,254		27,254	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	169,196	101,570		101,570	96,977	10,900	107,877	U
118	0605036A	Combating Weapons of Mass Destruction (CWMD)	05					2,089		2,089	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	S e c
119	0605041A	Defensive CYBER Tool Development	05					33,836		33,836	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		78,112		78,112	41,133	73,110	114,243	U
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	108,851	33,515		33,515				U
125	0605380A	AMF Joint Tactical Radio System (JTRS)	05	6,616	11,455		11,455	5,028		5,028	U
126	0605450A	Joint Air-to-Ground Missile (JAGM)	05	80,585	83,054		83,054	42,972		42,972	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	252,811		252,811	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	4,955		4,955	U
132	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05	43,302	32,486		32,486	11,530		11,530	U
133	0605830A	Aviation Ground Support Equipment	05	9,655	13,880		13,880	2,142		2,142	U
134	0210609A	Paladin Integrated Management (PIM)	05	77,210	152,288		152,288	41,498		41,498	U
135	0303032A	TROJAN - RH12	05	983	5,022		5,022	4,273		4,273	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

Page A 9

xvii

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Sec
136	0304270A	Electronic Warfare Development	05	8,961	12,686		12,686	14,425		14,425	U
		System Development & Demonstration		1,604,756	2,085,147		2,085,147	2,265,094	84,043	2,349,137	
137	0604256A	Threat Simulator Development	06	21,691	27,535		27,535	25,675		25,675	U
138	0604258A	Target Systems Development	06	9,778	16,684		16,684	19,122		19,122	U
139	0604759A	Major T&E Investment	06	54,281	66,580		66,580	84,777		84,777	U
140	0605103A	Rand Arroyo Center	06	19,817	19,382		19,382	20,658		20,658	U
141	0605301A	Army Kwajalein Atoll	06	169,699	203,905		203,905	236,648		236,648	U
142	0605326A	Concepts Experimentation Program	06	18,757	19,430		19,430	25,596		25,596	U
143	0605502A	Small Business Innovative Research	06	172,658							U
144	0605601A	Army Test Ranges and Facilities	06	271,377	279,896		279,896	293,748		293,748	U
145	0605602A	Army Technical Test Instrumentation and Targets	06	43,961	51,550		51,550	52,404		52,404	U
146	0605604A	Survivability/Lethality Analysis	06	33,210	33,246		33,246	38,571		38,571	U
147	0605606A	Aircraft Certification	06	4,667	4,760		4,760	4,665		4,665	U
148	0605702A	Meteorological Support to RDT&E Activities	06	6,289	8,303		8,303	6,925		6,925	U
149	0605706A	Materiel Systems Analysis	06	20,578	20,403		20,403	21,677		21,677	U
150	0605709A	Exploitation of Foreign Items	06	8,418	10,396		10,396	12,415		12,415	U
151	0605712A	Support of Operational Testing	06	48,953	49,337		49,337	49,684		49,684	U
152	0605716A	Army Evaluation Center	06	54,468	52,694		52,694	55,905		55,905	U
153	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	1,081	938		938	7,959		7,959	U
154	0605801A	Programwide Activities	06	63,687	60,319		60,319	51,822		51,822	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	S e c
155	0605803A	Technical Information Activities	06	28,781	28,478		28,478	33,323		33,323	U
156	0605805A	Munitions Standardization, Effectiveness and Safety	06	62,168	64,604		64,604	40,545		40,545	U
157	0605857A	Environmental Quality Technology Mgmt Support	06	2,512	3,186		3,186	2,130		2,130	U
158	0605898A	Management HQ - R&D	06	48,951	48,955		48,955	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	233							U
		RDT&E Management Support		1,166,015	1,070,581		1,070,581	1,136,134		1,136,134	
161	0603778A	MLRS Product Improvement Program	07	17,852	18,397		18,397	9,663		9,663	U
162	0603813A	TRACTOR PULL	07		9,461		9,461	3,960		3,960	U
163	0605024A	Anti-Tamper Technology Support	07					3,638		3,638	U
164	0607131A	Weapons and Munitions Product Improvement Programs	07		4,945		4,945	14,517		14,517	U
165	0607133A	TRACTOR SMOKE	07		7,569		7,569	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	86,099	65,562		65,562	66,441		66,441	U
168	0607136A	Blackhawk Product Improvement Program	07	48,406	66,653		66,653	46,765		46,765	U
169	0607137A	Chinook Product Improvement Program	07	35,424	32,407		32,407	91,848		91,848	U
170	0607138A	Fixed Wing Product Improvement Program	07	819	1,151		1,151	796		796	U
171	0607139A	Improved Turbine Engine Program	07	49,328	51,164		51,164	126,105		126,105	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	S e c
172	0607140A	Emerging Technologies from NIE	07	4,916	2,481		2,481	2,369		2,369	U
173	0607141A	Logistics Automation	07	3,513	1,673		1,673	4,563		4,563	U
174	0607665A	Family of Biometrics	07	1,332	13,237		13,237	12,098		12,098	U
175	0607865A	Patriot Product Improvement	07	57,962	89,816		89,816	49,482		49,482	U
176	0202429A	Aerostat Joint Project - COCOM Exercise	07	43,248	10,565		10,565	45,482		45,482	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	30,455		30,455	U
179	0203735A	Combat Vehicle Improvement Programs	07	297,423	354,667		354,667	316,857		316,857	U
180	0203740A	Maneuver Control System	07	43,453	15,408		15,408	4,031		4,031	U
181	0203744A	Aircraft Modifications/Product Improvement Programs	07	40				35,793		35,793	U
182	0203752A	Aircraft Engine Component Improvement Program	07	372	364		364	259		259	U
183	0203758A	Digitization	07	5,765	4,361		4,361	6,483		6,483	U
184	0203801A	Missile/Air Defense Product Improvement Program	07	4,917	3,154		3,154	5,122		5,122	U
185	0203802A	Other Missile Product Improvement Programs	07	40,468	35,951		35,951	7,491		7,491	U
186	0203808A	TRACTOR CARD	07	19,347	34,686		34,686	20,333		20,333	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	124		124	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	S e c
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	69,417		69,417	U
191	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	43,791	36,727		36,727	22,044		22,044	U
192	0208053A	Joint Tactical Ground System	07	10,209	20,515		20,515	12,649		12,649	U
194	0303028A	Security and Intelligence Activities	07	12,518	6,998		6,998	11,619		11,619	U
195	0303140A	Information Systems Security Program	07	13,627	31,154		31,154	38,280		38,280	U
196	0303141A	Global Combat Support System	07	5,225	21,574		21,574	27,223		27,223	U
197	0303142A	SATCOM Ground Environment (SPACE)	07	9,978	9,355		9,355	18,815		18,815	U
198	0303150A	WWMCCS/Global Command and Control System	07	2,493	7,034		7,034	4,718		4,718	U
201	0305179A	Integrated Broadcast Service (IBS)	07		750		750				U
202	0305204A	Tactical Unmanned Aerial Vehicles	07	20,290	13,225		13,225	8,218		8,218	U
203	0305206A	Airborne Reconnaissance Systems	07		22,870		22,870	11,799		11,799	U
204	0305208A	Distributed Common Ground/Surface Systems	07	20,155	25,592		25,592	32,284		32,284	U
205	0305219A	MQ-1C Gray Eagle UAS	07	46,472				13,470		13,470	U
206	0305232A	RQ-11 UAV	07					1,613		1,613	U
207	0305233A	RQ-7 UAV	07	16,389	11,797		11,797	4,597		4,597	U
208	0307665A	Biometrics Enabled Intelligence	07	1,973					7,104	7,104	U
209	0310349A	Win-T Increment 2 - Initial Networking	07	3,123	3,800		3,800	4,867		4,867	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 14, 2016 at 10:17:52

UNCLASSIFIED

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

14 Jan 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	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Sec
210	0708045A	End Item Industrial Preparedness Activities	07	73,419	60,422		60,422	62,287		62,287	U
9999	9999999999	Classified Programs		14,302	4,536		4,536	4,625		4,625	U
		Operational Systems Development		1,173,856	1,211,051		1,211,051	1,296,954	7,104	1,304,058	
Total Research, Development, Test & Eval, Army				6,744,134	7,562,170	1,500	7,563,670	7,515,399	100,522	7,615,921	

UNCLASSIFIED

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

Table of Contents

Introduction and Explanation of Contents..... ii

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

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

Exhibit R-2's..... 1

UNCLASSIFIED

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

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

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
161	07	0603778A	MLRS Product Improvement Program.....	1
162	07	0603813A	TRACTOR PULL.....	22
163	07	0605024A	Anti-Tamper Technology Support.....	23
164	07	0607131A	Weapons and Munitions Product Improvement Programs.....	28
165	07	0607133A	TRACTOR SMOKE.....	57
166	07	0607134A	Long Range Precision Fires (LRPF).....	58
167	07	0607135A	Apache Product Improvement Program.....	65
168	07	0607136A	Blackhawk Product Improvement Program.....	74
169	07	0607137A	Chinook Product Improvement Program.....	83
170	07	0607138A	Fixed Wing Product Improvement Program.....	93
171	07	0607139A	Improved Turbine Engine Program.....	100
172	07	0607140A	Emerging Technologies from NIE.....	109
173	07	0607141A	Logistics Automation.....	116
174	07	0607665A	Family of Biometrics.....	127
175	07	0607865A	Patriot Product Improvement.....	140
176	07	0202429A	Aerostat Joint Project - COCOM Exercise.....	150

UNCLASSIFIED

UNCLASSIFIED

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

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
177	07	0203726A	Adv Field Artillery Tactical Data System.....	160
178	07	0203728A	Joint Automated Deep Operation Coordination System (JADOCS).....	167
179	07	0203735A	Combat Vehicle Improvement Programs.....	192
180	07	0203740A	Maneuver Control System.....	227
181	07	0203744A	Aircraft Modifications/Product Improvement Programs.....	238
182	07	0203752A	Aircraft Engine Component Improvement Program.....	246
183	07	0203758A	Digitization.....	253
184	07	0203801A	Missile/Air Defense Product Improvement Program.....	263
185	07	0203802A	Other Missile Product Improvement Programs.....	271
186	07	0203808A	TRACTOR CARD.....	278
187	07	0205402A	Integrated Base Defense - Operational System Dev.....	282
188	07	0205410A	Materials Handling Equipment.....	293
189	07	0205412A	Environmental Quality Technology - Operational System Dev.....	301
190	07	0205456A	Lower Tier Air and Missile Defense (AMD) System.....	307
191	07	0205778A	Guided Multiple-Launch Rocket System (GMLRS).....	317
192	07	0208053A	Joint Tactical Ground System.....	332
194	07	0303028A	Security and Intelligence Activities.....	341
195	07	0303140A	Information Systems Security Program.....	347

UNCLASSIFIED

UNCLASSIFIED

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

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
196	07	0303141A	Global Combat Support System.....	385
197	07	0303142A	SATCOM Ground Environment (SPACE).....	406
198	07	0303150A	WWMCCS/Global Command and Control System.....	431
200	07	0305179A	Integrated Broadcast Service (IBS).....	445
201	07	0305204A	Tactical Unmanned Aerial Vehicles.....	451
202	07	0305206A	Airborne Reconnaissance Systems.....	473
203	07	0305208A	Distributed Common Ground/Surface Systems.....	499
204	07	0305219A	MQ-1 Gray Eagle UAV.....	520
205	07	0305232A	RQ-11 UAV.....	527
206	07	0305233A	RQ-7 UAV.....	534
207	07	0307665A	Biometrics Enabled Intelligence.....	544
208	07	0300349A	Win-T Increment 2 - Initial Networking.....	554
209	07	0708045A	End Item Industrial Preparedness Activities.....	563

UNCLASSIFIED

UNCLASSIFIED

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

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

Program Element Title	Program Element Number	Line #	BA	Page
Adv Field Artillery Tactical Data System	0203726A	177	07.....	160
Aerostat Joint Project - COCOM Exercise	0202429A	176	07.....	150
Airborne Reconnaissance Systems	0305206A	202	07.....	473
Aircraft Engine Component Improvement Program	0203752A	182	07.....	246
Aircraft Modifications/Product Improvement Programs	0203744A	181	07.....	238
Anti-Tamper Technology Support	0605024A	163	07.....	23
Apache Product Improvement Program	0607135A	167	07.....	65
Biometrics Enabled Intelligence	0307665A	207	07.....	544
Blackhawk Product Improvement Program	0607136A	168	07.....	74
Chinook Product Improvement Program	0607137A	169	07.....	83
Combat Vehicle Improvement Programs	0203735A	179	07.....	192
Digitization	0203758A	183	07.....	253
Distributed Common Ground/Surface Systems	0305208A	203	07.....	499
Emerging Technologies from NIE	0607140A	172	07.....	109
End Item Industrial Preparedness Activities	0708045A	209	07.....	563
Environmental Quality Technology - Operational System Dev	0205412A	189	07.....	301
Family of Biometrics	0607665A	174	07.....	127

UNCLASSIFIED

UNCLASSIFIED

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

Program Element Title	Program Element Number	Line #	BA	Page
Fixed Wing Product Improvement Program	0607138A	170	07.....	93
Global Combat Support System	0303141A	196	07.....	385
Guided Multiple-Launch Rocket System (GMLRS)	0205778A	191	07.....	317
Improved Turbine Engine Program	0607139A	171	07.....	100
Information Systems Security Program	0303140A	195	07.....	347
Integrated Base Defense - Operational System Dev	0205402A	187	07.....	282
Integrated Broadcast Service (IBS)	0305179A	200	07.....	445
Joint Automated Deep Operation Coordination System (JADOCS)	0203728A	178	07.....	167
Joint Tactical Ground System	0208053A	192	07.....	332
Logistics Automation	0607141A	173	07.....	116
Long Range Precision Fires (LRPF)	0607134A	166	07.....	58
Lower Tier Air and Missile Defense (AMD) System	0205456A	190	07.....	307
MLRS Product Improvement Program	0603778A	161	07.....	1
MQ-1 Gray Eagle UAV	0305219A	204	07.....	520
Maneuver Control System	0203740A	180	07.....	227
Materials Handling Equipment	0205410A	188	07.....	293
Missile/Air Defense Product Improvement Program	0203801A	184	07.....	263
Other Missile Product Improvement Programs	0203802A	185	07.....	271
Patriot Product Improvement	0607865A	175	07.....	140

UNCLASSIFIED

UNCLASSIFIED

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

Program Element Title	Program Element Number	Line #	BA	Page
RQ-11 UAV	0305232A	205	07.....	527
RQ-7 UAV	0305233A	206	07.....	534
SATCOM Ground Environment (SPACE)	0303142A	197	07.....	406
Security and Intelligence Activities	0303028A	194	07.....	341
TRACTOR CARD	0203808A	186	07.....	278
TRACTOR PULL	0603813A	162	07.....	22
TRACTOR SMOKE	0607133A	165	07.....	57
Tactical Unmanned Aerial Vehicles	0305204A	201	07.....	451
WWMCCS/Global Command and Control System	0303150A	198	07.....	431
Weapons and Munitions Product Improvement Programs	0607131A	164	07.....	28
Win-T Increment 2 - Initial Networking	0300349A	208	07.....	554

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program
--	--

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	-	17.852	18.397	9.663	-	9.663	3.778	3.840	3.848	5.066	Continuing	Continuing
093: Multi-Launch Rocket System (MLRS)	-	14.974	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.974
DX8: HIMARS Product Improvement Program	-	2.878	1.355	9.663	-	9.663	3.778	3.840	3.848	5.066	Continuing	Continuing
DZ8: Long Range Precision Fires	-	0.000	17.042	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17.042

Note

FY2017 funding for Long Range Precision Fires (LRPF) has been realigned to a new OSD-directed PE 0607134A, Project ES1.

A. Mission Description and Budget Item Justification

Project 093. The Multiple Launch Rocket System (MLRS) is a full spectrum, combat proven, all weather, 24/7, tracked weapon system. These precision strike weapon systems are organic/assigned to Field Artillery Brigades (FABs). The MLRS launcher provides critical missile precision strike, operational shaping fires, counterfire, and close support destructive and suppressive fires. In FY16 a third battalion of MLRS launchers will be added to United States Forces Korea (USFK). Army Prepositioned Stock requirements have increased to eight M270A1s in FY16. The launcher is complemented by the MLRS Family of Munitions (MFOM) to include the Guided Multiple Launch Rocket System (GMLRS), and the Army Tactical Missile System (ATACMS) Family of Munitions (AFOM), capable of engaging targets up to a range of 300 kilometers. The MLRS product improvement program provides funding for research, development, test, and integration efforts necessary for incorporation of advanced automotive, armament, and system hardware and software technologies, including Common Operating Environment (COE) and Network Integrated Evaluation (NIE), obsolescence mitigation, reliability improvements, and decreasing the logistics footprint. This effort includes performing technical assessments, concept studies, and risk reduction efforts for incorporation of future requirements. The MLRS product improvement program maintains compliance with intra-army interoperability and digital communications via joint variable message format.

Project DX8. The M142 High Mobility Artillery Rocket System (HIMARS) is a full spectrum, combat proven, all weather, 24/7 lethal and responsive, precision strike weapon system that fully supports more deployable, affordable and lethal, Brigade Combat Teams (BCT), Fires Brigades, Modular Forces, and Joint Expeditionary Forces. The HIMARS launcher is a C-130 transportable, wheeled, indirect fire, rocket/missile launcher capable of firing all rockets and missiles in the current and future Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM) and Army Tactical Missile System (ATACMS) Family of Munitions (AFOM) engaging targets with precision out to ranges of 300 kilometers. The HIMARS satisfies the Army's digitization requirements by interfacing with the Advanced Field Artillery Tactical Data System (AFATDS) fire support command and control system. The HIMARS product improvement program provides funding for research, development test, and integration efforts necessary for incorporation of advanced automotive, armor, armament, life cycle enhancements, system hardware and software technologies, including Common Operating Environment (COE) and Network Integrated Evaluation (NIE), obsolescence mitigation, reliability improvements and decreasing the logistics footprint. This effort includes performing technical assessments, concept studies, and risk reduction efforts for incorporation of future requirements. The

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0603778A / <i>MLRS Product Improvement Program</i>
---	---

HIMARS product improvement program maintains compliance with Intra-Army Interoperability and Digital Communications. Army prepositioned stock requirement has increased to twenty-four HIMARS in FY16. The HIMARS was deployed to Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) with great success by both US Army and Marine Corps units.

Project DZ8. LRPF is being developed as a non-cluster munition to provide Joint Force Command with a 24/7 all weather long-range fires capability without placing aircraft and crews at risk. FY2017 funding for Long Range Precision Fires (LRPF) has been realigned to a new OSD-directed PE 0607134A, Project ES1.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	17.103	18.397	49.986	-	49.986
Current President's Budget	17.852	18.397	9.663	-	9.663
Total Adjustments	0.749	0.000	-40.323	-	-40.323
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.400	-			
• SBIR/STTR Transfer	-0.651	-			
• Adjustments to Budget Years	-	-	-40.323	-	-40.323

Change Summary Explanation

FY2015 Below Threshold Reprogramming (BTR) in the amount of \$1.400 million was received from Program Element 0205778A Project EG2 into Project 093 to support Improved Armor Cab (IAB).

FY2017 funding for Long Range Precision Fires (LRPF) has been realigned to a new OSD-directed PE 0607134A, Project ES1, funding adjustment reflects this change.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program				Project (Number/Name) 093 / Multi-Launch Rocket System (MLRS)			
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
093: Multi-Launch Rocket System (MLRS)	-	14.974	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.974
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY2015 Below Threshold Reprogramming (BTR) in the amount of \$1.400 million was received from Program Element 0205778A Project EG2 into Project 093 to support Improved Armor Cab (IAB).

A. Mission Description and Budget Item Justification

The Multiple Launch Rocket System (MLRS) is a full spectrum, combat proven, all weather, 24/7, tracked weapon system. These precision strike weapon systems are organic/assigned to Field Artillery Brigades (FABs). The MLRS launcher provides critical missile precision strike, operational shaping fires, counterfire, and close support destructive and suppressive fires. In FY16 a third battalion of MLRS launchers will be added to United States Forces Korea (USFK). Army Prepositioned Stock requirements have increased to eight M270A1s in FY16. The launcher is complemented by the MLRS Family of Munitions (MFOM) to include the Guided Multiple Launch Rocket System (GMLRS), and the Army Tactical Missile System (ATACMS) Family of Munitions (AFOM), capable of engaging targets up to a range of 300 kilometers. The MLRS product improvement program provides funding for research, development, test, and integration efforts necessary for incorporation of advanced automotive, armament, and system hardware and software technologies, including Common Operating Environment (COE) and Network Integrated Evaluation (NIE), obsolescence mitigation, reliability improvements, and decreasing the logistics footprint. This effort includes performing technical assessments, concept studies, and risk reduction efforts for incorporation of future requirements. The MLRS product improvement program maintains compliance with intra-army interoperability and digital communications via joint variable message format.

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

	FY 2015	FY 2016	FY 2017
Title: MLRS Product Improvement Program	14.974	-	-
<p>Description: The MLRS product improvement program ensures compliance as defined in the Department of Defense (DoD) Information Technology Standards. Funding is provided to several government agency laboratories each fiscal year in support of this program. Support efforts also include Enhanced Command and Control (EC2), interoperability certifications, obsolescence mitigation, increased crew protection, automotive updates and hardware/software enhancements, and information assurance compliance. All efforts are directed toward preservation of platform viability and readiness to accept technology insertion as capability enhancements and obsolescence mitigations are developed.</p> <p>Perform Command, Control, Communications, Computers and Intelligence (C4I)/interoperability certification tests, improve operational timeline, and conduct network interoperability testing/certification. Perform technical assessments, concept studies, obsolescence mitigation, crew protection, automotive and hardware/software enhancements, and risk reduction.</p>			
FY 2015 Accomplishments:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) 093 / Multi-Launch Rocket System (MLRS)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Completed testing for Improved Armored Cab (IAC) that includes system level live fire testing, missile firing, user testing with field exercises and automotive/environmental testing. Continue preparation for award of production contract for IAC. Completed Critical Design Review (CDR) for the Fire Control System Upgrade (FCS-U) and built prototypes to conduct qualification and certification tests. Integrate FCS-U hardware with the Government developed FCS Software that replaces aging contractor developed software. Additional activities include FCS-U qualification tests, C4I/interoperability and network interoperability certification and maintenance. Redesign subsystems as required to mitigate obsolescence. Continue to improve system design and development hardware and software integration with upcoming C2 initiatives to include the COE and the NIE. Incorporate new assurance requirements into system software and evaluate Information Assurance (IA) performance.			
Accomplishments/Planned Programs Subtotals	14.974	-	-

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
• C67500000: MLRS Mods (C67500)	10.380	35.970	34.704	-	34.704	36.771	37.312	46.698	46.968	Continuing	Continuing
• CA0265000: MLRS Mod Initial Spares (CA0265)	1.087	1.067	1.676	-	1.676	1.089	1.105	-	-	0	6.024

Remarks

D. Acquisition Strategy

The MLRS product improvement program conducts concept studies to support obsolescence mitigation, automotive updates, and hardware/software enhancements. Development efforts underway include EC2 and efforts supporting interoperability certifications, information assurance compliance, IAC, and mitigating obsolescence of the Fire Control System through the FCS-U effort. The IAC effort enhances the level of crew protection. A contract was awarded following a competitive bid process (full and open competition) to ensure best value for the government. Seven prototype cabs have been delivered and integrated onto the launchers; testing was completed in FY15. The FCS-U is driven by the need to mitigate obsolete electronic components that are being sustained through life of type purchases. These purchased components will be exhausted, thus requiring an update to the design. This update to the design will preserve current and future capability of firing the complete set of MLRS family of munitions per the Operational Requirements Document (ORD). The FCS-U development effort began in FY13, utilizing the Industrial Engineering Services (IES) contract that was previously sole source awarded.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) 093 / Multi-Launch Rocket System (MLRS)
--	--	---

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			
Government Program Management	Various	PFRMS Proj Ofc, Redstone Arsenal, Alabama : Redstone Arsenal, Alabama	8.249	0.706	Oct 2014	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			8.249	0.706		-		-		-		-	-	-	-

Remarks
PFRMS - Precision Fires Rocket and Missile Systems

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			
Other Government Agencies OGA	MIPR	FT SILL OK, CECOM-NJ AMRDEC-RSA AL, : various	16.245	0.863	Oct 2014	-		-		-		-	Continuing	Continuing	Continuing
MLRS IAC	C/CPFF	Lockheed Martin : Grand Prairie, TX	28.338	2.160	Oct 2014	-		-		-		-	Continuing	Continuing	Continuing
MLRS FCS Development	SS/CR	Lockheed Martin : Grand Prairie, TX	60.367	9.833	Oct 2014	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			104.950	12.856		-		-		-		-	-	-	-

Remarks
 C CPFF - Competitive Cost-Plus Fixed-Fee
 SS CR - Sole Source Cost
 AMRDEC - U.S. Army Aviation and Missile Research Development and Engineering Center
 RSA AL - Redstone Arsenal, Alabama
 CECOM - United States Army Communication - Electronics Command
 MIPR - Military Interdepartmental Purchase Request

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) 093 / Multi-Launch Rocket System (MLRS)
--	--	---

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support Contract	Various	Multiple : Multiple	4.410	0.424	Dec 2015	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			4.410	0.424		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support, Joint Interoperability Test Certificate	MIPR	CTSF, Ft. Hood : Texas	9.724	0.988	Dec 2014	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			9.724	0.988		-		-		-		-	-	-	-

Remarks
CTSF - Central Technical Support Facility

	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	127.333	14.974	0.000	-	-	-	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) 093 / Multi-Launch Rocket System (MLRS)
--	--	---

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
Comd, Cntrl, Comm, Comp, and Intell (C4I)/Interop Cert Tests, Imp Oper	[Red]				[Red]																							
Software Interoperability Testing/Network Interoperability Testing/Certific	[Red]				[Red]																							
FCS-U Development	[Red]				[Red]																							
FCS-U Production - Award 3Q FY16; 1st Delivery/Install 3Q/FY17 (PRO)	[Red]				[Red]				[Blue]																			
IAC Development Award 3Q FY12; Testing Complete 3QFY15	[Red]				[Red]																							
IAC Production - 1st Delivery/Install 1Q FY17 (PROC)	[Red]				[Red]				[Blue]																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) 093 / Multi-Launch Rocket System (MLRS)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Comd, Cntrl, Comm, Comp, and Intell (C4I)/Interop Cert Tests, Imp Oper Timeline	1	2010	4	2015
Software Interoperability Testing/Network Interoperability Testing/Certification	1	2010	4	2015
FCS-U Development	1	2013	3	2016
FCS-U Production - Award 3Q FY16; 1st Delivery/Install 3Q/FY17 (PROC)	3	2016	4	2020
IAC Development Award 3Q FY12; Testing Complete 3QFY15	3	2012	3	2015
IAC Production - 1st Delivery/Install 1Q FY17 (PROC)	1	2017	4	2020

Note

C4I interoperability certification tests, improved operational timeline.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program				Project (Number/Name) DX8 / HIMARS Product Improvement Program			
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
DX8: HIMARS Product Improvement Program	-	2.878	1.355	9.663	-	9.663	3.778	3.840	3.848	5.066	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The M142 High Mobility Artillery Rocket System (HIMARS) is a full spectrum, combat proven, all weather, 24/7 lethal and responsive, precision strike weapon system that fully supports more deployable, affordable and lethal, Brigade Combat Teams, Fires Brigades, Modular Forces, and Joint Expeditionary Forces. The HIMARS launcher is a C-130 transportable, wheeled, indirect fire, rocket/missile launcher capable of firing all rockets and missiles in the current and future Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM) and Army Tactical Missile System (ATACMS) Family of Munitions (AFOM) engaging targets with precision out to ranges of 300 kilometers. The HIMARS satisfies the Army's digitization requirements by interfacing with the Advanced Field Artillery Tactical Data System (AFATDS) fire support command and control system. The HIMARS product improvement program provides funding for research, development, test and integration efforts necessary for incorporation of advanced automotive, armor, armament, life cycle enhancements, system hardware and software technologies, including Common Operating Environment (COE) and Network Integrated Evaluation (NIE), obsolescence mitigation, reliability improvements, and decreasing the logistics footprint. This effort includes performing technical assessments, concept studies, and risk reduction efforts for incorporation of future requirements. The HIMARS product improvement program maintains compliance with Intra-Army Interoperability and Digital Communications. Army prepositioned stock requirements has increased to twenty-four HIMARS in FY16. The HIMARS was deployed to Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) with great success by both U.S. Army and Marine Corps units.

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

	FY 2015	FY 2016	FY 2017
Title: MLRS Production Improvement Program (PIP)-HIMARS PIP	2.878	1.355	9.663
Description: Improve system design and develop hardware and software integration with upcoming command and control initiatives to include the COE and the NIE. Perform technical assessments, concept studies, cost reduction, risk reduction, field issue resolution and required documentation concerning upgrades to Enhanced Command and Control (EC2), improved initialization, hardware and software obsolescence mitigation, tactical fire control, embedded training, launcher loader module electric drive, diagnostics/prognostics, alternate coupling, situational awareness, long range communication, automotive chassis life cycle enhancements and future munitions integration.			
FY 2015 Accomplishments: The focus of the FY15 HIMARS Product Improvement Program was to continue Software Modification Version 8.0 (SW MOD 8.0) software and hardware integration, conduct software testing and debugging, conduct missile firings and field exercises to validate software and obtain a software material release of the SW MOD 8.0 software that mitigates software obsolescence of the Fire Control System. Maintain Command, Control, Communications, and Intelligence (C4I) and network interoperability certification.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) DX8 / HIMARS Product Improvement Program

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

	FY 2015	FY 2016	FY 2017
<p>Conducted technical assessments and concept studies in the areas of automotive and hardware/software technologies to support evolving mission requirements, planned for technology insertion, and continued obsolescence mitigation. Improved system design and developed hardware and software integration with upcoming Command and Control (C2) initiatives to include the (COE) and (NIE), development and implementation of Global Positioning System (GPS).</p> <p>FY 2016 Plans: The focus of the FY16 HIMARS Product Improvement Program is to complete testing, certification, and software material release approval of SW Mod 8.0 that will enable fielding to start in FY16. Maintain C4I and network interoperability certification. Conduct technical assessments and concept studies in the areas of automotive and hardware/software technologies to support evolving mission requirements, planning for technology insertion, and continued obsolescence mitigation. Improve system design and develop hardware and software integration with the upcoming C2 initiatives to include the (COE) and (NIE), development and implementation of Global Positioning System (GPS) M-Code improvements.</p> <p>FY 2017 Plans: The FY17 HIMARS Product Improvement Program will begin development, testing and certification of Software Modification Version 8.1 to enable fielding of Version 8.1 in FY18. Version 8.1 will implement capabilities for Insensitive Munitions, improve the Ignition Safety Device, and correct minor defects from the previous Version 8.0 software. The Product Office will continue to address questions, requests from units in the field on Software Version 8.0 as well as make required modifications. Integrate and test the Wireless Vehicle Intercom System that will enhance operation and safety during mission reload and conduct of fire missions. Develop and document requirements for GPS-M Code to meet DoD requirement and conduct testing of potential future concepts. Review tactical considerations for replacing the High Frequency radio with SATCOM radios. Maintain C4I and network interoperability certification. Conduct technical assessments and concept studies in the areas of automotive and hardware/software technologies to support evolving mission requirements, planning for technology insertion, and continued obsolescence mitigation. Improve system design and develop hardware and software integration with the upcoming C2 initiatives to include the (COE) and (NIE), development.</p>			
Accomplishments/Planned Programs Subtotals	2.878	1.355	9.663

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• C67501: HIMARS Modifications (C67501)	6.008	3.148	1.847	-	1.847	9.566	10.456	12.768	6.320	Continuing	Continuing

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / <i>MLRS Product Improvement Program</i>	Project (Number/Name) DX8 / <i>HIMARS Product Improvement Program</i>

D. Acquisition Strategy

The HIMARS Product Improvement Program conducts concept studies to support obsolescence mitigation, automotive updates, and hardware/software enhancements. Development efforts underway include Enhanced C2 and efforts supporting interoperability certifications, information assurance compliance, and mitigating obsolescence of the fire control system on the M142 HIMARS. The HIMARS follow-on technology insertion efforts include automotive chassis life cycle enhancements, fire control system obsolescence mitigation and associated enhancements to training devices as improvements when applicable.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) DX8 / HIMARS Product Improvement Program
--	--	--

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			
Government Program Management	TBD	PFRMS Project Office, Redstone Arsenal, Alabama : Various	0.050	0.137	Oct 2014	0.289	Oct 2015	0.400	Oct 2016	-		0.400	Continuing	Continuing	0
Subtotal			0.050	0.137		0.289		0.400		-		0.400	-	-	0.000

Remarks
PFRMS - Precision Fires Rocket and Missile Systems; C - Competitive

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			
Other Government Agencies (OGA)	MIPR	AMCOM, GSA, RSA : Various	0.075	0.193	Oct 2014	0.059		0.950	Oct 2016	-		0.950	Continuing	Continuing	0
Wireless Vehicle Intercom System Integration	C/CPFF	Contractor TBD : Various	0.000	-		-		4.897	Dec 2016	-		4.897	0	4.897	0
Battle Command	SS/CPFF	CECOM, PEO STRI, AMRDEC, CGI, LMMFC : Various	0.914	2.136	Oct 2014	0.059	Oct 2015	-		-		-	Continuing	Continuing	0
Subtotal			0.989	2.329		0.118		5.847		-		5.847	-	-	0.000

Remarks
AMCOM - US Army Aviation & Missile Life Cycle Management Command; GSA - General Services Administration; RSA - Redstone Arsenal, Alabama; C - Competitive SS - Sole Source; CPFF - Cost Plus Fixed Fee; CECOM - US Army Communications Electronics Command; PEO STRI - Program Executive Office for Simulation, Training and Instrumentation; AMRDEC - Aviation and Missile Research, Development and Engineering Center; LMMFC - Lockheed Martin Missiles and Fire Control

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support Contract	C/Various	Various : Various	0.063	0.165	Oct 2014	0.345	Oct 2015	-		-		-	0	0.573	0

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army											Date: February 2016				
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program				Project (Number/Name) DX8 / HIMARS Product Improvement Program							

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Other Government Agencies (OGA)	C/TBD	AMRDEC : Various	0.000	-		-		0.920	Oct 2016	-		0.920	0	0.920	0
Subtotal			0.063	0.165		0.345		0.920		-		0.920	0.000	1.493	0.000

Remarks
AMRDEC - Aviation & Missile Research, Development, and Engineering Center

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support	MIPR	Ft Hood, TX, ATEC, APG, MD, WSMR, RTC, RSA : Various	0.113	0.247	Oct 2014	0.603	Oct 2015	2.496	Oct 2016	-		2.496	Continuing	Continuing	0
Subtotal			0.113	0.247		0.603		2.496		-		2.496	-	-	0.000

Remarks
ATEC - US Army Test and Evaluation Command; APG MD - Aberdeen Proving Ground, Maryland; WSMR - White Sands Missile Range; RTC RSA - Redstone Test Center, Redstone Arsenal, Alabama

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.215	2.878	1.355	9.663	-	9.663	-	-	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) DX8 / HIMARS Product Improvement Program
--	--	--

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
Central Technical Support Facility Certification																												
Enhanced Command and Control Development and Testing																												
Software Modification V8.0 IPRs																												
Software Modification V8.0 Qualification Testing & Certification																												
Software Modification V8.0 Unit Fieldings																												
Software Modification V8.1 Development/Certification																												
Wireless Vehicle Intercom System Integration & Test																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) DX8 / HIMARS Product Improvement Program

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Central Technical Support Facility Certification	1	2014	4	2021
Enhanced Command and Control Development and Testing	1	2014	4	2021
Software Modification V8.0 IPRs	4	2014	1	2015
Software Modification V8.0 Qualification Testing & Certification	1	2015	3	2016
Software Modification V8.0 Unit Fieldings	3	2016	1	2017
Software Modification V8.1 Development/Certification	1	2017	4	2017
Wireless Vehicle Intercom System Integration & Test	1	2017	4	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program				Project (Number/Name) DZ8 / Long Range Precision Fires			
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
DZ8: Long Range Precision Fires	-	0.000	17.042	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17.042
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Army G-3/5/7 has directed that Guided Multiple Launch Rocket System (GMLRS) Increment 4 change its name to Long-Range Precision Fires (LRPF) to better reflect the solution as an Army Tactical Missile System (ATACMS) replacement versus a follow-on increment to the GMLRS program. Starting in FY2017 funding for LRPF has been realigned to new OSD-directed PE 0607134A, Proj ES1.

A. Mission Description and Budget Item Justification

The LRPF is being developed as a cluster and insensitive munition-compliant system that replaces and improves upon ATACMS capabilities to provide Joint Force Commanders with a 24/7, all-weather, area target, long-range fires capability without placing aircraft and crews at risk. The mission of the LRPF System will be to attack/neutralize/suppress/destroy targets using missile delivered indirect precision fires. The LRPF will counter the enemy's ability to conduct combat maneuver and air defense operations. Targets include counterfire, air defense, command and control, and other high payoff targets at all depths of the tactical battlefield. LRPF requirements include 300km range; specified lethality against the designated target set, a Missile Launch Pod Container (MLPC) that holds a minimum of two missiles; and compatibility with the existing launcher platforms (M270A1 and High Mobility Artillery Rocket System (HIMARS)). The Army has completed an Analysis of Alternatives (AoA), in accordance with Office of the Secretary of Defense (OSD) approved Material Development Decision (MDD) on 6 November 2013. The AoA was completed on 30 April 2015 and a letter of sufficiency issued by OSD in August 2015.

The Army initially funded the development of the LRPF under PE 0603778A, Proj DZ8. The LRPF program currently has a Milestone (MS) A Decision scheduled for 1QFY16. Funding was requested in FY2016 to conduct competitive sub-system risk reduction activities under DoD Section 845 Other Transaction Authority (OTA), to mature the rocket motor and warhead technology to support the award of Technology Maturation/Risk Reduction (TM/RR) system demonstration contracts in FY17. LRPF will be developed using competitive prototyping, carrying two or more contractors through the TM/RR Phase. LRPF is scheduled for a MS B in FY2020 and MS C in FY2024.

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

	FY 2015	FY 2016	FY 2017
Title: TM/RR	-	17.042	-
Description: Funding is provided for the following effort			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / <i>MLRS Product Improvement Program</i>	Project (Number/Name) DZ8 / <i>Long Range Precision Fires</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Execute system and sub-system (IM rocket motor and warhead) risk reduction prototyping design activities. Qualify GFE flight termination systems for use in TM/RR systems integration and test.				
Accomplishments/Planned Programs Subtotals		-	17.042	-
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy The LRPF is being developed as a cluster and insensitive munition-compliant system that replaces and improves upon ATACMS capabilities to provide Joint Force Commanders with a 24/7, all-weather, area target, long-range fires capability without placing aircraft and crews at risk. An AoA supporting a MS A decision is being conducted by U.S. Army Training and Doctrine Command (TRADOC) Analysis Center-White Sands Missile Range (TRAC-WSMR), with the final report to be completed in March 2015. The Milestone Decision Authority will hold a MS A decision review in 1QFY16. The Acquisition Strategy is for competitive prototyping for TM/RR at both the sub-system and system demonstration levels. After a MS A decision directing a new start LRPF system, the program office will initiate TM/RR activities with awards in 3QFY16 for critical sub-system prototyping under the DoD Ordnance Technology Consortium (DOTC) Section 845 (NDAA 1994) Other Transaction Authority. The program will also conduct a full and open competition in FY2016 of a 24-month TM/RR competitive prototyping and flight demonstration phase to be awarded to two contractors in 2QFY2017. Flight demonstrations and PDRs in FY18 will lead to a limited competition for the EMD contract and competitive down select at MS B.				
E. Performance Metrics N/A				

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) DZ8 / Long Range Precision Fires
--	--	--

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			
Government Program Management	SS/BA	PFRMS Project Office, : RSA	0.000	-		2.446	Oct 2015	-		-		-	0	2.446	0
Subtotal			0.000	-		2.446		-		-		-	0.000	2.446	0.000

Remarks
PFRMS-Precision Fires Rocket and Missile Systems; RSA-Redstone Arsenal, Alabama; TBD-To Be Determined

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			
LRPF Risk Reduction – DOTC OTA (Sec 845)	C/TBD	TBD : TBD	0.000	-		12.033		-		-		-	Continuing	Continuing	Continuing
Other Government Agencies	MIPR	AMCOM/AMRDEC, : RSA	0.000	-		1.038		-		-		-	0	1.038	0
Subtotal			0.000	-		13.071		-		-		-	-	-	-

Remarks
LRPF-Long-Range Precision Fires; LMMFCS-Lockheed Martin Missile and Fire Control System; TX-Texas; C-Competitive; TBD: To Be Determined; AMCOM-Army Materiel Command; AMRDEC-U.S. Army Research, Development and Engineering Command; RSA-Redstone Arsenal, AL

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support Contract	TBD	TBD : TBD	0.000	-		1.126		-		-		-	0	1.126	0
Subtotal			0.000	-		1.126		-		-		-	0.000	1.126	0.000

Remarks
S3-Systems Studies Simulation, Inc.; TMI-Tec Master, Inc.; TBD-To Be Determined

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) DZ8 / Long Range Precision Fires
--	--	--

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support	MIPR	WSMR, NM; : RTC, AL	0.000	-		0.399		-		-		-	0	0.399	0
Subtotal			0.000	-		0.399		-		-		-	0.000	0.399	0.000

Remarks
WSMR, NM-White Sands Missile Range, New Mexico; RTC, AL-Redstone Test Center, Alabama

	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	-	17.042	-	-	-	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) DZ8 / Long Range Precision Fires
--	--	--

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
AoA					▲ 1																							
(1) MS A																												
TM/RR																												
Vendor #1 Contract Award/Preparation/Execution of Flight Demo																												
Vendor #2 Contract Award/Preparation/Execution of Flight Demo																												
(2) MS B																					▲ 2							
Engineering Manufacturing Development Phase																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / MLRS Product Improvement Program	Project (Number/Name) DZ8 / Long Range Precision Fires

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AoA	1	2014	3	2015
MS A	2	2016	2	2016
TM/RR	2	2016	1	2020
Vendor #1 Contract Award/Preparation/Execution of Flight Demo	3	2016	1	2020
Vendor #2 Contract Award/Preparation/Execution of Flight Demo	3	2016	1	2020
MS B	2	2020	2	2020
Engineering Manufacturing Development Phase	2	2020	3	2024

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0603813A / <i>TRACTOR PULL</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	9.461	3.960	-	3.960	3.863	3.928	4.205	4.286	Continuing	Continuing
ET1: <i>Tractor Peel</i>	-	0.000	9.461	3.960	-	3.960	3.863	3.928	4.205	4.286	Continuing	Continuing

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)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	9.461	10.320	-	10.320
Current President's Budget	0.000	9.461	3.960	-	3.960
Total Adjustments	0.000	0.000	-6.360	-	-6.360
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-6.360	-	-6.360

Change Summary Explanation

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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0605024A / <i>Anti-Tamper Technology Support</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	3.638	-	3.638	4.126	4.388	7.288	6.623	0.000	26.063
FB1: <i>Anti-Tamper Technology Support</i>	-	0.000	0.000	3.638	-	3.638	4.126	4.388	7.288	6.623	0.000	26.063

Note

Anti-Tamper was a part of AMRDEC's Programwide Activities (665801M46) in FY 16 and prior. New project FB1 established under PE 605024A in FY 17.

A. Mission Description and Budget Item Justification

Anti-Tamper (AT) Technology Support. The Protective Technologies (PT) organization is the Army's Technical Center for the DoD AT program, which is focused on preventing exploitation (reverse engineering (RE)) of U.S. systems lost or captured on the battlefield or sold via Foreign Military Sales (FMS) or Direct Commercial Sales (DCS). In support of this mission, PT's classified efforts are focused on AT Validation and Verification (V&V) activities with Army programs, AT/RE Lab facilities and equipment and AT/RE Lab assessments. Failure to adequately fund these efforts will put all current and future Army acquisition programs, and their underlying critical technologies, at risk for loss to our adversaries. This will reduce or eliminate the U.S. technological advantage and put warfighters lives at unnecessary peril.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	3.638	-	3.638
Total Adjustments	0.000	0.000	3.638	-	3.638
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	3.638	-	3.638

Change Summary Explanation

FY17 increase due to funds reprogrammed from PE 0605801A Project M46.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0605024A / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) FB1 / <i>Anti-Tamper Technology Support</i>
--	---	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
FB1: <i>Anti-Tamper Technology Support</i>	-	0.000	0.000	3.638	-	3.638	4.126	4.388	7.288	6.623	0.000	26.063
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Anti-Tamper was a part of AMRDEC's Programwide Activities (665801M46) in FY 16 and prior. New project FB1 established under PE 605024A in FY 17.

A. Mission Description and Budget Item Justification

Anti-Tamper Technology Support

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

	FY 2015	FY 2016	FY 2017
Title: Anti-Tamper Technology Support	-	-	3.638
Description: AT is a DoD program that encompasses the systems engineering activities intended to prevent and/or delay exploitation of critical technologies in U.S. weapon systems. These activities involve the entire life-cycle of systems acquisition, including research, development, implementation, and testing of AT measures.			
FY 2017 Plans: Will maintain the core team of subject matter experts (SMEs) available for this mission to support the development of and evaluate the AT designs for Army programs, and in support of that primary mission, conduct technical assessments of micro-electronic parts used in the electronic designs of a number of critical Army weapons systems.			
Accomplishments/Planned Programs Subtotals	-	-	3.638

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0605024A / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) FB1 / <i>Anti-Tamper Technology Support</i>
--	---	---

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			
AT V&V Activities	Various	Redstone Arsenal & Prime Contract locations : Redstone Arsenal	0.000	-		-		1.352	Jun 2017	-		1.352	0	1.352	0
Subtotal			0.000	-		-		1.352		-		1.352	0.000	1.352	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AT/RE Lab Facilities & Equipment	Various	Redstone Arsenal, AL : Redstone Arsenal, AL	0.000	-		-		1.598	Sep 2017	-		1.598	0	1.598	0
Subtotal			0.000	-		-		1.598		-		1.598	0.000	1.598	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AT/RE Laboratory Assessments	Various	Redstone Arsenal, AL : Redstone Arsenal, AL	0.000	-		-		0.688	Sep 2017	-		0.688	0	0.688	0
Subtotal			0.000	-		-		0.688		-		0.688	0.000	0.688	0.000

			Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		0.000		3.638		-		3.638	0.000	3.638	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0605024A / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) FB1 / <i>Anti-Tamper Technology Support</i>
--	---	---

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
AT V&V Activities																												
AT/RE Lab Facilities and Equipment																												
AT/RE Laboratory Assessments																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0605024A / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) FB1 / <i>Anti-Tamper Technology Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AT V&V Activities	1	2017	4	2021
AT/RE Lab Facilities and Equipment	1	2017	4	2021
AT/RE Laboratory Assessments	1	2017	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	4.945	14.517	-	14.517	7.001	5.753	5.835	6.716	Continuing	Continuing
ER2: <i>Close Combat Technology</i>	-	0.000	0.870	4.300	-	4.300	1.183	0.832	0.956	1.083	0.000	9.224
ER5: <i>Indirect Fire and Fuze Technology</i>	-	0.000	1.771	0.883	-	0.883	2.159	2.320	2.328	2.816	0.000	12.277
ER6: <i>Direct Fire Technology</i>	-	0.000	2.304	9.334	-	9.334	3.659	2.601	2.551	2.817	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project ER2: The Close Combat Technology program includes development efforts to upgrade Close Combat technologies, energetics, and munitions, such as counter explosives, grenades, demolitions, shoulder launched munitions, pyrotechnic simulators, countermeasure flares, non-lethal ammunition/systems, networked munitions and mines, that have been fielded or have received approval for full rate production. This program will identify, characterize, study, analyze, test and develop technologies to resolve close combat munition reliability, safety, environmental, storage, standardization, obsolescence and manufacturing/producibility issues.

FY 2017 funds will be used to support the following efforts: MK3A2 Offensive Hand Grenade, improve Claymore Force-on-Force Training Aids, Device, Simulator and Simulation (TADSS) Trainer, Countermeasure Flare Decoy Formulations, AN-M82A Obscuration Grenade, and Non-Lethal Ammunition Obsolescence.

Project ER5: The Indirect Fire and Fuze Technology program supports product improvement development efforts to upgrade indirect fire weapon systems and munitions that have already been fielded and/or are in production. Indirect Fire Weapons and Munitions Product Improvement Programs include improved target engagement; increased reliability, availability, maintainability, and safety; standardization and interoperability with weapons and munitions of Allied Nations; defense exportability features under the auspices of Better Buying Power; reduced taxpayer life-cycle costs; reduction of failure mechanisms and supply chain risk through introduction of new and alternative technology and materiel solutions; materiel and technology obsolescence mitigation; improvement of manufacturing methods and their associated production and life cycle support processes; new capabilities in response the evolving and emerging threats and countermeasures; and reduction/elimination of potential environmental and health risks associated with these products and their underlying components, materials, and production processes.

This program supports the standardization and interoperability of legacy and new production U.S. weapons and ammunition with Allied Nations to maximize battlefield interchangeability/compatibility under the auspices of the international Joint Ballistics Memorandum Of Understanding (JBMOU). Maximizing standardization, interchangeability, and exportability will also potentially increase Foreign Military Sales (FMS) of U.S. indirect fire Weapon and Munition products to maintain critical mass domestic production and affordable taxpayer costs through increased economies of scale.

This program also supports the identification, study, analysis and development of fuzing technologies and safe and arm devices in production and in the field. This program will implement these technologies into fuzing systems to preclude obsolescence, maximize standardization, enhance performance, and improve the safety and exportability of existing munitions. The program addresses two major areas: (1) analysis and (2) block upgrades. Analysis efforts will identify second sources for fuzing systems that may reduce cost by providing competition, and maintain production when sources or parts are no longer available. It will also allow for the

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>
---	---

performance enhancement of current ammunition items by conducting studies of major fuze components to detect and identify latent defects. The second major area is block upgrades, which will identify and perform studies on improvements to fuzes; increase commonality of fuze components and requirements. Block upgrades will enable the introduction of the latest technologies into fuzing, keep the fuzing design current to avoid obsolescence issues, and add capabilities.

Project ER6: The Munitions, Survivability and Logistics program funding will be used to support direct fire ammunition from small caliber ammunition, 40mm grenade, medium caliber cannon ammunition and large caliber ammunition enhancements to lethality, effectiveness, survivability, accuracy and general product improvements. In FY 2016, this program assures complete interchangeability of direct fire ammunition and weapons among all the North Atlantic Treaty Organization (NATO) countries with all of the associated logistic, strategic and tactical advantages of the alliance. The program involves development and testing compliance of NATO standardization agreements (STANAGS) and staffing of the North American Regional Test Center (NARTC). In FY 2017, the NATO Standardization mission transfers to PE 0605805A - Munitions Standardization, Effectiveness and Safety, Project F21 - Direct Fire Technology and NATO Ammo Evaluation.

FY 2017 funds are used for a more lethal and safer design for 40mm grenades that will be built and tested. An improved 30mm training round for the Apache helicopter will allow pilots to see where the rounds strike. Warhead improvements for the 30mm Apache ammunition are also under development. A number of studies on potential improvements for training ammunition and better primers will be conducted.

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	4.945	4.322	-	4.322
Current President's Budget	0.000	4.945	14.517	-	14.517
Total Adjustments	0.000	0.000	10.195	-	10.195
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	10.195	-	10.195

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs	Project (Number/Name) ER2 / Close Combat Technology
--	---	---

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
ER2: Close Combat Technology	-	0.000	0.870	4.300	-	4.300	1.183	0.832	0.956	1.083	0.000	9.224
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Grenades MK3A2 Replacement, Concussion Grenade Optimization Effort and Claymore Force-on-Force Training Aids, Devices, Simulators, and Simulations (TADSS) Trainer are efforts previously funded under project 296 PE 0605805A - Munitions Standardization, Effectiveness and Safety. FY2017 also includes Countermeasure Flare Decoy Formulations, AN-M8A2 Obscuration Grenade and Non-Lethal Ammunition Obsolescence.

A. Mission Description and Budget Item Justification

This program includes development efforts to upgrade Close Combat technologies, energetics, and munitions, such as counter explosives, grenades, demolitions, shoulder launched munitions, pyrotechnic simulators, countermeasure flares, non-lethal ammunition/systems, networked munitions and mines, that have been fielded or have received approval for full rate production. This program will identify, characterize, study, analyze, test and develop technologies to resolve close combat munition reliability, safety, environmental, storage, standardization, obsolescence and manufacturing/producibility issues.

FY 2017 funds will be used to support the following efforts: MK3A2 Offensive Hand Grenade, improve Claymore Force-on-Force Training Aids, Device, Simulator and Simulation (TADSS) Trainer, Countermeasure Flare Decoy Formulations, AN-M82A Obscuration Grenade, and Non-Lethal Ammunition Obsolescence.

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

	FY 2015	FY 2016	FY 2017
Title: Claymore Force-on-Force Training Aids, Devices, Simulators, and Simulations (TADSS) Trainer	-	0.370	0.950
Description: Develop an improved Claymore Force-on-Force Training Aids, Devices, Simulators, and Simulations (TADSS) Trainer. The Claymore does not have a TADSS trainer with sight, sound & Multiple Integrated Laser Engagement System (MILES) capability. Development of an improved Claymore trainer will allow Claymore to be trained at Combat Training Centers (CTCs) and will provide more realistic and effective training for the user when they are training Claymore as an end item and when training Claymore as initiated by Spider.			
FY 2016 Plans: Continue the design and test of the Non-Pyro Claymore Simulation (NPCS), finalize the design and test of the Fireset Board and the Multiple Integrated Laser Engagement System (MILES) Emitting Unit. Conduct a Systems Requirements Review (SRR), a Preliminary Design Review (PDR), and perform a User Assessment and Demonstration of the System.			
FY 2017 Plans: Design and test Fireset Board, Non-Pyro Claymore simulation and Multiple Integrated Laser Engagement System (MILES) Emitting Unit. Conduct a Preliminary Design Review, perform user assessments and demonstrations and a preliminary Drop and			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER2 / <i>Close Combat Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Loose Cargo test. Conduct a Systems Verification Test. All efforts will lead to delivery of a production representative prototype Claymore TADSS trainer.				
<p>Title: MK3A2 Replacement, Concussion Grenade Optimization Effort</p> <p>Description: The Current MK3A2 Offensive Hand Grenade can expose the warfighter to toxic levels of asbestos and is restricted for use in Continental United States and Outside Continental United State (CONUS/OCONUS). The warfighter cannot safely employ this grenade. Alternate munitions do not satisfy user requirements for incapacitating the enemy. This effort incorporates modern materials and insensitive explosives to provide a safer, producible concussion grenade.</p> <p>FY 2016 Plans: The FY16 effort will include finalizing the design of grenade. The training device design will also be finalized. Production Qualification (PQT) hardware will be procured and built.</p> <p>FY 2017 Plans: Production Qualification Testing (PQT) will be conducted in addition to Insensitive Munitions testing and other testing required to support Type Classification (TC). The final report will be generated. TC documentation will be generated in preparation for TC in 2QFY18.</p>		-	0.500	1.926
<p>Title: Countermeasure Flare Decoy Formulations</p> <p>Description: Improve the producibility of countermeasure (CM) decoy formulations in order to increase the production safety and functional reliability to protect aircraft against multiple threat systems.</p> <p>FY 2017 Plans: Develop prototypes and conduct developmental testing. Effort will result in a production representative prototype countermeasure.</p>		-	-	0.480
<p>Title: AN-M8A2 Obscuration Grenade</p> <p>Description: This effort supports the Type Classification / Production Prove Out of a new obscurant grenade that provides the warfighter with three times the performance of the current M83 without exposing the soldier to the carcinogens of the AN-M8. Use of the AN-M8 Obscuration Grenade has been discontinued in Continental United State and Outside Continental United State (CONUS/OCONUS) due to restrictions of Hexachlorethane on the battlefield. The M83 is incapable of providing smoke duration or density at the required performance level of the AN-M8, so the current warfighter strategy is to utilize two M83 Obscuration Grenades to replace the performance of the AN-M8.</p> <p>FY 2017 Plans:</p>		-	-	0.800

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER2 / <i>Close Combat Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Effort during FY17 will include finalizing the design of th grenade, producing the test quantity and beginning TC/FMR documentation.				
<p>Title: Non-Lethal Ammunition Obsolescence</p> <p>Description: Due to advancement in technology, electronic components of fuzed items are rapidly becoming obsolete. Obsolescence slows or even stops production and delays delivery of systems to inventory which impacts warfighter readiness. This effort will fund the replacement of obsolete chips on the BA39, XM1112 Tactical Non Lethal Munition 40MM projectile. Qualification testing will also be required to ensure that the functionality of the round is unchanged.</p> <p>FY 2017 Plans: This effort will study alternatives to the obsolete components. A contract will be issued to build prototype components for initial testing.</p>		-	-	0.144
Accomplishments/Planned Programs Subtotals		-	0.870	4.300
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
Not Applicable for these items.				
E. Performance Metrics				
N/A				

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs	Project (Number/Name) ER2 / Close Combat Technology
--	---	---

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			
MK3A2 Replacement, Concussion Grenade Optimization Effort	MIPR	PM CCS : Picatinny Arsenal, NJ	0.000	-		-		0.050	Jan 2017	-		0.050	0	0.050	0
Claymore Force-on-Force TADSS Trainer - Program Management	MIPR	PM CCS : Picatinny Arsenal, NJ	0.000	-		0.020	Mar 2016	0.085	Jan 2017	-		0.085	0	0.105	0
MK3A2 Replacement, Concussion Grenade Optimization Effort	MIPR	PM CCS : Picatinny Arsenal	0.000	-		0.020	Jan 2016	-		-		-	0	0.020	0
Countermeasure Flare Decoy Formulations	MIPR	PM CCS : Picatinny Arsenal, NJ	0.000	-		-		0.030	Feb 2017	-		0.030	0.060	0.090	0
M8A2 Enhanced Obscuration Grenade	MIPR	PM CCS : Picatinny Arsenal, NJ	0.000	-		-		0.025	Jan 2017	-		0.025	0	0.025	0
Non-Lethal Ammunition Obsolescence	MIPR	PM CCS : Picatinny Arsenal, NJ	0.000	-		-		0.025	Jan 2017	-		0.025	0	0.025	0
Subtotal			0.000	-		0.040		0.215		-		0.215	0.060	0.315	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			
MK3A2 Replacement, Concussion Grenade Optimization Effort	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		0.480	Jan 2016	-		-		-	0	0.480	0
Claymore Force-on-Force TADSS Trainer - Design, Develop and Deliver a Production Prototype	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		0.350	Jan 2016	0.865	Jan 2017	-		0.865	0	1.215	0
Countermeasure Flare Decoy Formulations	MIPR	ACC : Picatinny Arsenal, NJ	0.000	-		-		0.350	Mar 2017	-		0.350	0.170	0.520	0
Subtotal			0.000	-		0.830		1.215		-		1.215	0.170	2.215	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs	Project (Number/Name) ER2 / Close Combat Technology
--	---	---

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MK3A2 Replacement, Concussion Grenade Optimization Effort	MIPR	ARDEC : Picatinny Arsenal	0.000	-		-		0.909	Jan 2017	-		0.909	0	0.909	0
Countermeasure Flare Decoy Formulations	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		-		0.100	Jan 2017	-		0.100	0.270	0.370	0
M8A2 Enhanced Obscuration Grenade	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		-		0.400	Jan 2017	-		0.400	0	0.400	0
M8A2 Enhanced Obscuration Grenade	MIPR	ECBC : Edgewood, MD	0.000	-		-		0.300	Jan 2017	-		0.300	0	0.300	0
M8A2 Enhanced Obscuration Grenade	MIPR	Pine Bluff : Pine Bluff Arsenal	0.000	-		-		0.075	Jan 2017	-		0.075	0	0.075	0
Non-Lethal Ammunition Obsolescence	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		-		0.119	Jan 2017	-		0.119	0	0.119	0
Subtotal			0.000	-		-		1.903		-		1.903	0.270	2.173	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MK3A2 Replacement, Concussion Grenade Optimization Effort	MIPR	ARDEC : Picatinny Arsenal	0.000	-		-		0.877	Jun 2017	-		0.877	0	0.877	0
MK3A2 Replacement, Concussion Grenade Optimization Effort	MIPR	DAHLGREN : Dahlgren, VA	0.000	-		-		0.090	Jun 2017	-		0.090	0	0.090	0
Subtotal			0.000	-		-		0.967		-		0.967	0.000	0.967	0.000

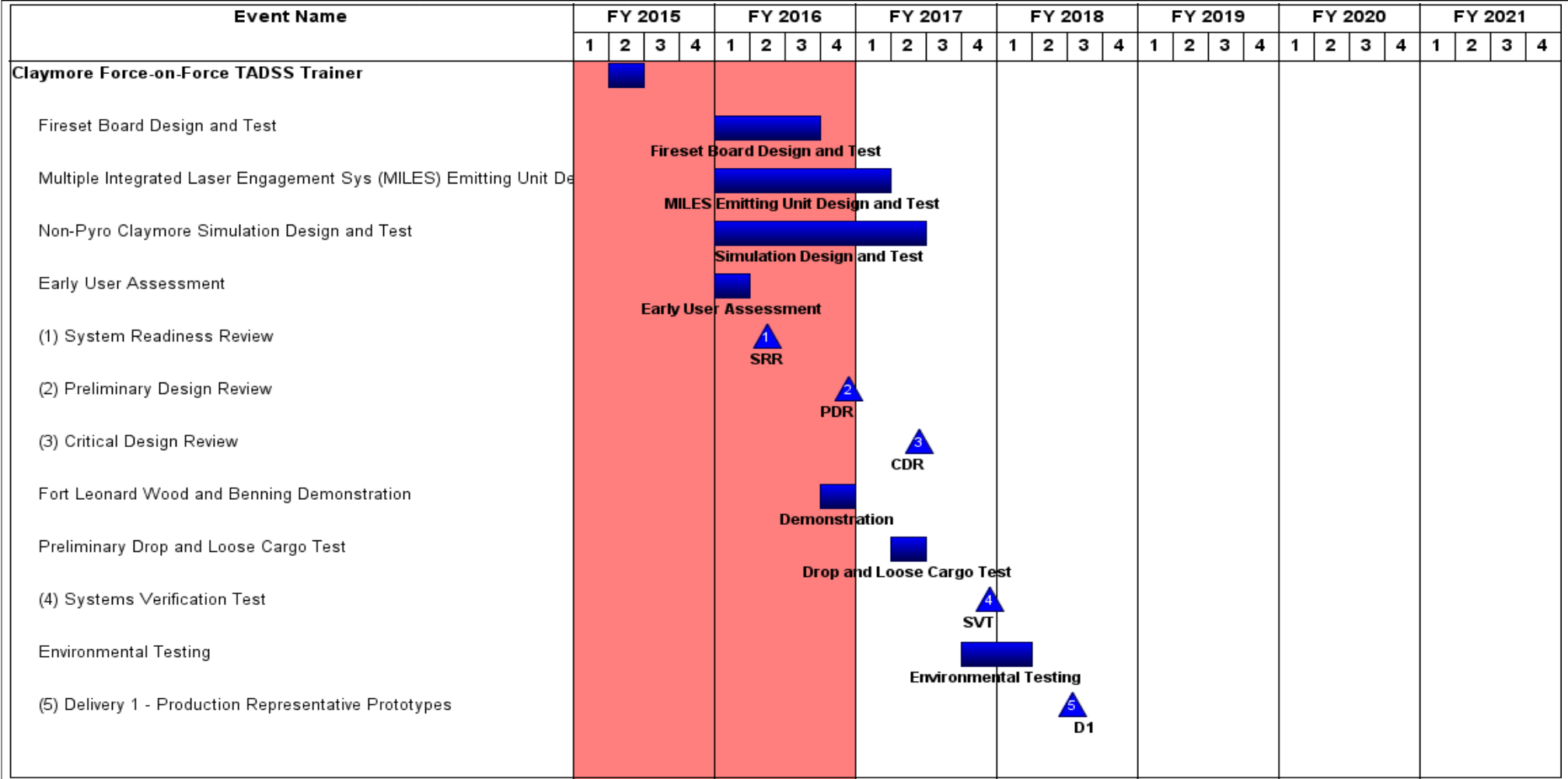
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		0.000	-	0.870	4.300	-	4.300	0.500	5.670	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER2 / <i>Close Combat Technology</i>
--	---	--



UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs	Project (Number/Name) ER2 / Close Combat Technology
--	---	---

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
MK3A2 GRENADE																												
(1) Baseline Final Design Review																												
Produce Test Quantity																												
Detailed Spec, Type Classification/Full Material Release (TC/FMR) D																												
Production Qualification Testing																												
(2) Type Classification																												
(3) Full Material Release																												
Countermeasure Flare Decoy Formulations																												
Program Contract Preparation																												
(4) Prototype Contract Award																												
Prototype and Developmental Testing																												
Hardware Contract Preparation																												
(5) Hardware Contract Award																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs	Project (Number/Name) ER2 / Close Combat Technology
--	---	---

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
ECP Confirmation Testing																												
ECP Preparation and Staffing																												
(1) ECP Tech Data Package																												
AN-M8A2 Obscuration Grenade																												
Final Design Review - For QTY																												
-Produce Test Quantity																												
Type Classification Documentation																												
Full Material Release Documentation																												
-Production Validation Testing																												
(2) -Type Classification																												
(3) -Full Material Release																												
Non-Lethal Ammunition Obsolescence																												
Develop Alternate Design																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs	Project (Number/Name) ER2 / Close Combat Technology
--	---	---

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				
Translate Process to Chip									Translate Process to Chip																							
Complete Translation Process													Complete Translation Process																			
Build Prototype																	Build Prototype															
Test Prototype																					Test Prototype											
Build Test Hardware Chips																					Build Test Hardware Chips											
Build Qualification Hardware																									Build Qualification Hardware							
Conduct Qualification Testing																									PQT							
(1) Update TDP																													<div style="text-align: center;">▲ TDP Update</div>			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER2 / <i>Close Combat Technology</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Claymore Force-on-Force TADSS Trainer	2	2015	2	2015
Fireset Board Design and Test	1	2016	3	2016
Multiple Integrated Laser Engagement Sys (MILES) Emitting Unit Design and Test	1	2016	1	2017
Non-Pyro Claymore Simulation Design and Test	1	2016	2	2017
Early User Assessment	1	2016	1	2016
System Readiness Review	2	2016	2	2016
Preliminary Design Review	4	2016	4	2016
Critical Design Review	2	2017	2	2017
Fort Leonard Wood and Benning Demonstration	4	2016	4	2016
Preliminary Drop and Loose Cargo Test	2	2017	2	2017
Systems Verification Test	4	2017	1	2018
Environmental Testing	4	2017	1	2018
Delivery 1 - Production Representative Prototypes	3	2018	3	2018
MK3A2 GRENADE	2	2015	2	2015
Baseline Final Design Review	2	2016	2	2016
Produce Test Quantity	2	2016	3	2016
Detailed Spec, Type Classification/Full Material Release (TC/FMR) Documentation	2	2016	2	2018
Production Qualification Testing	3	2016	1	2017
Type Classification	3	2017	2	2018
Full Material Release	3	2018	2	2020
Countermeasure Flare Decoy Formulations	2	2015	2	2015
Program Contract Preparation	1	2017	2	2017

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER2 / <i>Close Combat Technology</i>
--	---	--

Events	Start		End	
	Quarter	Year	Quarter	Year
Prototype Contract Award	2	2017	2	2017
Prototype and Developmental Testing	3	2017	4	2017
Hardware Contract Preparation	1	2018	2	2018
Hardware Contract Award	2	2018	2	2018
ECP Confirmation Testing	3	2018	4	2018
ECP Preparation and Staffing	1	2019	2	2019
ECP Tech Data Package	4	2019	4	2019
AN-M8A2 Obscuration Grenade	2	2015	2	2015
Final Design Review - For QTY	2	2017	2	2017
-Produce Test Quantity	2	2017	4	2017
Type Classification Documentation	3	2018	3	2018
Full Material Release Documentation	4	2018	3	2019
-Production Validation Testing	4	2017	2	2018
-Type Classification	4	2018	4	2018
-Full Material Release	3	2019	3	2019
Non-Lethal Ammunition Obsolescence	2	2015	2	2015
Develop Alternate Design	2	2017	3	2017
Translate Process to Chip	3	2017	4	2017
Complete Translation Process	1	2018	1	2018
Build Prototype	2	2018	2	2018
Test Prototype	3	2018	4	2018
Build Test Hardware Chips	1	2019	2	2019
Build Qualification Hardware	3	2019	4	2019
Conduct Qualification Testing	1	2020	2	2020
Update TDP	4	2020	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>				Project (Number/Name) ER5 / <i>Indirect Fire and Fuze Technology</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
ER5: <i>Indirect Fire and Fuze Technology</i>	-	0.000	1.771	0.883	-	0.883	2.159	2.320	2.328	2.816	0.000	12.277
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program supports product improvement development efforts to upgrade indirect fire weapon systems and munitions that have already been fielded and/or are in production. Indirect Fire Weapons and Munitions Product Improvement Programs include improved target engagement; increased reliability, availability, maintainability, and safety; standardization and interoperability with weapons and munitions of Allied Nations; defense exportability features under the auspices of Better Buying Power; reduced taxpayer life-cycle costs; reduction of failure mechanisms and supply chain risk through introduction of new and alternative technology and materiel solutions; materiel and technology obsolescence mitigation; improvement of manufacturing methods and their associated production and life cycle support processes; new capabilities in response the evolving and emerging threats and countermeasures; and reduction/elimination of potential environmental and health risks associated with these products and their underlying components, materials, and production processes.

This program supports the standardization and interoperability of legacy and new production U.S. weapons and ammunition with Allied Nations to maximize battlefield interchangeability/compatibility under the auspices of the international Joint Ballistics Memorandum Of Understanding (JBMOU). Maximizing standardization, interchangeability, and exportability will also potentially increase Foreign Military Sales (FMS) of U.S. indirect fire Weapon and Munition products to maintain critical mass domestic production and affordable taxpayer costs through increased economies of scale.

This program also supports the identification, study, analysis and development of fuzing technologies and safe and arm devices in production and in the field. This program will implement these technologies into fuzing systems to preclude obsolescence, maximize standardization, enhance performance, and improve the safety and exportability of existing munitions. The program addresses two major areas: (1) analysis and (2) block upgrades. Analysis efforts will identify second sources for fuzing systems that may reduce cost by providing competition, and maintain production when sources or parts are no longer available. It will also allow for the performance enhancement of current ammunition items by conducting studies of major fuze components to detect and identify latent defects. The second major area is block upgrades, which will identify and perform studies on improvements to fuzes; increase commonality of fuze components and requirements. Block upgrades will enable the introduction of the latest technologies into fuzing, keep the fuzing design current to avoid obsolescence issues, and add capabilities.

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

	FY 2015	FY 2016	FY 2017
Title: ARDEC Fuze Technology Improvements	-	1.336	0.625
Description: Activities include Maturation and Validation, and Risk Reduction of fuze component alternatives to increase sources of supply, improve performance, and lower cost. Integration of fuze initiation improvements to increase reliability and lower fuze costs. Evaluation of fuze electronic upgrades to improve safety and increase performance reliability. Evaluation of inductive fuze setting improvements to lower costs. Evaluation of fuze sensing interface improvements for increased safety.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER5 / <i>Indirect Fire and Fuze Technology</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2016 Plans:</i> Block Upgrades: Will mature and evaluate Micro Electro Mechanical Systems (MEMS) component packaging improvements for increased performance and lower cost. Will conduct tests to demonstrate improvements to the mortar fuze electronics. Will conduct tests to prove-out the mortar fuze delay primer improvements. Will conduct fuze impact switch /electronics integration and prototype builds. Will conduct fuze setback spring prototype fabrication and builds. Will evaluate improvements to the inductive fuze setter interface and initialization of large caliber indirect fire munitions.</p> <p><i>FY 2017 Plans:</i> Block Upgrades: Will conduct engineering tests to prove-out the mortar fuze delay primer improvements. Will conduct engineering tests to prove-out the mortar fuze impact switch upgrades. Will conduct engineering tests to prove-out fuze setback spring interface improvements. Analysis/Risk Mitigation: Will conduct studies on electronic component replacement prototypes for indirect and direct fire fuzes due to component obsolescence.</p>			
<p><i>Title:</i> Indirect Fires Weapons And Munitions Standardization and Interoperability</p> <p><i>Description:</i> Activities include maturation, validation, and risk reduction of battlefield interchangeability/compatibility and associated enabling technologies between US and Allied 155mm weapons and munitions.</p> <p><i>FY 2016 Plans:</i> Activities include ballistic testing including firing tables, safety, reliability and performance.</p> <p><i>FY 2017 Plans:</i> Activities include ballistic testing including firing tables, safety, reliability and performance.</p>	-	0.435	0.258
Accomplishments/Planned Programs Subtotals	-	1.771	0.883

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

N/A

Remarks

D. Acquisition Strategy

The Joint Ballistics Memorandum of Understanding (JBMOU) Concerning the Standardization of Elements of 155mm Weapons and Ammo between US, FR, GE, IT, and UK was signed 18Dec09. This is a FY17 continuation of live fire testing, evaluation, and validation and any corresponding NATO Armaments Ballistics Kernel (NABK) and Firing Control Input (FCI) database changes, enables battlefield interchangeability of existing/new 155mm cannon munitions between domestic US and NATO/Allied Nations Indirect Fires Weapons And Munitions.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER5 / <i>Indirect Fire and Fuze Technology</i>

ARDEC Fuze Technology Improvement (FTI) will improve current production munitions by exploiting existing fuzing technologies and inserting them into current production fuzes, providing safer, more producible, and more lethal fuzing solutions. FTI develops second source suppliers and resolve component obsolescence issues to mitigate risk and prevent production interruptions in order to continue to provide safer, more reliable munitions for the Warfighter with significant risk reduction to production fuzes also benefiting the US Taxpayer. In FY16, FTI will ballistically evaluate a proximity sensor filter to eliminate potential of early M734A1 fuze function due to undesired out-range response and generate ECP(s) to incorporate changes into M734A1 fuze TDP, ballistically evaluate the omni-directional G-switch performance of the M433 grenade, and evaluate if it will reduce duds, due to improved reliability on soft targets and graze angles. In FY17 FTI will analyze the design modification to the escapement housing will ensure the M433 HEDP round and M918 training rounds will decrease the risk of having a defeated safety and evaluate feasibility of incorporating state of the art MEMS G-Switch into the M734A1/M783 through comparable G-Switch performance metrics and generate ECP(s) to incorporate changes into M734A1/M783 TDPs, evaluate feasibility of incorporating state of the art MEMS G-Switch into the M734A1/M783 through equivalency tests for comparable G-Switch performance metrics and generate ECP(s) to incorporate changes into M734A1/M783 TDPs. FTI will also analyze the delay primer and evaluate changes to the explosive mixture of the delay primer input cup assembly to reduce occurrences of instantaneous firings and generate ECP to incorporate into M734A1 and M783 fuze TDPs. as well as evaluate the potential for a simplified inductive fuze setting capability to provide cost savings and simplify integration with future weapon platforms.

FTI will evaluate the design and integration of a custom radar transceiver integrated circuit into indirect fire proximity fuzes due to component obsolescence through bench and sub-scale testing. FTI will conduct tests to evaluate the integration of the next generation microcontroller into 60, 81, and 120mm mortar fuzes to replace the current one-time-programmable part due to component obsolescence. FTI will evaluate reserve power source improvements for indirect fire fuzes that will provide a safer, more producible reserve battery configuration that performs reliably across the operating temperature range through bench and sub-scale testing. FTI will evaluate the design and integration of a MEMS-based G-switch from a second source of supply which is used on direct fire and indirect fire production fuzes for the elimination of a single point failure through analysis, bench, and sub-scale testing. FTI will evaluate improvements on 40mm medium caliber fuze that will reduce occurrences of rejected parts due to porosity of material which will increase throughput and avoid cost escalations due to additional quality controls and will subsequently generate an ECP to incorporate into the M550 TDP.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs	Project (Number/Name) ER5 / Indirect Fire and Fuze Technology
--	---	---

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fuze Technology Development	MIPR	Picatinny : NJ	0.000	-		0.200	Nov 2015	-		-		-	0	0.200	0.200
40mm Fuze Prototypes with Improved Setback Interface	SS/FFP	AMTEC : Janesville, WI	0.000	-		-		0.100	Dec 2016	-		0.100	0	0.100	0.100
Subtotal			0.000	-		0.200		0.100		-		0.100	0.000	0.300	0.300

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering	MIPR	Picatinny : NJ	0.000	-		0.235	Mar 2016	0.158	Mar 2017	-		0.158	0	0.393	0.393
FTI - Government Engineering	MIPR	Picatinny : NJ	0.000	-		1.136	Dec 2015	0.475	Nov 2016	-		0.475	0	1.611	1.611
Subtotal			0.000	-		1.371		0.633		-		0.633	0.000	2.004	2.004

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			
FTI - Ballistic Testing	MIPR	Yuma : AZ	0.000	-		-		0.050	Nov 2016	-		0.050	0	0.050	0.050
Interoperability Testing	MIPR	Yuma : AZ	0.000	-		0.200	Apr 2016	0.100	Feb 2017	-		0.100	0	0.300	0.300
Subtotal			0.000	-		0.200		0.150		-		0.150	0.000	0.350	0.350

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		0.000	-	1.771	0.883	-	0.883	0.000	2.654	2.654

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER5 / <i>Indirect Fire and Fuze Technology</i>
--	---	--

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
Safe & Arm Device Technology Integration of MEMs G-switch																												
M734A1/M783 Delay Primer Improvements																												
M734A1 Electronics Upgrade																												
M734A1/M783 Impact Switch Upgrade																												
40mm M550 Setback Spring Interface Improvement																												
Fuze Initialization Improvement																												
Second Source Electronics for Indirect Fire Fuzes																												
Mortar Fuze Microcontroller replacement																												
Power Source Improvements																												
Second Source MEMS G-Switch																												
40mm Fuze Improvements																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER5 / <i>Indirect Fire and Fuze Technology</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Safe & Arm Device Technology Integration of MEMs G-switch	1	2016	4	2016
M734A1/M783 Delay Primer Improvements	1	2016	4	2016
M734A1 Electronics Upgrade	1	2016	4	2016
M734A1/M783 Impact Switch Upgrade	1	2016	4	2017
40mm M550 Setback Spring Interface Improvement	1	2016	4	2017
Fuze Initialization Improvement	1	2016	4	2016
Second Source Electronics for Indirect Fire Fuzes	1	2017	4	2020
Mortar Fuze Microcontroller replacement	1	2020	4	2021
Power Source Improvements	1	2019	4	2021
Second Source MEMS G-Switch	1	2018	4	2020
40mm Fuze Improvements	1	2018	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs				Project (Number/Name) ER6 / Direct Fire Technology			
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
ER6: Direct Fire Technology	-	0.000	2.304	9.334	-	9.334	3.659	2.601	2.551	2.817	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The 0607131A ER6, Munitions, Survivability and Logistics, program is not a new start. Funds in this program in FY 2016 are a realignment of funds from program 0605805A - Munitions Standardization, Effectiveness and Safety for more efficient and effective program management. In FY 2016 the F21 Direct Fire Technology and North Atlantic Treaty Organization (NATO) Ammunition Evaluation program transfers to PE 0607131A, Weapons and Munitions Product Improvement Programs, Project ER6, Munitions, Survivability and Logistics.

A. Mission Description and Budget Item Justification

The Munitions, Survivability and Logistics program funding will be used to support direct fire ammunition from small caliber ammunition, 40mm grenade, medium caliber cannon ammunition and large caliber ammunition enhancements to lethality, effectiveness, survivability, accuracy and general product improvements. In FY 2016, this program assures complete interchangeability of direct fire ammunition and weapons among all the North Atlantic Treaty Organization (NATO) countries with all of the associated logistic, strategic and tactical advantages of the alliance. The program involves development and testing compliance of NATO standardization agreements (STANAGS) and staffing of the North American Regional Test Center (NARTC). In FY 2017, the NATO Standardization mission transfers to PE 0605805A - Munitions Standardization, Effectiveness and Safety, Project F21 - Direct Fire Technology and NATO Ammo Evaluation.

FY 2017 funds are used for a more lethal and safer design for 40mm grenades that will be built and tested. An improved 30mm training round for the Apache helicopter will allow pilots to see where the rounds strike. Warhead improvements for the 30mm Apache ammunition are also under development. A number of studies on potential improvements for training ammunition and better primers will be conducted.

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

	FY 2015	FY 2016	FY 2017
Title: New Ammo Design Qualification & NATO Mission Support	-	0.200	-
Description: This program assures complete interchangeability of small caliber and automated cannon-caliber, and 40mm grenade ammunition and weapons among NATO countries to achieve the associated logistic, strategic and tactical advantages.			
FY 2016 Plans: FY 2016 work is supporting NATO small arms ammunition interchangeability group meetings, documentation and test operations.			
Title: Lightweight Ammunition	-	-	0.264
Description: Develop, demonstrate, and quantify a Lightweight Small Caliber Ammunition (LSCA) 7.62mm capability that will provide an ammunition weight savings of twenty percent to the M240 gunner, assistant gunner and ammo bearer.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER6 / <i>Direct Fire Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
FY 2017 Plans: FY 2017 funds used to perform government testing and continued improvement of candidate designs.				
Title: Small Caliber Ammunition Training Range Impact Reduction Engineering Study Description: Perform an engineering study on the feasibility of reducing the surface danger zone of small caliber training ammunition while maintaining a ballistic match to the combat ammunition out to maximum effective range of the combat ammunition. The results of the study will assist in establishing the baseline requirements for future training ammunition.		-	0.100	-
FY 2016 Plans: FY 2016 work evaluates .50 Caliber ball and trace potential candidates.				
Title: Metastable Intermolecular Composite (MIC) Primer Lead Free Primer Description: Automate and Integrate environmental friendly lead free primary explosives within the small caliber family of ammunition. Addresses health concerns of lead intake during firing by removing lead styphnate from small caliber primers. Automated pilot line combined with new mix reduces human exposure, improves quality, improves safety and reduces environmental waste stream in manufacturing process.		-	0.100	1.000
FY 2016 Plans: FY 2016 work supports optimizing primer mix for 5.56mm, 7.62mm, and .50 cal primers, develops master test plan for cartridge qualification, tests some 5.56mm cartridges for compatibility as mix and process matures, completes design of automated pilot line to include mixing, dispensing, and drying of MIC green primers, and begins building pilot line process.				
FY 2017 Plans: FY 2017 work will support complete optimization of 5.56mm, 7.62mm, and .50 cal primer mix, test multiple 7.62mm cartridges and remaining 5.56mm cartridges for compatibility as pilot line process matures, begin Energetic Munition Qualification Board (EMQB) processes, complete development of pilot line process, and complete prove-out test plans for pilot line equipment.				
Title: Modular Handgun Integration Description: Support handgun ammunition integration into new Army standard handgun weapon. Maintain compatibility with handgun weapon while improving operational availability.		-	0.050	-
FY 2016 Plans: FY 2016 work supports ammunition integration into new Army standard handgun weapon. Maintain compatibility with legacy handgun weapon while improving operational availability.				
Title: Close Combat Mission Capability Kit (CCMCK)		-	0.025	0.025

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER6 / <i>Direct Fire Technology</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: CCMCK is a user installed weapons modification system, which allows the Soldier to employ weapons at a short range for force-on-force training using low velocity marking ammunition while precluding the weapon from firing standard service ammunition. The system provides normal environmental/weapon employment cues and immediate target feedback through force-on-force, interactive live fire scenario tasks, and mission execution.</p> <p>FY 2016 Plans: FY 2016 work replaces current primer system in CCMCK with Non-toxic (no lead) primers and execute effort to test solution feasibility of unmet user requirements. Users are regularly exposed to significant toxic metals levels due to repetitive high volume ammunition expenditures during training and experience unmet user requirements.</p> <p>FY 2017 Plans: FY 2017 work will qualify one solution that will meet non-toxic needs and solve unmet requirements. Users are regularly exposed to significant toxic metals levels due to repetitive high volume ammunition expenditures during training and experience unmet user requirements.</p>			
<p>Title: Support Sniper Ammunition Integration Into Army Standard Sniper Weapons</p> <p>Description: Modify existing sniper ammunition to support integration into new Army standard sniper weapons. Maintain compatibility with legacy sniper weapons while improving operational availability.</p> <p>FY 2016 Plans: FY 2016 work supports ammunition integration into new Army standard sniper weapons, and maintains compatibility with legacy sniper weapons while improving operational availability.</p> <p>FY 2017 Plans: FY 2017 work will test and evaluate sniper ammunition improvements.</p>	-	0.100	0.100
<p>Title: Support improvements in Direct Fire Propulsion Systems</p> <p>Description: Improve Direct Fire Propulsion Systems to increase user survivability.</p> <p>FY 2017 Plans: FY 2017 work will explore additional sources of supply in the National Technology and Industrial Base (NTIB) to reduce the dependence on foreign suppliers and pursue improvements to address temperature sensitivities of energetics.</p>	-	-	0.025
<p>Title: Improved M789 Lethality, Warhead Fragmentation Improvement</p>	-	0.550	1.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER6 / <i>Direct Fire Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Improve M789 warhead fragmentation for lethality by utilizing fragmentation sleeves, scoring or other technologies within the warhead to promote more efficient fragmentation.</p> <p>FY 2016 Plans: FY 2016 work encompasses the production qualification of the improved design.</p> <p>FY 2017 Plans: FY 2017 work will support Request for Proposal (RFP), Solicitation, Contract Award, and Qualification Build.</p>				
<p>Title: M433 Warhead Improvement</p> <p>Description: 40mm: Improve lethality (fragmentation) of the M433 grenade.</p> <p>FY 2016 Plans: FY 2016 work conducts a demonstration of subsystem and system maturity by conducting two integrated system demonstration tests. Testing will confirm integration maturity and enable improvements in system manufacturing. Contracting actions will be performed to find a source to manufacture developmental test and evaluation hardware.</p> <p>FY 2017 Plans: FY 2017 work will conduct Developmental Testing (DT) / Pre Production Qualification Test (PPQT) build, following Low Rate Initial Production (LRIP) quantity. Technology readiness review will be conducted.</p>		-	0.629	4.220
<p>Title: Target Practice Spotter Technology Insertion</p> <p>Description: Training Cartridge with impact initiated spotting charge. Goal is visible signature upon impact under all conditions.</p> <p>FY 2016 Plans: FY 2016 work supports design qualification.</p>		-	0.450	-
<p>Title: Hazards of Electromagnetic Radiation to Ordnance (HERO) safe electric primers for 30mmx113mm Ammunition</p> <p>Description: 30mm x 113mm is used on the Apache (AH64) and Blackhawk (MH60) systems, its primers are not HERO safe. The primers do not meet the requirements of MIL-STD-464A. Consequently 30mm x 113mm ammunition cannot be safely handled, including loading the systems, when in high energy electromagnetic environments such as on or near Navy ships. It also introduces risk to the systems operating in unknown environments because there are approximately 10 exposed cartridges in the feed shoot between the Helicopter Body and the gun. Effort will address this design shortcoming by developing and proving out a laser initiated primer which will be a direct replacement of the existing primer. Performance of the end items will not be affected by this change.</p>		-	-	2.200

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER6 / <i>Direct Fire Technology</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<i>FY 2017 Plans:</i> FY 2017 dollars supports the development of the ignition train (laser plus energetics) and the electronics assemblies. The design will be demonstrated in a laboratory environment.			
<i>Title:</i> 20mm C-RAM Ammo Improvement <i>Description:</i> Improvement of lethality and self-destruct safety / reliability.	-	-	0.500
<i>FY 2017 Plans:</i> FY 2017 funding will support demonstration of ammunition across operational temperatures from a fixed mounted burst fire weapon.			
<i>Title:</i> 120mm Tank Ammunition Propellant High Temperature Improvement <i>Description:</i> Develop improved tank ammunition propellants that can withstand higher temperatures and meet international norms.	-	0.100	-
<i>FY 2016 Plans:</i> FY 2016 work supports the study changes and conduct test fixes to determine extent of engineering required.			
Accomplishments/Planned Programs Subtotals	-	2.304	9.334

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
• PE 0605805A Project F21: <i>Direct Fire Technology and North Atlantic Treaty Organization (NATO) Ammunition Evaluation</i>	6.607	-	0.650	-	0.650	0.665	0.680	0.675	-	0.000	9.277

Remarks

D. Acquisition Strategy
All contracts will be full and open competition firm fixed price.

E. Performance Metrics
N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs				Project (Number/Name) ER6 / Direct Fire Technology							
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
Program Manager Maneuver Ammunition Systems (PM MAS) - Labor & Travel	Various	PM-MAS : Picatinny Arsenal, NJ	0.000	-		0.200		0.500		-		0.500	Continuing	Continuing	Continuing
Contract 1 _M433 Warhead Improvement	C/FFP	TBD : TBD	0.000	-		-		1.500		-		1.500	Continuing	Continuing	Continuing
Contract 1 - M789 Enhanced Lethality	C/FFP	TBD : TBD	0.000	-		-		1.500		-		1.500	Continuing	Continuing	Continuing
Subtotal			0.000	-		0.200		3.500		-		3.500	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Armament Research Development and Engineering Center (ARDEC)	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		1.000		5.234		-		5.234	Continuing	Continuing	Continuing
Subtotal			0.000	-		1.000		5.234		-		5.234	-	-	-
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
Naval Surface Warfare Center (NSWC)	MIPR	Naval Surface Warfare Center : Dahlgren, VA	0.000	-		0.452		0.200		-		0.200	Continuing	Continuing	Continuing
Army Research Lab (ARL)	MIPR	Aberdeen : Maryland	0.000	-		-		0.200		-		0.200	Continuing	Continuing	Continuing
Aberdeen Test Center (ATC)	MIPR	Aberdeen Test Center : Aberdeen, MD	0.000	-		0.452		0.200		-		0.200	Continuing	Continuing	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army											Date: February 2016				
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0607131A / Weapons and Munitions Product Improvement Programs						Project (Number/Name) ER6 / Direct Fire Technology					
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
North American Regional Test (NARTC)	MIPR	North American Regional Test Center : Rock island, IL	0.000	-		0.200		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.000	-		1.104		0.600		-		0.600	-	-	-
			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	-		2.304		9.334		-		9.334	-	-	-
<u>Remarks</u>															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER6 / <i>Direct Fire Technology</i>
--	---	---

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
New Ammo Design Qualification & NATO Mission Support	New Ammo Design Qualification & NATO Mission Support																											
Lightweight Ammunition																												
Small Caliber Ammunition Training Range Impact Reduction Engineering	Small Caliber Ammunition Training Range Impact Reduction Engineering Study																											
Metastable Intermolecular Composite (MIC) Primer Lead Free Primer					Metastable Intermolecular Composite (MIC) Primer Lead Free Primer																							
Modular Handgun Integration					Modular Handgun Integration																							
Close Combat Mission Capability Kit (CCMCK)					Close Combat Mission Capability Kit (CCMCK)																							
Support Sniper Ammunition Integration Into Army Standard Sniper Weapons					Support Sniper Ammunition Integration Into Army Standard Sniper Weapons																							
Support improvements in Direct Fire Propulsion Systems					Support improvements in Direct Fire Propulsion Systems																							
Improved M789 Lethality, Warhead Fragmentation Improvement					Improved M789 Lethality, Warhead Fragmentation Improvement																							
M433 Warhead Improvement					M433 Warhead Improvement																							
Target Practice Spotter Technology Insertion					Target Practice Spotter Technology Insertion																							
Hazards of Electromagnetic Radiation to Ordnance (HERO) safe electric primers f					Hazards of Electromagnetic Radiation to Ordnance (HERO) safe electric primers f																							
20mm C-RAM Ammo Improvement					20mm C-RAM Ammo Improvement																							

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER6 / <i>Direct Fire Technology</i>
--	---	---

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
120mm Tank Ammunition Propellant High Temperature Improvement																												
120mm Tank Ammunition Propellant High Temperature Improvement																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607131A / <i>Weapons and Munitions Product Improvement Programs</i>	Project (Number/Name) ER6 / <i>Direct Fire Technology</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
New Ammo Design Qualification & NATO Mission Support	1	2016	4	2016
Lightweight Ammunition	1	2015	4	2020
Small Caliber Ammunition Training Range Impact Reduction Engineering Study	1	2016	4	2016
Metastable Intermolecular Composite (MIC) Primer Lead Free Primer	1	2015	4	2022
Modular Handgun Integration	1	2016	4	2016
Close Combat Mission Capability Kit (CCMCK)	1	2016	4	2017
Support Sniper Ammunition Integration Into Army Standard Sniper Weapons	1	2016	4	2018
Support improvements in Direct Fire Propulsion Systems	1	2017	4	2021
Improved M789 Lethality, Warhead Fragmentation Improvement	1	2015	4	2019
M433 Warhead Improvement	1	2015	4	2017
Target Practice Spotter Technology Insertion	1	2015	4	2016
Hazards of Electromagnetic Radiation to Ordnance (HERO) safe electric primers f	1	2017	4	2019
20mm C-RAM Ammo Improvement	1	2017	4	2019
120mm Tank Ammunition Propellant High Temperature Improvement	1	2016	4	2016

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0607133A / <i>TRACTOR SMOKE</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	7.569	4.479	-	4.479	4.368	4.442	4.753	4.842	Continuing	Continuing
ET2: <i>Tractor Stove</i>	-	0.000	7.569	4.479	-	4.479	4.368	4.442	4.753	4.842	Continuing	Continuing

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).

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	7.569	8.256	-	8.256
Current President's Budget	0.000	7.569	4.479	-	4.479
Total Adjustments	0.000	0.000	-3.777	-	-3.777
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-3.777	-	-3.777

Change Summary Explanation

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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0607134A / Long Range Precision Fires (LRPF)							
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	39.275	-	39.275	64.808	79.697	59.177	62.775	Continuing	Continuing
ES1: Long Range Precision Fires (LRPF)	-	0.000	0.000	39.275	-	39.275	64.808	79.697	59.177	62.775	Continuing	Continuing

Note

In FY 2017 LRPF continues under new PE 0607134A, Project ES1. Funding was realigned from PE 0603778A, Project DZ8.

A. Mission Description and Budget Item Justification

The Long Range Precision Fires (LRPF) program is being developed as a cluster and insensitive munition compliant system that replaces and improves upon Army Tactical Missile System (ATACMS) capabilities to provide Joint Force Commanders with a 24/7, all-weather, area target, long-range fires capability without placing aircraft and crews at risk. The mission of the LRPF System will be to attack/neutralize/suppress/destroy targets using missile delivered indirect precision fires. The LRPF will counter the enemy's ability to conduct combat maneuver and air defense operations. Targets include counter-fire, air defense, command and control, and other high payoff targets at all depths of the tactical battlefield. LRPF requirements include 300km range; specified lethality against the designated target set, a Launch Pod Missile Container (LPMC) that holds a minimum of two missiles; and compatibility with the existing launcher platforms (M270A1 and High Mobility Artillery Rocket System (HIMARS)). An Analysis of Alternatives (AoA) was directed in the Material Development Decision (MDD) on 6 November 2013. The AoA was completed on 30 April 2015 and a letter of sufficiency issued by OSD in August 2015.

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	39.275	-	39.275
Total Adjustments	0.000	0.000	39.275	-	39.275
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	39.275	-	39.275

Change Summary Explanation

FY 2017 funding reflects the movement of the program from PE 0603778A, Project DZ8.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607134A / Long Range Precision Fires (LRPF)				Project (Number/Name) ES1 / Long Range Precision Fires (LRPF)			
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
ES1: Long Range Precision Fires (LRPF)	-	0.000	0.000	39.275	-	39.275	64.808	79.697	59.177	62.775	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017 LRPF continues under a new PE 0607134A, Project ES1. Funding was realigned from PE 0603778A, Project DZ8.

A. Mission Description and Budget Item Justification

The LRPF is being developed as a cluster and insensitive munition-compliant system that replaces and improves upon ATACMS capabilities to provide Joint Force Commanders with a 24/7, all-weather, area target, long-range fires capability without placing aircraft and crews at risk. The mission of the LRPF System will be to attack/neutralize/suppress/destroy targets using missile delivered indirect precision fires. The LRPF will counter the enemy's ability to conduct combat maneuver and air defense operations. Targets include counter-fire, air defense, command and control, and other high payoff targets at all depths of the tactical battlefield. LRPF requirements include 300km range; specified lethality against the designated target set, a Launch Pod Missile Container (LPMC) that holds a minimum of two missiles; and compatibility with the existing launcher platforms (M270A1 and High Mobility Artillery Rocket System (HIMARS)). The Army has completed an Analysis of Alternatives (AoA), in accordance with Office of the Secretary of Defense (OSD) approved Material Development Decision (MDD) on 6 November 2013. The AoA was completed on 30 April 2015 and a letter of sufficiency issued by OSD in August 2015.

The LRPF program Milestone(MS) A Decision is scheduled for 2QFY16. FY 2017 funding is requested to provide incremental funding to continue risk reduction activities through the execution of Technology Maturation/Risk Reduction (TMRR) system demonstration contracts to be awarded in 3QFY16. LRPF will be developed using competitive prototyping, carrying two or more contractors through the TMRR Phase. The FY17 funding will be used to continue execution of two TMRR prototyping and flight demonstration contracts and conduct System Requirements Review (SRR), functional reviews, and prototype design activities and long-lead material procurement to support flight demonstrations and Preliminary Design Reviews (PDRs) in FY19. This funding also supports Government management and Government systems engineering and test support activities. LRPF is scheduled for a MS B in FY2020 and MS C in FY2024.

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

	FY 2015	FY 2016	FY 2017
Title: TMRR	-	-	39.275
Description: Funding is provided for the following effort.			
FY 2017 Plans: Continue execution of two TM/RR prototyping and flight demonstration contracts. Conduct System Requirements Reviews (SRRs), functional reviews, and prototype design activities.			
Accomplishments/Planned Programs Subtotals	-	-	39.275

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607134A / <i>Long Range Precision Fires (LRPF)</i>	Project (Number/Name) ES1 / <i>Long Range Precision Fires (LRPF)</i>

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

N/A

Remarks

D. Acquisition Strategy

The LRPF is being developed as a cluster and insensitive munition-compliant system that replaces and improves upon ATACMS capabilities to provide Joint Force Commanders with a 24/7, all-weather, area target, long-range fires capability without placing aircraft and crews at risk. An AoA supporting the MS A decision has been completed by U.S. Army Training and Doctrine Command (TRADOC) Analysis Center-White Sands Missile Range (TRAC-WSMR), with the OSD letter of sufficiency issued in August 2015. The Milestone Decision Authority will hold a MS A decision review in 2QFY16. After an MS A decision directing a new start LRPF system, the program office will conduct a limited competition in FY16 of a 45 month TMRR phase using DoD Ordnance Technology Consortium (DOTC) Other Transaction Authority (OTA) for competitive prototyping. TMRR will include two award agreements in 3QFY16 leading to flight demonstrations and PDRs in FY19. Data from the TMRR phase will support the EMD contract competition in FY19 that will result in selection of a single contractor for Engineering and Manufacturing Development at MS B in FY20 to complete product development, qualification, production readiness assessment, and limited user test.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607134A / Long Range Precision Fires (LRPF)	Project (Number/Name) ES1 / Long Range Precision Fires (LRPF)
--	---	---

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			
Government Program Management	SS/TBD	PFRMS Project Office : RSA	0.000	-		-		4.231	Oct 2016	-		4.231	0	4.231	0
Subtotal			0.000	-		-		4.231		-		4.231	0.000	4.231	0.000

Remarks
PFRMS - Precision Fires Rocket and Missile Systems; RSA - Redstone Arsenal, Alabama;

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			
LRPF Risk Reduction - 2 Vendors (DOTC OTA)	TBD	TBD : TBD	0.000	-		-		29.228	Apr 2017	-		29.228	0	29.228	0
Development Engineering Support	MIPR	AMCOM/AMRDEC : RSA	0.000	-		-		3.250	Apr 2017	-		3.250	0	3.250	0
Subtotal			0.000	-		-		32.478		-		32.478	0.000	32.478	0.000

Remarks
LRPF - Long Range Precision Fires; TBD - To Be Determined; AMCOM - Army Material Command; AMRDEC - U.S. Army Research, Development and Engineering Command; RSA - Redstone Arsenal, Alabama

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering, Testing, and Analysis	C/TBD	TBD : TBD	0.000	-		-		2.351	Oct 2016	-		2.351	0	2.351	0
Subtotal			0.000	-		-		2.351		-		2.351	0.000	2.351	0.000

Remarks
TBD - To Be Determined

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army											Date: February 2016				
Appropriation/Budget Activity 2040 / 7						R-1 Program Element (Number/Name) PE 0607134A / Long Range Precision Fires (LRPF)					Project (Number/Name) ES1 / Long Range Precision Fires (LRPF)				

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	Cost To Complete			
Test Support	MIPR	WSMR; RTC : WSMR,NM; RSA	0.000	-		-		0.215	Oct 2016	-		0.215	0	0.215	0	
Subtotal			0.000	-		-		0.215		-		0.215	0.000	0.215	0.000	

Remarks
WSMR,NM - White Sands Missile Range, New Mexico; RTC - Redstone Test Center; RSA - Redstone Arsenal, Alabama

Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		0.000		39.275		-	39.275	0.000	39.275	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607134A / Long Range Precision Fires (LRPF)	Project (Number/Name) ES1 / Long Range Precision Fires (LRPF)
--	---	---

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
AoA																												
(1) MS A																												
TM/RR																												
Vendor #1 Contract (DOTC OTA)																												
Vendor #2 Contract (DOTC OTA)																												
(2) Preliminary Design Review																												
(3) MS B																												
Engineering Manufacturing Development Phase																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607134A / Long Range Precision Fires (LRPF)	Project (Number/Name) ES1 / Long Range Precision Fires (LRPF)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AoA	2	2015	3	2015
MS A	2	2016	2	2016
TM/RR	3	2016	1	2020
Vendor #1 Contract (DOTC OTA)	3	2016	1	2020
Vendor #2 Contract (DOTC OTA)	3	2016	1	2020
Preliminary Design Review	3	2019	3	2019
MS B	2	2020	2	2020
Engineering Manufacturing Development Phase	2	2020	3	2024

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0607135A / Apache Product Improvement Program							
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	-	86.099	65.562	66.441	-	66.441	59.786	31.203	32.746	37.515	0.000	379.352
ES2: Apache Product Improvement Program	-	86.099	65.562	66.441	-	66.441	59.786	31.203	32.746	37.515	0.000	379.352

Note

Funds in this program were realigned in FY 2015 from Program Element 0203744A Aircraft Modifications/Product Improvement Programs, Project D17, for more efficient program management.

A. Mission Description and Budget Item Justification

The Fiscal Year (FY) 2017 budget request for Apache AH-64E, previously known as Apache Block III, will fund the non-recurring engineering (NRE), development, and testing work associated with the planned remanufacture and new build of 690 Apache aircraft in the AH-64E configuration (deliveries began in Oct 2011). The AH-64E program consists of two Major Defense Acquisition Programs (MDAP), AH-64E Remanufacture and AH-64E New Build. This project also addresses obsolescence and reliability challenges and provides increased combat capability to the aircraft. Upgrades include: Unmanned Aircraft System (UAS) Level III-IV Control, Improved Situational Awareness, Upgraded Communications Suite, Improved Drive and Propulsion Systems, Improved Targeting Capability, Increased Computer Processing Capability and Speed, Improved Navigation Systems, Improved Diagnostics and Maintainability, and Joint Air to Ground Missile (JAGM) integration. Upgrades are integrated as incremental block modifications. The program addresses operational shortfalls identified during real-world combat missions and meets Longbow Apache Capability Production Document (CPD) requirements for modernization.

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	86.099	69.862	66.131	-	66.131
Current President's Budget	86.099	65.562	66.441	-	66.441
Total Adjustments	0.000	-4.300	0.310	-	0.310
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-4.300			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	0.310	-	0.310

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607135A / Apache Product Improvement Program					Project (Number/Name) ES2 / Apache Product Improvement Program		
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
ES2: Apache Product Improvement Program	-	86.099	65.562	66.441	-	66.441	59.786	31.203	32.746	37.515	0.000	379.352
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funds in this program were realigned in FY 2015 from Program Element 0203744A Aircraft Modifications/Product Improvement Programs Project ES2, Project D17, for more efficient program management.

A. Mission Description and Budget Item Justification

The Fiscal Year (FY) 2017 budget request for Apache AH-64E, previously known as Apache Block III, will fund the non-recurring engineering (NRE), development, and testing work associated with the planned remanufacture and new build of 690 Apache aircraft in the AH-64E configuration (deliveries began in Oct 2011). The AH-64E program consists of two Major Defense Acquisition Programs (MDAP), AH-64E Remanufacture and AH-64E New Build. This project also addresses obsolescence and reliability challenges and provides increased combat capability to the aircraft. Upgrades include: Unmanned Aircraft System (UAS) Level III-IV Control, Improved Situational Awareness, Upgraded Communications Suite, Improved Drive and Propulsion Systems, Improved Targeting Capability, Increased Computer Processing Capability and Speed, Improved Navigation Systems, Improved Diagnostics and Maintainability, and Joint Air to Ground Missile (JAGM) integration. Upgrades are integrated as incremental block modifications. The program addresses operational shortfalls identified during real-world combat missions and meets Longbow Apache Capability Production Document (CPD) requirements for modernization.

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

	FY 2015	FY 2016	FY 2017
Title: Product Development	75.377	62.628	56.551
Description: Funding is provided for the following efforts by Boeing and Longbow Limited Liability (LBL).			
FY 2015 Accomplishments: Developed, Integrated & Tested work associated with the planned remanufacture and new build of Apache aircraft in the AH-64E Version 6 configuration (joint interoperability, crashworthy fuel tank kits, embedded diagnostics, communications, mission processor, and navigation upgrades) and to enhance operational capabilities. Risk reduction for Version 6 CPD capabilities to include cognitive decision aiding, soldier radio waveform, modernized dayside assembly, modernized radio frequency interferometer, maritime targeting, and radar upgrades. Provided NRE for design of the Hydra Launcher Electronics Assembly for development of the Material Requirements List (MRL).			
FY 2016 Plans: Development, Integration & Testing work associated with the planned remanufacture and new build of Apache aircraft in the AH-64E Version 6 configuration (joint interoperability, crashworthy fuel tank kits, embedded diagnostics, communications, mission			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607135A / Apache Product Improvement Program	Project (Number/Name) ES2 / Apache Product Improvement Program		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
processor, and navigation upgrades) and to enhance operational capabilities. Risk reduction for Version 6 CPD capabilities to include cognitive decision aiding, soldier radio waveform, modernized dayside assembly, modernized radio frequency interferometer, maritime targeting, and radar upgrades. FY 2017 Plans: Development, Integration & Testing work associated with the planned remanufacture and new build of Apache aircraft in the AH-64E Capability Version 6 configuration (cognitive decision aiding, soldier radio waveform, modernized dayside assembly, modernized radio frequency interferometer, maritime targeting, and radar upgrades) and to enhance operational capabilities, and JAGM integration.				
Title: Support Costs Description: Funding is provided for the following effort. FY 2015 Accomplishments: Government Furnished Equipment (GFE) supported Apache AH-64E tests and government Research and Development (R&D) Facilities FY 2016 Plans: GFE supporting Apache AH-64E tests and government R&D Facilities FY 2017 Plans: GFE supporting Apache AH-64E tests and government R&D Facilities.		1.726	1.000	1.129
Title: Test and Evaluation Description: Funding is provided for Development Testing and Evaluation and Operational Test and Evaluation. FY 2015 Accomplishments: Funding was provided for Development Testing and Evaluation and Operational Test and Evaluation, Government test oversight, test ranges, flight hour costs for MRL testing. FY 2016 Plans: Funding is provided for Development Testing and Evaluation and Operational Test and Evaluation, Government test oversight, test ranges, flight hour costs for MRL testing. FY 2017 Plans: Funding is provided for Development Testing and Evaluation and Operational Test and Evaluation.		3.700	1.200	6.500
Title: Management Services		5.296	0.734	2.261

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607135A / Apache Product Improvement Program	Project (Number/Name) ES2 / Apache Product Improvement Program
--	--	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Funding is provided for the following effort: Payroll, Travel, Support Contractors, Matrix Support.</p> <p>FY 2015 Accomplishments: Funding was provided for the following effort: Payroll, Travel, Support Contractors, Matrix Support.</p> <p>FY 2016 Plans: Funding is provided for the following effort: Payroll, Travel, Support Contractors, Matrix Support.</p> <p>FY 2017 Plans: Funding is provided for the following effort: Payroll, Travel, Support Contractors, Matrix Support.</p>			
Accomplishments/Planned Programs Subtotals	86.099	65.562	66.441

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
• AA6605: AH-64 Mods	181.869	116.153	137.883	-	137.883	238.141	144.892	133.029	91.698	580.576	1,624.241
• A05111: AH-64 Apache Block IIIA Reman	1,123.347	1,353.391	1,066.284	-	1,066.284	1,082.004	1,179.269	1,123.219	998.718	5,407.894	13,334.126

Remarks

D. Acquisition Strategy

The NRE will encompass subsystem integration and will utilize existing test aircraft, incorporate the technical insertions, and initiate appropriate qualification and operational flight-testing.

In FY14, a contract for Apache AH-64E Lot 3, initiating Full Rate Production, was awarded with options for Lot 4 and will continue to a total of 690 remanufactured and new build aircraft.

Training device concurrency will be maintained with each technical insertion. The Engineering/Manufacturing Design (EMD) effort is managed as Cost Reimbursable. Production efforts will be awarded as Fixed Price Incentive (FPI) and include the Advance Procurement requirements.

In FY13, FY14, and FY15 MRL NRE encompassed US Government (USG) design of the Hydra Launcher Electronics Assembly (LEA), modification of the M261 launcher, launcher fabrication, and launcher testing.

In FY15-FY18, Apache AH-64E Version 6 System Development and Demonstration (SDD) Contract.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607135A / Apache Product Improvement Program	Project (Number/Name) ES2 / Apache Product Improvement Program

Multi-year production authority has been requested for the out years.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607135A / Apache Product Improvement Program	Project (Number/Name) ES2 / Apache Product Improvement Program
--	--	--

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			
Management Services (In-House, Travel, etc.)	MIPR	PMO AAH Matrix Support AMCOM Express : Redstone Arsenal, AL	0.000	5.296		0.734	Oct 2015	2.261	Oct 2016	-		2.261	3.480	11.771	0
Subtotal			0.000	5.296		0.734		2.261		-		2.261	3.480	11.771	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			
The Boeing Company	SS/CPIF	Boeing Contracts : Mesa, AZ	0.000	54.377	Apr 2015	62.628	Oct 2015	56.551	Oct 2016	-		56.551	49.286	222.842	0
Longbow Limited Liability (LBL) Contracts	SS/CPIF	Longbow Limited Liability (LBL) Contracts : Orlando, FL	0.000	9.000	Aug 2015	-		-		-		-	0	9.000	0
Ground Fire Acquisition Development (GFAD)	SS/CPIF	TBD : TBD	0.000	12.000		-		-		-		-	0	12.000	0
Subtotal			0.000	75.377		62.628		56.551		-		56.551	49.286	243.842	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Support Activities	MIPR	Various : Various	0.000	1.726		1.000	Oct 2015	1.129	Oct 2016	-		1.129	1.568	5.423	0
Subtotal			0.000	1.726		1.000		1.129		-		1.129	1.568	5.423	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607135A / Apache Product Improvement Program	Project (Number/Name) ES2 / Apache Product Improvement Program
--	--	--

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
NRE Contracts - Boeing	NRE Contracts - Boeing																											
NRE Contracts - Longbow Limited Liability	NRE Contracts - LB Limited Liability																											
(1) MRL Prototypes & CDR																	▲ Prototypes & CDR											
Force Develop Test & Evaluation (FDTE III)																	FDTE III											
(2) Follow-On Test & Eval II																	▲ FOT&E II											
MRL Integration and Test																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607135A / Apache Product Improvement Program	Project (Number/Name) ES2 / Apache Product Improvement Program

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NRE Contracts - Boeing	1	2011	3	2018
NRE Contracts - Longbow Limited Liability	1	2011	4	2016
MRL Prototypes & CDR	4	2014	1	2015
Force Develop Test & Evaluation (FDTE III)	1	2017	2	2017
Follow-On Test & Eval II	2	2017	1	2018
MRL Integration and Test	2	2015	4	2015

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0607136A / <i>Blackhawk Product Improvement Program</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	48.406	66.653	46.765	-	46.765	34.586	18.279	5.047	7.786	Continuing	Continuing
ES3: <i>Blackhawk Product Improvement Program</i>	-	48.406	66.653	46.765	-	46.765	34.586	18.279	5.047	7.786	Continuing	Continuing

Note

Funds in this program were realigned in Fiscal Year (FY) 2015 from Program Element 0203744A Aircraft Modifications/Product Improvement Programs, Project 504, for more efficient program management.

A. Mission Description and Budget Item Justification

The H-60L Digital Blackhawk, now designated as UH-60V, is designed to update the existing H-60L analog architecture to a digital infrastructure enabling the upgraded aircraft to have a similar Pilot-Vehicle Interface (PVI) to the H-60M. The program will address current capability gaps and meet operational requirements by employing an evolutionary acquisition approach to leverage mature technologies that have been successfully integrated on other military aircraft. The program will reduce obsolescence and increase commonality and interoperability by installing a digital cockpit, bussing and upgrading the communication/identification suite, improving navigation guidance, and integrating Aircraft Survivability Equipment (ASE), digital moving map, and Joint Variable Message Format (JVMF) messaging.

FY 2017 UH-60V funds hardware and software development as well as training material development and developmental testing.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	48.446	66.653	50.153	-	50.153
Current President's Budget	48.406	66.653	46.765	-	46.765
Total Adjustments	-0.040	0.000	-3.388	-	-3.388
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-0.040	-	-3.388	-	-3.388

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607136A / <i>Blackhawk Product Improvement Program</i>				Project (Number/Name) ES3 / <i>Blackhawk Product Improvement Program</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
ES3: <i>Blackhawk Product Improvement Program</i>	-	48.406	66.653	46.765	-	46.765	34.586	18.279	5.047	7.786	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funds in this program were realigned in Fiscal Year (FY) 2015 from Program Element 0203744A Aircraft Modifications/Product Improvement Programs, Projected 504, for more efficient program management.

A. Mission Description and Budget Item Justification

The H-60L Digital Blackhawk, now designated as UH-60V, is designed to update the existing H-60L analog architecture to a digital infrastructure enabling the upgraded aircraft to have a similar Pilot-Vehicle Interface (PVI) to the H-60M. The program will address current capability gaps and meet operational requirements by employing an evolutionary acquisition approach to leverage mature technologies that have been successfully integrated on other military aircraft. The program will reduce obsolescence and increase commonality and interoperability by installing a digital cockpit, bussing and upgrading the communication/identification suite, improving navigation guidance, and integrating Aircraft Survivability Equipment (ASE), digital moving map, and Joint Variable Message Format (JVMF) messaging.

FY 2017 UH-60V funds hardware and software development as well as training material development and developmental testing.

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

	FY 2015	FY 2016	FY 2017
Title: Product Development	38.953	55.293	34.335
Description: The UH-60V program provides an integrated digital map, integrated performance planning, common functionality and commonality of training with UH-60M. Product Development includes all activities related to Hardware and Software development, Prototype Manufacturing (5 units), Training Equipment, Data, and Production Engineering and Planning for the UH60V program. Examples of specific activities include drawing development, work instruction development, prototype builds, Preliminary Design Review (PDR)/Critical Design Review (CDR), Software Engineering Directorate (SED) Simulation Integration Laboratory (SIL) design, Software Development (aircraft and off aircraft), trainers, and training material development.			
FY 2015 Accomplishments: Initiated development of the UH-60V kit. Design included refinement of Performance Specification and development of sub-system specifications to support requirements. Artifacts produced during FY15 to support design development and reviews included: Mechanical Drawings, Electrical Drawings, Installation Drawings, Safety Documentation. Successful completion of System Requirements Review (SRR) System Functional Review (SFR), Preliminary Design Review (PDR) and Technical Interchange Meetings. Early User Dem (EUD) 1 & 2 were completed, this activity included user involvement to insure user requirements were captured and contractor design would meet the user needs. EUDs focused on Pilot Vehicle Interface Design			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607136A / <i>Blackhawk Product Improvement Program</i>	Project (Number/Name) ES3 / <i>Blackhawk Product Improvement Program</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description (PVIDD) to maintain similarity to UH-60M and to capture pilot input. Project Architecture Workshop was completed to ensure all stakeholders agreed to the structure being created for requirements management. Integrated Baseline Review for primary and sub-contractor to assure key milestones and risks were identified, resources were allocated and earned value method understood. Identified and provided GFE/GFI for prototype development and System Integration Laboratories (SIL). Inducted aircraft to be used for Engineering Development Model (EDM) 1-3.</p> <p>FY 2016 Plans: Continue development of the UH-60V kit. Refinement of Performance Specification and sub-system specifications to support requirements. Artifacts to be updated during FY16 to support design refinement and reviews include: Mechanical Drawings, Electrical Drawings, Installation Drawings, and Safety Documentation. Successful completion of Critical Design Review (CDR) Software Stages of Involvement Audit (SOI) and Technical Interchange Meetings (TIM) planned for May 2016. Conduct activities in support of Flight Readiness Review (FRR). Risk reduction activities to be conducted in the SIL for early assessment of software maturity. Deliver GFE/GFI for prototype development and System Integration Laboratories. Complete demodification of electrical and mechanical for EDM 1-3. Complete installation of UH-60V kit on EDM 1 and begin installation on EDM 2. Begin induction activities on EDM 4 & 5 at Corpus Christi Army Depot (CCAD).</p> <p>FY 2017 Plans: Conduct Physical Configuration Audit (PCA) on delivered UH-60V kit. Delivery of software Build 1 and associated technical data package (TDP) that will be used for first flight. Conduct FRR to obtain Airworthiness Release (AWR) for flight testing. Conduct Formal Qualification Testing (FQT), Software SOI 3 and TIM. Continue risk reduction activities in the SIL for early assessment of software maturity. Begin verification of Technical Manuals (TMs) on EDM 4 & 5. Complete installation of UH-60V kit on EDM 2 and begin installation on EDM 3. Begin induction activities on EDM 4 & 5 at Corpus Christi Army Depot (CCAD).</p>				
<p>Title: Support</p> <p>Description: Support Costs include Systems Engineering/Program Management (SEPM) type activities performed at the Prototype Integration Facility (PIF). This includes Army Engineering Directorate (AED) support for propulsion, structures, aeromechanics, mission equipment, as well as PIF program management.</p> <p>FY 2015 Accomplishments: Continued SEPM activities in support of UH-60V.</p> <p>FY 2016 Plans: Continued SEPM activities in support of UH-60V.</p> <p>FY 2017 Plans:</p>		3.171	3.358	3.104

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607136A / <i>Blackhawk Product Improvement Program</i>	Project (Number/Name) ES3 / <i>Blackhawk Product Improvement Program</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continued SEPM activities in support of UH-60V.				
<p>Title: Test & Evaluation</p> <p>Description: The Utility Helicopters Project Office (UHPO) is responsible for day-to-day test management activities to include execution of all developmental tests and support of operational tests for the UH-60V Program. The focal point for test management is the UH-60V Test Lead Engineer who is the chair for the UH-60V Test and Evaluation (T&E) Working-level Integrated Product Team. The UH-60 T&E team ensures integration and coordination of test and data requirements among all agencies involved in the test and acquisition of the UH-60V effort. T&E activities include, but not limited to, ensuring component hardware qualification is accomplished, system level Electromagnetic Environmental Effects (E3) testing, Daylight Readability testing, Air Traffic Control Radar Beacon System (ATCRBS), Identification Friend or Foe (IFF), Mark XIIA System (AIMS) certification testing, Limited User Test (LUT), Initial Operational Test and Evaluation (IOTE), Cybersecurity, Interoperability tests, and AFTD Baseline Flight Testing.</p> <p>FY 2015 Accomplishments: Successfully conducted a T&E WIPT in coordination with the key T&E community stakeholders on 21 July 2015. Initiated long-term system test planning efforts with the Redstone Test Center (RTC)/ Aviation Flight Test Directorate (AFTD) for conducting development tests at Redstone Arsenal for the UH-60V test program. Provided a UH-60V Test Program status update to the Office of Secretary of Defense (OSD) Director of Operational Test and Evaluation (DOT&E).</p> <p>FY 2016 Plans: Continue test planning and execution efforts for developmental system level test events. Development and approval of system level checklists, flight test plans, Electromagnetic Compatibility (EMC) test plan, Modal Rap test plan, Electromagnetic Vulnerability (EMV) test plan, Delta Electromagnetic Environmental Effects (E3) test plan, Interoperability test plan and AIMS certification test plan. Conduct the following test events: system level power quality checks, ground EMC, ground Acceptance Test Procedures (ATP) rotors turning, Maintenance Test Flight (MTF) and system level testing.</p> <p>FY 2017 Plans: Prepare, document and receive approval of flight test Airworthiness Release (AWR) for developmental flight test activities. Continue test planning and execution efforts for continuous improvement of system level test. Conduct test planning efforts for IOT&E.</p>		0.100	1.833	3.597
<p>Title: Management Services</p> <p>Description: Management Services includes all activities related to Government/Contractor SEPM to include the cost of Government and Contractor personnel supporting the UH-60V program.</p> <p>FY 2015 Accomplishments:</p>		6.182	6.169	5.729

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607136A / <i>Blackhawk Product Improvement Program</i>	Project (Number/Name) ES3 / <i>Blackhawk Product Improvement Program</i>
--	--	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continued core and contractor (SEPM) activities in support of UH-60V.			
<i>FY 2016 Plans:</i> Continued core and contractor (SEPM) activities in support of UH-60V.			
<i>FY 2017 Plans:</i> Continued core and contractor (SEPM) activities in support of UH-60V.			
Accomplishments/Planned Programs Subtotals	48.406	66.653	46.765

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>
• UH-60 A and L Models A05009: <i>UH-60 Black Hawk A and L Models A05009</i>	-	55.441	46.173	-	46.173	75.133	167.079	209.205	213.716	0.000	766.747

Remarks
A05009 UH-60 Blackhawk A and L Models provides procurement funding for conversions to UH-60V starting in FY2018.

D. Acquisition Strategy
The UH-60V program plans to leverage a Government-owned Government-operated (GOGO) facility to design, integrate and build five production representative aircraft. The Prototype Integration Facility (PIF) will build three aircraft and two more aircraft will be built at Corpus Christi Army Depot (CCAD). The GOGO facility uses a cost plus contract vehicle and conducted full and open competition for the selection of the avionics solution provider.

E. Performance Metrics
N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 7				PE 0607136A / Blackhawk Product Improvement Program				ES3 / Blackhawk Product Improvement Program								
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
UH-60V - Organic	MIPR	Various : Redstone Arsenal, AL	0.000	3.606	Oct 2014	3.661	Oct 2015	3.231	Oct 2016	-		3.231	0	10.498	0	
UH-60V - Contractor	C/LH	Various : Redstone Arsenal, AL	0.000	2.576	Oct 2014	2.508	Oct 2015	2.498	Oct 2016	-		2.498	0	7.582	0	
Subtotal			0.000	6.182		6.169		5.729		-		5.729	0.000	18.080	0.000	
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	
UH-60V Development Engineering	C/CPFF	AMRDEC PIF : Redstone Arsenal, AL	0.000	38.953	Mar 2015	55.293	Oct 2015	34.335	Oct 2016	-		34.335	0	128.581	0	
Subtotal			0.000	38.953		55.293		34.335		-		34.335	0.000	128.581	0.000	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
UH-60V	MIPR	Various : Redstone Arsenal, AL	0.000	3.171	Oct 2014	3.358	Oct 2015	3.104	Oct 2016	-		3.104	0	9.633	0	
Subtotal			0.000	3.171		3.358		3.104		-		3.104	0.000	9.633	0.000	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
UH-60V	MIPR	Redstone Test Center : Redstone Arsenal, AL	0.000	0.100	Oct 2014	1.833	Jan 2016	3.597	Dec 2016	-		3.597	0	5.530	0	
Subtotal			0.000	0.100		1.833		3.597		-		3.597	0.000	5.530	0.000	

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607136A / <i>Blackhawk Product Improvement Program</i>	Project (Number/Name) ES3 / <i>Blackhawk Product Improvement Program</i>
--	--	--

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

Remarks
Government Support

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	48.406	66.653	46.765	-	46.765	0.000	161.824	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607136A / <i>Blackhawk Product Improvement Program</i>	Project (Number/Name) ES3 / <i>Blackhawk Product Improvement Program</i>
--	--	--

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
UH-60V Development (Research, Development, Test, and Evaluation (RDTE))	UH-60V EMD (Product Development)																											
Support	Support																											
Test and Evaluation	Test and Evaluation																											
Management Services	Management Services																											
UH-60V Future Integration Efforts (RDTE)																									Integration			
UH-60V Digital Modifications (Low Rate Initial Production (LRIP); (APA))																									UH-60V LRIP			
UH-60V Digital Modifications Production (APA)																					UH-60V Production							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607136A / <i>Blackhawk Product Improvement Program</i>	Project (Number/Name) ES3 / <i>Blackhawk Product Improvement Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
UH-60V Development (Research, Development, Test, and Evaluation (RDTE))	4	2014	4	2020
Support	1	2014	4	2019
Test and Evaluation	4	2015	4	2019
Management Services	1	2014	4	2019
UH-60V Future Integration Efforts (RDTE)	1	2021	4	2021
UH-60V Digital Modifications (Low Rate Initial Production (LRIP); (APA)	4	2018	4	2019
UH-60V Digital Modifications Production (APA)	1	2020	1	2024

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0607137A / Chinook Product Improvement Program							
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	-	35.424	32.407	91.848	-	91.848	118.435	89.491	13.121	13.321	Continuing	Continuing
ES4: Chinook Product Improvement Program	-	35.424	32.407	91.848	-	91.848	118.435	89.491	13.121	13.321	Continuing	Continuing

Note

Funds in this Program Element (PE) were realigned from PE 0203744A Aircraft Modifications/Product Improvement Programs, Project Number 430 Impr Cargo Helicopter.

A. Mission Description and Budget Item Justification

The CH-47 Chinook is the Army's only heavy lift helicopter and is an essential element of the current Army Aviation master plan. This program funds improvements to the CH-47F System that include: T55-GA-714A engine control and component upgrades to increase power to support emerging 6K/95 requirements, continued development and testing of the Advanced Chinook Rotor Blades (ACRB) which will provide increased lift in high/hot conditions and reduce Operation and Support (O&S) costs. Production of the ACRB will begin in Fiscal Year (FY) 2018. Funding supports the transition from individual Engineering Change Proposals (ECPs) into a CH-47F Block II Engineering/Manufacturing Design (EMD) effort with Milestone B planned for May 2017. Funding also initiates advanced flight control and drive train component improvements to improve aircraft performance. Development of requirements specifications, studies and risk reduction prototyping are also part of this effort.

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	35.424	37.407	79.339	-	79.339
Current President's Budget	35.424	32.407	91.848	-	91.848
Total Adjustments	0.000	-5.000	12.509	-	12.509
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-5.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	17.709	-	17.709
• Execution Rephase	-	-	-5.200	-	-5.200

Change Summary Explanation

The FY 2017 funds increase of \$12.509 million is based on: +\$19.144 million for an EMD Block II revised cost estimate; -\$5.2 million due to the availability of prior year execution balances; and -\$1.435 million due to revised economic assumptions.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607137A / Chinook Product Improvement Program				Project (Number/Name) ES4 / Chinook Product Improvement Program			
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
ES4: Chinook Product Improvement Program	-	35.424	32.407	91.848	-	91.848	118.435	89.491	13.121	13.321	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funds in this Program Element (PE) were realigned from PE 0203744A Aircraft Modifications/Product Improvement Programs, Project Number 430 Impr Cargo Helicopter.

A. Mission Description and Budget Item Justification

The CH-47 Chinook is the Army's only heavy lift helicopter and is an essential element of the current Army Aviation master plan. This program funds improvements to the CH-47F System that include: T55-GA-714A engine control and component upgrades to increase power to support emerging 6K/95 requirements, continued development and testing of the Advanced Chinook Rotor Blades (ACRB) which will provide increased lift in high/hot conditions and reduce Operation and Support (O&S) costs. Production of the ACRB will begin in Fiscal Year (FY) 2018. Funding supports the transition from individual Engineering Change Proposals (ECPs) into a CH-47F Block II Engineering/Manufacturing Design (EMD) effort with Milestone B planned for third quarter of FY 2017. Funding also initiates advanced flight control and drive train component improvements to improve aircraft performance. Development of requirements specifications, studies and risk reduction prototyping are also part of this effort.

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

	FY 2015	FY 2016	FY 2017
Title: Modernization Integration	11.396	4.181	15.404
Description: Modernization Integration is an Airframe Component Improvement Program (ACIP) effort that provides system engineering, program management, and planning for manufacturing/modification, test, and logistics that will facilitate the integration of multiple ECPs.			
FY 2015 Accomplishments: Conducted preliminary engineering for equipment placement and conducted a virtual review and completed the Integrated Baseline Review to ensure effort is defined and schedule is executable.			
FY 2016 Plans: This effort will provide technical readiness assessment support, test planning support, and Ground Test Vehicle (GTV) design. Continue non-recurring engineering and conduct system level Program Decision Review (PDR).			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607137A / <i>Chinook Product Improvement Program</i>	Project (Number/Name) ES4 / <i>Chinook Product Improvement Program</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue system integration non-recurring engineering prior to EMD.				
<p>Title: CH-47F Block II Engineering and Manufacturing Development</p> <p>Description: The EMD Phase will begin after a 2017 Milestone (MS) B decision and the subsequent contract will develop affordable and executable manufacturing processes; complete system fabrication; remanufacture three production representative CH-47F Block II Chinook test articles; and reduce program risk.</p> <p>FY 2017 Plans: The Block II EMD contract planned for award in third quarter FY17 will integrate separate, on-going non-recurring engineering changes into the CH-47F Block II configuration to satisfy the Army's heavy lift requirement. The four-year EMD contract will provide design, development, integration, qualification, remanufacture and delivery of three production representative CH-47F Block II test articles; conduct and support aircraft developmental and limited user testing; delivery of documentation that demonstrates requirements verification; and a production configuration baseline.</p>		-	-	38.453
<p>Title: Advanced Chinook Rotor Blade (ACRB)</p> <p>Description: This effort provides an ACRB which is a redesign of the current rotor blade to provide improved capability. It improves high/hot performance, reduces Operations and Support (O&S) costs and is a form, fit, function replacement for the legacy blade.</p> <p>FY 2015 Accomplishments: Engineering design and manufacturing to support the first production representative ACRB to validate tooling. Produce-ability reviews for leading edge, heel, spar and aft fairing assemblies as well as numerous manufacturing readiness reviews to assess contractor readiness to proceed into manufacturing.</p> <p>FY 2016 Plans: Build 17 additional blades to support, safety of flight component level testing, flight testing and full component level testing. First flight design review will be conducted in preparation of flight testing at Mesa, AZ.</p> <p>FY 2017 Plans: Complete ACRB flight and live fire testing leading to component level full qualification as well as the finalization of the technical data package.</p>		8.350	10.345	12.828
Title: Improved Drive Train		5.396	7.266	6.842

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607137A / <i>Chinook Product Improvement Program</i>	Project (Number/Name) ES4 / <i>Chinook Product Improvement Program</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: This effort addresses O&S cost reduction while simultaneously re-qualifying the combining, forward, and aft transmissions to a higher power level to maximize engine power available at sea-level conditions. Funding completes preliminary design review and begins preparation for critical design review effort.</p> <p>FY 2015 Accomplishments: Completed design analysis for the forward and aft transmission and sub-system preliminary design review for the improved drive train. Defined test requirements and conducted re-qualification of the combining transmission to a higher horsepower.</p> <p>FY 2016 Plans: Test preparation including purchase of test materials. Conduct initial bench testing, aft transmission static/dynamics strain surveys test, aft transmission destruct testing, and the forward transmission scuffing test.</p> <p>FY 2017 Plans: Continue test preparation including purchase of test materials. Initiate forward transmission, static/dynamics strain surveys test, sync shaft fatigue tests, and the material coupon testing to assess material properties of component.</p>				
<p>Title: Electronic Control Unit (ECU) Software Upgrade</p> <p>Description: Software upgrade improves engine communication with the aircraft monitoring system to increase aircrew situational awareness and reduce workload. In addition software enhancements accommodate increased capability of the Improved Drive Train (IDT). Software upgrades will occur at designated intervals to allow efficient and expedient fielding of any improvements/enhancements.</p> <p>FY 2015 Accomplishments: Completed the design, development, and qualification of Version 3 ECU software enhancements.</p> <p>FY 2016 Plans: Design and development of the V3+ enhancements. Preparation for testing/Qualification.</p> <p>FY 2017 Plans: Testing and qualification of the software enhancements. Test Readiness Review (TRR) followed by the formal qualification and testing.</p>		3.505	2.485	2.697
<p>Title: Ratio Detector Power Supply (RDPS)</p> <p>Description: The RDPS is a component of the engine torque measuring system. The RDPS addresses obsolescence related to one of the microprocessors and accuracy of the torque measurement signal. The redesigned RDPS improves the accuracy of the engine signal to the torque measuring system and provides improved mission planning capability to the aviators.</p>		2.665	3.010	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607137A / <i>Chinook Product Improvement Program</i>	Project (Number/Name) ES4 / <i>Chinook Product Improvement Program</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Contract Requirements Package submitted and official proposal received.</p> <p><i>FY 2016 Plans:</i> Contract Award. Design and development of a replacement T55-GA-714A Engine RDPS.</p>				
<p><i>Title:</i> In-house and Program Management Administration</p> <p><i>Description:</i> This funding provides support costs for various government agencies.</p> <p><i>FY 2015 Accomplishments:</i> This funding provides support costs for various government agencies.</p> <p><i>FY 2016 Plans:</i> This funding provides support costs for various government agencies.</p> <p><i>FY 2017 Plans:</i> This funding provides support costs for various government agencies to include the increased effort in support of Block II.</p>		1.771	1.620	4.592
<p><i>Title:</i> Testing and Evaluation</p> <p><i>Description:</i> This effort incorporates all testing requirements to integrate numerous ECPs into one system level requirement to include the ACRB.</p> <p><i>FY 2015 Accomplishments:</i> Finalized the Live Fire Strategy and Test & Evaluation Master Plan (TEMP) and contractor participation in the Test and Evaluation Working-level Integrated Product Team (T&E WIPT) meetings. Initiated test planning activity, Computational fluid dynamics (CFD) modeling and analysis.</p> <p><i>FY 2016 Plans:</i> Conduct component level airworthiness qualification and Live Fire Testing for ACRB and developmental ECP components. Continue test planning activity, CFD modeling software and analysis to support EMD flight test qualification and participate the T&E WIPT meetings.</p> <p><i>FY 2017 Plans:</i> Continue component level airworthiness qualification and Live Fire Testing for ACRB and developmental ECP components to characterize performance improvements. Finalize test planning activity for EMD ground test and continue test planning activity for EMD flight test.</p>		2.341	3.500	11.032
Accomplishments/Planned Programs Subtotals		35.424	32.407	91.848

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607137A / <i>Chinook Product Improvement Program</i>	Project (Number/Name) ES4 / <i>Chinook Product Improvement Program</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>			<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• AA0252: <i>CH-47 CARGO HELICOPTER MODS</i>	32.092	90.330	102.943	-	102.943	188.968	122.257	89.884	25.394	Continuing	Continuing
• A05105: <i>CH-47 SLEP (Including Adv Proc)</i>	758.622	746.111	564.964	-	564.964	132.804	135.110	190.208	426.915	Continuing	Continuing
• A05008: <i>CH-47 CARGO HELICOPTER NEW BUILD</i>	236.243	357.820	-	-	-	450.525	-	-	-	Continuing	Continuing

Remarks

The CH-47F program replaces the aging CH-47D aircraft by FY 2020, incorporates a new machined airframe, and includes a new Common Avionics Architecture System (CAAS) cockpit with digital communication/navigation capability allowing improved interoperability on the digital battlefield. The CH-47F program includes recapitalization of key dynamic components, bringing them to a near zero time.

D. Acquisition Strategy

Given the need to maintain the fleet's relevance through 2060, the PM is proposing a block strategy to facilitate incremental upgrades to the Chinook fleet. Using the CH-47F as a baseline, the H-47 Block II is the first increment of this potential multi-block strategy. The Block II program will restore performance lost due to the added weight of safety and survivability equipment incorporated since initial fielding in 2007. Additional objectives of the Block II program include: Efficiently incorporating multiple engineering changes; Accomplishing required mid-life airframe recapitalization; Converging the special operations and conventional Army designs; Establishing a foundation for future block upgrades; and Maintaining the industrial base until Future Vertical Lift (FVL)-Heavy is realized.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0607137A / Chinook Product Improvement Program				ES4 / Chinook Product Improvement Program							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Modernization Integration	SS/CPFF	Boeing Ridley : Park PA	0.000	11.396	May 2015	4.181	Dec 2015	15.404	Dec 2016	-		15.404	Continuing	Continuing	Continuing
Engineering and Manufacturing Development (Pre-Decisional)	SS/CPIF	Boeing Ridley : Park, PA	0.000	-		-		38.453	May 2017	-		38.453	Continuing	Continuing	Continuing
Advanced Chinook Rotor Blade (ACRB)	SS/CPFF	Boeing Ridley : Park PA	0.000	8.350	Jun 2015	10.345	Dec 2015	12.828	Dec 2016	-		12.828	Continuing	Continuing	Continuing
Improved Drive Train	SS/CPFF	Boeing Ridley : Park, PA	0.000	5.396	Nov 2015	7.266	Dec 2015	6.842	Dec 2016	-		6.842	Continuing	Continuing	Continuing
Electronic Control Unit (ECU) Software Upgrade	SS/CPFF	Honeywell : Phoenix, AZ	0.000	3.505	May 2015	2.485	Feb 2016	2.697	Feb 2017	-		2.697	Continuing	Continuing	Continuing
Ratio Detector Power Supply (RDPS)	SS/CPFF	Boeing Ridley : Park, PA	0.000	2.665	Jun 2015	3.010	Dec 2015	-		-		-	0	5.675	0
Subtotal			0.000	31.312		27.287		76.224		-		76.224	-	-	-
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
PMO/OGA	Various	Various Government : Redstone Arsenal AL	0.000	1.771	Mar 2015	1.620	Mar 2016	4.592	Mar 2017	-		4.592	Continuing	Continuing	Continuing
Subtotal			0.000	1.771		1.620		4.592		-		4.592	-	-	-
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
Testing of configuration update ECPs to include	SS/CPFF	Boeing Ridley : Park PA	0.000	2.341	May 2015	3.500	Jan 2016	11.032	Jan 2017	-		11.032	Continuing	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607137A / <i>Chinook Product Improvement Program</i>	Project (Number/Name) ES4 / <i>Chinook Product Improvement Program</i>
--	--	--

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
Modernization Integration					Modernization Integration																							
CH-47F Block II EMD (Pre-Decisional)													CH-47F Block II EMD															
Advanced Chinook Rotor Blade									Advanced Chinook Rotor Blade																			
Improved Drive Train									Improved Drive Train																			
Electronic Control Unit (ECU) Software Upgrade (Engine)									ECU Software Upgrade																			
Ratio Detector Power Supply (RDPS) (Engine)					RDPS																							
In-house and Program Management Administration									In-house and Program Management Administration																			
Testing and Evaluation									Testing and Evaluation																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607137A / <i>Chinook Product Improvement Program</i>	Project (Number/Name) ES4 / <i>Chinook Product Improvement Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Modernization Integration	3	2015	3	2017
CH-47F Block II EMD (Pre-Decisional)	3	2017	3	2021
Advanced Chinook Rotor Blade	1	2008	4	2017
Improved Drive Train	3	2014	2	2018
Electronic Control Unit (ECU) Software Upgrade (Engine)	4	2010	4	2021
Ratio Detector Power Supply (RDPS) (Engine)	3	2015	3	2016
In-house and Program Management Administration	1	2015	4	2021
Testing and Evaluation	3	2015	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0607138A / Fixed Wing Product Improvement Program							
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	-	0.819	1.151	0.796	-	0.796	0.894	2.076	1.619	2.147	Continuing	Continuing
ES5: Fixed Wing Product Improvement Program	-	0.819	1.151	0.796	-	0.796	0.894	2.076	1.619	2.147	Continuing	Continuing

Note

Prior funding for this program was received on Program Element 0203744A Project D18. This is not a new start.

A. Mission Description and Budget Item Justification

The budget line provides for Non-Recurring Engineering (NRE), development of supplemental type certificates (STC) and associated developmental testing, and integration of all Army fixed wing aircraft to provide Communications, Navigation and Surveillance (CNS), Aircraft Survivability Equipment (ASE), and Department of Defense (DoD) mandated safety equipment to meet current and evolving international and Army standards. As requirements for new avionics equipment continue, aircraft delays and airspace exclusions are likely for aircraft not properly equipped. Upgrade of communication and aircraft modifications will assure worldwide deployability for those required to deploy. This budget line will also provide funding for studies, evaluations and Analysis of Alternatives to support emerging Army fixed wing requirements for product improvements to support the Army fleet.

In accordance with the Office of the Secretary of Defense (OSD) Director of Operational Test and Evaluation (DOT&E) Working Oversight List (dtd 26 Jun 15), the Fixed Wing Utility Aircraft Program will be required to undergo both Live Fire Testing and Operational Testing. Fiscal Year (FY) 2017 Research, Development, Test and Evaluation (RDTE) dollars in the amount of \$0.796 million provides funding for Live Fire Test & Evaluation (LFT&E) hardware materials on Fixed Wing Utility Aircraft. The LFT&E hardware materials consist of Structural Wing, Engine, Propeller, Fuselage, Wing Iron Bird, Hydraulic System, Dry Bay Fire Suppression System, and Emergency Supplemental Oxygen Supply (ESOS) System.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.819	1.151	0.999	-	0.999
Current President's Budget	0.819	1.151	0.796	-	0.796
Total Adjustments	0.000	0.000	-0.203	-	-0.203
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	-0.203	-	-0.203

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607138A / Fixed Wing Product Improvement Program				Project (Number/Name) ES5 / Fixed Wing Product Improvement Program			
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
ES5: Fixed Wing Product Improvement Program	-	0.819	1.151	0.796	-	0.796	0.894	2.076	1.619	2.147	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding for this Program Element (PE) was previously on PE 0203744A Project D18 - Aircraft Modifications/Product Improvement Programs

A. Mission Description and Budget Item Justification

The budget line provides for Non-Recurring Engineering (NRE), development of supplemental type certificates (STC) and associated developmental testing, and integration of all Army fixed wing aircraft to provide Communications, Navigation and Surveillance (CNS), Aircraft Survivability Equipment (ASE), and Department of Defense (DoD) mandated safety equipment to meet current and evolving international and Army standards. As requirements for new avionics equipment continue, aircraft delays and airspace exclusions are likely for aircraft not properly equipped. Upgrade of communication and aircraft modifications will assure worldwide deployability for those required to deploy. This budget line will also provide funding for studies, evaluations and Analysis of Alternatives to support emerging Army fixed wing requirements for product improvements to support the Army fleet.

In accordance with the Office of the Secretary of Defense (OSD) Director of Operational Test and Evaluation (DOT&E) Working Oversight List (dtd 26 Jun 15), the Fixed Wing Utility Aircraft Program will be required to undergo both Live Fire Testing and Operational Testing. Fiscal Year (FY) 2017 Research, Development, Test and Evaluation (RDTE) dollars in the amount of \$0.796 million provides funding for Live Fire Test & Evaluation (LFT&E) hardware materials on Fixed Wing Utility Aircraft. The LFT&E hardware materials consist of Structural Wing, Engine, Propeller, Fuselage, Wing Iron Bird, Hydraulic System, Dry Bay Fire Suppression System, and Emergency Supplemental Oxygen Supply (ESOS) System.

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

	FY 2015	FY 2016	FY 2017
Title: Non-recurring Engineering	0.770	1.082	-
Description: Non-recurring engineering efforts provide improved performance to Army fixed wing aircraft for communication, navigation, and surveillance equipment.			
FY 2015 Accomplishments: Non-recurring engineering efforts provide improved performance to Army fixed wing aircraft for communication, navigation, and surveillance equipment.			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607138A / Fixed Wing Product Improvement Program	Project (Number/Name) ES5 / Fixed Wing Product Improvement Program

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Non-recurring engineering efforts provide improved performance to Army fixed wing aircraft for communication, navigation, and surveillance equipment.			
Title: Program Management (PM) Description: PM Fixed Wing (FW) FY 2015 Accomplishments: PM Fixed Wing (FW) FY 2016 Plans: PM Fixed Wing (FW)	0.049	0.069	-
Title: Test And Evaluation Description: Contractor hardware support for LFT&E on Fixed Wing Utility Aircraft (FUA). FY 2017 Plans: Funding provides for LFT&E hardware materials on FUA. The LFT&E hardware materials consist of Structural Wing, Engine, Propeller, Fuselage, Wing Iron Bird, Hydraulic System, Dry Bay Fire Suppression System, and ESOS System.	-	-	0.796
Accomplishments/Planned Programs Subtotals	0.819	1.151	0.796

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
• A11300: Utility F/W Aircraft	10.787	0.879	58.046	-	58.046	118.271	107.937	135.298	102.072	Continuing	Continuing
• AA0270: Utility/ Cargo Airplane Mods	15.029	16.166	17.526	-	17.526	16.106	16.442	15.470	14.692	Continuing	Continuing

Remarks

D. Acquisition Strategy

The US Army Fixed Wing acquisition and modernization strategy leverages commercial derivative aircraft through the use of supplemental type certificates (STC) and associated testing and includes cockpit modernization for civil and tactical upgrades of military unique equipment and integration of Mission Equipment Packages (MEP). Cockpit modernization upgrades include items such as dual Flight Management Systems, Terrain Area Warning Systems, transponder, Mode S/5 transponders, Satellite Communications, Traffic Alert and Collision Avoidance II, Flight Data Recorders, Cockpit Voice Recorders, communication radios, military Global Positioning System (GPS), Wide Area Augmentation System/ Localizer Performance with Vertical Guidance, Automatic Dependence Surveillance Broadcast (ADS-B) Out, M-code GPS, Blue Force Tracker, and Smart books. Intelligence, Surveillance, and Reconnaissance (ISR) MEP upgrades include integration of multi-intelligence systems.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607138A / <i>Fixed Wing Product Improvement Program</i>	Project (Number/Name) ES5 / <i>Fixed Wing Product Improvement Program</i>

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607138A / Fixed Wing Product Improvement Program	Project (Number/Name) ES5 / Fixed Wing Product Improvement Program
--	--	--

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	Various	PM Fixed Wing : Redstone Arsenal, AL	0.000	0.049		0.069		-		-		-	Continuing	Continuing	0
Subtotal			0.000	0.049		0.069		-		-		-	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fixed Wing Non-recurring Engineering	Various	Various : Various	0.000	0.770		1.082		-		-		-	Continuing	Continuing	0
Subtotal			0.000	0.770		1.082		-		-		-	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Hardware Support for Live-Fire Testing	Various	Various : Various	0.000	-		-		0.796		-		0.796	Continuing	Continuing	0
Subtotal			0.000	-		-		0.796		-		0.796	-	-	0.000

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
	Project Cost Totals		0.000	0.819	1.151	0.796	-	0.796	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607138A / Fixed Wing Product Improvement Program	Project (Number/Name) ES5 / Fixed Wing Product Improvement Program
--	--	--

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				
FW Non-recurring Engineering	FW Non-recurring Engineering																															
Live Fire Test & Evaluation																	LFT&E															

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607138A / <i>Fixed Wing Product Improvement Program</i>	Project (Number/Name) ES5 / <i>Fixed Wing Product Improvement Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FW Non-recurring Engineering	4	2014	4	2021
Live Fire Test & Evaluation	4	2017	4	2019

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0607139A / <i>Improved Turbine Engine Program</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	49.328	51.164	126.105	-	126.105	186.264	238.331	309.312	315.190	Continuing	Continuing
ES6: <i>Improved Turbine Engine Program</i>	-	49.328	51.164	126.105	-	126.105	186.264	238.331	309.312	315.190	Continuing	Continuing

Note

For Fiscal Year (FY) 2014 and prior, all funding for the Improved Turbine Engine Program (ITEP) was contained in Program Element (PE) 0203744A – Aircraft Modifications/Product Improvement Programs, Project 504. FY 2015 funding has moved from PE 0203744A, Project EB1 to PE 0607139A, Project ES6. This is not a New Start.

A. Mission Description and Budget Item Justification

ITEP develops, tests, qualifies, and integrates the next generation turboshaft engine on the Black Hawk and Apache aircraft. The Improved Turbine Engine (ITE) replaces the existing T700 engine design originated in the 1970's and meets the operational requirement of 6000 feet pressure altitude and 95 degrees (6K/95). The ITE will fit inside the existing engine bays of the Black Hawk and Apache Helicopters and provides a significant power enhancement of up to fifty percent (total of 3,000 shaft horsepower) with increased fuel efficiency. Additional benefits include improved design life, enhanced reliability, lower maintenance cost and restored capability lost due to aircraft weight growth, without increasing the logistics footprint. The program consists of systems engineering and program management, detailed design engineering, design assurance, hardware manufacturing and testing, component and module level development and testing, system level testing and qualification, as well as integration into the airframe.

FY 2016 funding provides for dual vendor competitive Preliminary Design Review (PDR) contract awards, initial engine design effort, and continues platform/engine integration trade studies. FY 2017 continues engine design effort and completes platform/engine integration trade studies. FY 2018 funds the remaining PDR engine design effort, the Engineering and Manufacturing Development (EMD) Source Selection and Evaluation Board (SSEB) for entry into Milestone B (MS B), EMD contract award, and begins platform Original Engine Manufacturer (OEM) integration design engineering. FY 2019 continues both the EMD effort and platform/engine integration design engineering. FY 2020 continues both the EMD effort and platform/engine integration A-kit development, resulting in a Critical Design Review (CDR) in FY 2020. FY 2021 continues the EMD effort, provides for First Engine To Test (FETT), and begins physical airframe integration.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607139A / <i>Improved Turbine Engine Program</i>
---	--

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	49.328	51.164	99.728	-	99.728
Current President's Budget	49.328	51.164	126.105	-	126.105
Total Adjustments	0.000	0.000	26.377	-	26.377
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	26.377	-	26.377

Change Summary Explanation

For FY 2014 and prior, all funding for ITEP was contained in PE 0203744A – Aircraft Modifications/Product Improvement Programs, Project 504. FY 2015 funding has moved from PE 0203744A, Project EB1 to PE 0607139A, Project ES6. Additional Army funding in FY 2017 provided to fully fund initial PDR contracts.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607139A / Improved Turbine Engine Program				Project (Number/Name) ES6 / Improved Turbine Engine Program			
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
ES6: Improved Turbine Engine Program	-	49.328	51.164	126.105	-	126.105	186.264	238.331	309.312	315.190	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

For Fiscal Year (FY) 2014 and prior, all funding for the Improved Turbine Engine Program (ITEP) was contained in Program Element (PE) 0203744A – Aircraft Modifications/Product Improvement Programs, Project 504. FY 2015 funding has moved from PE 0203744A, Project EB1 to PE 0607139A, Project ES6. This is not a New Start.

A. Mission Description and Budget Item Justification

ITEP develops, tests, qualifies, and integrates the next generation turboshaft engine on the Black Hawk and Apache aircraft. The Improved Turbine Engine (ITE) replaces the existing T700 engine design originated in the 1970's and meets the operational requirement of 6000 feet pressure altitude and 95 degrees (6K/95). The ITE will fit inside the existing engine bays of the Black Hawk and Apache Helicopters and provides a significant power enhancement of up to fifty percent (total of 3,000 shaft horsepower) with increased fuel efficiency. Additional benefits include improved design life, enhanced reliability, lower maintenance cost and restored capability lost due to aircraft weight growth, without increasing the logistics footprint. The program consists of systems engineering and program management, detailed design engineering, design assurance, hardware manufacturing and testing, component and module level development and testing, system level testing and qualification, as well as integration into the airframe.

FY 2016 funding provides for dual vendor competitive Preliminary Design Review (PDR) contract awards, initial engine design effort, and continues platform/engine integration trade studies. FY 2017 continues engine design effort and concluded the platform/engine integration trade studies. FY 2018 funds the remaining PDR engine design effort, the Engineering and Manufacturing Development (EMD) SSEB for entry into Milestone B (MS B), EMD contract award, and begins platform Original Engine Manufacturer (OEM) integration design engineering. FY 2019 continues both the EMD effort and platform/engine integration design engineering. FY 2020 continues both the EMD effort and platform/engine integration A-kit development, resulting in a Critical Design Review (CDR) in FY 2020. FY 2021 continues the EMD effort, provides for First Engine To Test (FETT), and begins physical airframe integration.

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

	FY 2015	FY 2016	FY 2017
Title: ITEP	49.328	51.164	126.105
Description: ITEP - a multi-platform turbine engine development required across existing Army aircraft to fill the capability gaps for Army Aviation Operations			
FY 2015 Accomplishments:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607139A / <i>Improved Turbine Engine Program</i>	Project (Number/Name) ES6 / <i>Improved Turbine Engine Program</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Systems Engineering/Program Management requirements. Drafted and formally released Request for Proposals (RFP) for up to two vendors to execute PDR effort. Funded OEM aircraft platform/engine integration trade studies. FY 2016 Plans: Systems Engineering/Program Management requirements, dual vendor competitive PDR contract awards, initial engine design effort, and continues aircraft platform/engine integration trade studies. FY 2017 Plans: Systems Engineering/Program Management requirements, provide for incremental funding of dual vendor competitive PDR contract awarded in FY16, initial engine design effort, and continues aircraft platform/engine integration trade studies.			
Accomplishments/Planned Programs Subtotals	49.328	51.164	126.105

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

N/A

Remarks

FY 2014 and prior, all funding for ITEP was contained in PE 0203744A – Aircraft Modifications/Product Improvement Programs, Project 504. FY 2015 funding has moved from PE 0203744A, Project EB1 to PE 0607139A, Project ES6. This is not a New Start.

D. Acquisition Strategy

Full and Open Competition is planned for the ITEP PDR contracts. Award Fixed Price Incentive (Firm Target) contracts in FY 2016 to no more than two vendors for PDR. Following a successful Milestone B decision, currently planned for fourth quarter FY 2018, there will be a down select to one vendor to be awarded on a cost-plus-incentive-fee contract.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607139A / Improved Turbine Engine Program	Project (Number/Name) ES6 / Improved Turbine Engine Program
--	---	---

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			
ITEP SEPM - Organic	TBD	Program Management Office (PMO) Improved Turbine Engine/ Future Vertical Lift (ITE/FVL), Various : Redstone Arsenal, AL	0.000	7.241	Oct 2014	6.614	Oct 2015	6.568	Oct 2016	-		6.568	0	20.423	0
ITEP SEPM - Contractor	TBD	PMO Huntsville, AL Various : PMO Huntsville, AL Various	0.000	2.178	Oct 2014	1.700	Oct 2015	1.246	Oct 2016	-		1.246	0	5.124	0
ITEP SEPM - OGA	TBD	PMO Huntsville, AL Various : PMO Huntsville, AL Various	0.000	5.211	Oct 2014	1.080	Oct 2015	-		-		-	0	6.291	0
Subtotal			0.000	14.630		9.394		7.814		-		7.814	0.000	31.838	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			
ITEP Preliminary Design Review (PDR) Contracts	C/FPIF	TBD : TBD	0.000	-		29.518	Aug 2016	104.478	Dec 2016	-		104.478	0	133.996	0
Boeing - ITEP Vehicle Platform Integration Trade Studies Contract	SS/IDIQ	Program Management Office (PMO) Improved Turbine Engine/ Future Vertical Lift (ITEP/FVL), Various : Redstone Arsenal, AL	0.000	34.698	Feb 2015	-		2.905	Dec 2016	-		2.905	0	37.603	0
Sikorsky Aircraft - ITEP Vehicle Platform	SS/FPIF	Program Management Office	0.000	-		6.602	Dec 2015	4.468	Dec 2016	-		4.468	0	11.070	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607139A / Improved Turbine Engine Program	Project (Number/Name) ES6 / Improved Turbine Engine Program
--	---	---

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			
Integration Trade Studies Contract		(PMO) Improved Turbine Engine/ Future Vertical Lift (ITEP/FVL), Various : Redstone Arsenal, AL													
Subtotal			0.000	34.698		36.120		111.851		-		111.851	0.000	182.669	0.000

Remarks
Integration Contract value in FY15 was split between Boeing (15.798)and Sikorsky (18.900). FY16 contract value was solely Sikorsky. FY15 and FY16 values could not be moved to the appropriate line because those fields are locked.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ITEP Engineering Support - Organic	TBD	Program Management Office (PMO) Improved Turbine Engine/ Future Vertical Lift (ITEP/FVL), Various : Redstone Arsenal, AL	0.000	-		1.200	Oct 2015	1.143	Oct 2016	-		1.143	0	2.343	0
ITEP Engineering Support - Contractor	TBD	Program Management Office (PMO) Improved Turbine Engine/ Future Vertical Lift (ITEP/FVL), Various : Redstone Arsenal, AL	0.000	-		1.500	Oct 2015	1.662	Oct 2016	-		1.662	0	3.162	0
ITEP Engineering Support - OGA	TBD	Program Management Office (PMO) Improved	0.000	-		2.950	Oct 2015	3.635	Oct 2016	-		3.635	0	6.585	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607139A / Improved Turbine Engine Program	Project (Number/Name) ES6 / Improved Turbine Engine Program
--	---	---

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				
Improved Turbine Engine Program Systems Engineering/Program Manag	ITEP SEPM																															
Improved Turbine Engine Program Development Engineering																	ITEP PDR															
Improved Turbine Engine Program Detailed Design (EMD)																	ITEP Detailed Design (EMD)															
Improved Turbine Engine Program Air Vehicle Integration	ITEP Air Vehicle Integration																															

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607139A / <i>Improved Turbine Engine Program</i>	Project (Number/Name) ES6 / <i>Improved Turbine Engine Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Improved Turbine Engine Program Systems Engineering/Program Management	1	2015	1	2026
Improved Turbine Engine Program Development Engineering	4	2016	2	2018
Improved Turbine Engine Program Detailed Design (EMD)	4	2018	2	2024
Improved Turbine Engine Program Air Vehicle Integration	1	2015	2	2024

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0607140A / <i>Emerging Technologies from NIE</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	4.916	2.481	2.369	-	2.369	0.000	0.000	0.000	0.000	Continuing	Continuing
<i>ES7: Emerging Technologies from NIE</i>	-	4.916	2.481	2.369	-	2.369	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Emerging Technologies from Network Integration Evaluation (NIE) supports the Army's Equipment Modernization Strategy, Army Force Generation (ARFORGEN) cycle and consolidates capabilities to gain efficiencies. These funds provide for an iterative and incremental approach to software development and hardware/software integration as a result of NIEs and Army Warfighter Assessments (AWA)s. These funds promote industry's efforts to support the Army's Modernization Plan for Force 2025 and beyond. These funds will facilitate the identification, assessment and acquisition of capability solutions for the Army.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.916	2.481	2.506	-	2.506
Current President's Budget	4.916	2.481	2.369	-	2.369
Total Adjustments	0.000	0.000	-0.137	-	-0.137
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.137	-	-0.137

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607140A / <i>Emerging Technologies from NIE</i>			Project (Number/Name) ES7 / <i>Emerging Technologies from NIE</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
<i>ES7: Emerging Technologies from NIE</i>	-	4.916	2.481	2.369	-	2.369	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

These funds supports Pre NIE testing and NIE participation of 3rd party software for COE. These funds will be used to mature, test, and integrate small business and industry technologies that are demonstrated and evaluated to have significant application to COE. This includes improvements of technology applications and widgets found in the commercial marketplace. The scope of this effort covers SoSE&I responsibility for execution of Phases 0-3 of COE Integration and preparation of Phase 4 AIC. The impact if not funded is that the activities identified above will not be accomplished. The results will slow COE abilities to respond to threat activities and limits shared information sources that can be downloaded in real time.

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

	FY 2015	FY 2016	FY 2017
Title: Emerging Technologies from NIEs	4.916	2.481	2.369
Description: To mature, test, integrate and evaluate traditional and nontraditional small business and industry's technologies.			
FY 2015 Accomplishments: These funds were used to mature, test, and integrate small business and industry technologies that were demonstrated and evaluated during NIE 15.1, 15.2 and/or AWA 16.1 Events. This included improvements of technologies from these NIEs that were evaluated and/or baselined at the NIE/AWA for fielding in future Capability Sets (CS). The technologies that will benefit from these funds for further development are dependent upon the Gatekeeper's approval. These funds affected technologies from NIE 15.1, (2 QTR FY15), NIE 15.2 (4QTR FY15) and/or NIE 16.1 (2QTR FY16).			
FY 2016 Plans: These funds will be used to mature, test, and integrate small business and industry technologies that are demonstrated and evaluated during various NIE Events. This includes improvements of technologies from previous NIEs that will be then evaluated and baselined at a NIE for fielding in a Capability Set (CS). The technologies that will benefit from these funds for further development are dependent upon the Gatekeeper's approval. These funds will affect technologies from NIE 16.1, (2 QTR FY16), NIE 16.2 (4QTR FY16) and/or NIE 17.1 (2QTR FY17).			
FY 2017 Plans: These funds will be used to support maturing, testing, and integrating industry technologies that are demonstrated and evaluated during various NIE and AWA Events. This includes improvements of technologies from previous NIEs that will be then evaluated and baselined at a future NIE for fielding in a Capability Set (CS). The technologies that will benefit from these funds for further			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607140A / <i>Emerging Technologies from NIE</i>	Project (Number/Name) ES7 / <i>Emerging Technologies from NIE</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
development are dependent upon the Gatekeeper's approval. These funds will affect technologies from NIE/AWA 17.1, (2 QTR FY17), NIE 17.2 (4QTR FY17) and/or NIE/AWA 18.1 (2QTR FY18).			
Accomplishments/Planned Programs Subtotals	4.916	2.481	2.369

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

N/A

Remarks

This is the only project within this Program Element.

D. Acquisition Strategy

Technologies will be selected dependent upon the Gatekeeper's approval.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607140A / <i>Emerging Technologies from NIE</i>	Project (Number/Name) ES7 / <i>Emerging Technologies from NIE</i>
--	---	---

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
NIE 15.1 Planning - Execution	█																											
NIE 15.1 - Event Analysis & Summary	█																											
NIE 15.2 Planning - Execution	█																											
NIE 15.2 Event Analysis & Summary					█																							
NIE 16.1 Planning - Execution					█																							
NIE 16.1 Event Analysis & Summary									█																			
NIE 16.2 Planning - Execution					█																							
NIE 16.2 Event Analysis & Summary									█																			
NIE 17.1 Planning - Execution									█																			
NIE 17.1 Event Analysis & Summary													█															
NIE 17.2 Planning - Execution													█															
NIE 17.2 Planning/Prep - ValEx/CommEX/Pilot													█															
NIE 17.2 Event																	█											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607140A / <i>Emerging Technologies from NIE</i>	Project (Number/Name) ES7 / <i>Emerging Technologies from NIE</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 15.1 Planning - Execution	3	2013	1	2015
NIE 15.1 - Event Analysis & Summary	1	2015	1	2015
NIE 15.2 Planning - Execution	2	2014	3	2015
NIE 15.2 Event Analysis & Summary	3	2015	3	2015
NIE 16.1 Planning - Execution	2	2015	1	2016
NIE 16.1 Event Analysis & Summary	1	2016	1	2016
NIE 16.2 Planning - Execution	4	2015	3	2016
NIE 16.2 Event Analysis & Summary	3	2016	3	2016
NIE 17.1 Planning - Execution	2	2016	1	2017
NIE 17.1 Event Analysis & Summary	1	2017	1	2017
NIE 17.2 Planning - Execution	4	2016	3	2017
NIE 17.2 Planning/Prep - ValEx/CommEX/Pilot	4	2016	3	2017
NIE 17.2 Event	3	2017	3	2017
NIE 17.2 Event Analysis & Summary	3	2017	3	2017
NIE (AWA) 18.1 Planning - Execution	2	2017	1	2018
NIE/AWA 18.1 Planning/Prep - ValEx/CommEX/Pilot	2	2017	1	2018
NIE/AWA 18.1 Event	1	2018	1	2018
NIE/AWA 18.1 Event Analysis & Summary	1	2018	1	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0607141A / Logistics Automation
--	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	3.513	1.673	4.563	-	4.563	4.308	3.645	3.690	0.000	Continuing	Continuing
DY1: Logistics Information Warehouse (LIW)	-	1.421	0.301	1.957	-	1.957	1.824	1.475	1.493	0.000	Continuing	Continuing
DY2: Lead Material Integrator (LMI) (DST)	-	2.092	1.372	2.606	-	2.606	2.484	2.170	2.197	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Logistics Information Warehouse (LIW) has been designated by the Secretary of the Army as the primary system for the accessing, acquiring, and delivery of materiel data. This includes data from all sources designated as Authoritative, as well as, system derived data and appropriate reference data. This data will be used in support of materiel sourcing and distribution and other Materiel Enterprise missions. It enables Command visibility of business intelligence and resulting metrics for critical logistics components enabling enterprise-level analytics to be performed in support of the equipping mission within the Army's Tiered Readiness processes. LOGSA and its LIW suite of products and services provide the Army community with vital logistics data necessary for the planning, conducting and sustainment of war fighting capability worldwide. The LMI-DST directly supports Tiered Readiness by linking available equipment to the Generated Force model. Specifically, LMI-DST synchronizes an Army authoritative Demand Signal for manning, equipping, services & infrastructure and authoritative resourcing (money) information, resulting in an accurate prediction of a ready and properly equipped force. The Army Financial Liability Investigation of Property Loss Tracker (AFT) tool is a web-based, automated FLIPL processing and tracking system which provides an electronic FLIPL documentation packet that includes intelligent, digital versions of required forms and allows for attachment of supporting documentation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	3.652	1.673	4.815	-	4.815
Current President's Budget	3.513	1.673	4.563	-	4.563
Total Adjustments	-0.139	0.000	-0.252	-	-0.252
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.139	-			
• Adjustments to Budget Years	-	-	-0.252	-	-0.252

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607141A / <i>Logistics Automation</i>				Project (Number/Name) DY1 / <i>Logistics Information Warehouse (LIW)</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
DY1: <i>Logistics Information Warehouse (LIW)</i>	-	1.421	0.301	1.957	-	1.957	1.824	1.475	1.493	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Logistics Information Warehouse (LIW) is designated as the Army's authoritative materiel data repository. As chartered by the Secretary of The Army, LIW will provide enterprise-accepted and trusted information for analysis, aggregation, and reuse in support of the Lead Materiel Integrator (LMI) mission. As an Army enterprise-level repository and retrieval system to facilitate accurate choices and rapid decision making. Specifically, LIW will provide all required data structured in a way that allows for querying and reporting; e.g., equipment authorizations, equipment on-hand, new procurement schedules, RESET production schedules and in transit visibility from origin and distribution to final destination, in support of the information needs of the Army Materiel Command (AMC) and other command logistics managers. This includes data from all sources designated as authoritative, as well as system derived data and appropriate reference data. This data will be used in support of materiel sourcing and distribution and other Materiel Enterprise missions. LIW enables visibility of business intelligence and resulting metrics for critical logistics components enabling enterprise-level analytics to be performed in support of the equipping mission within the Army's Tiered Readiness processes. LIW supports the tenants of Mission Command by logistically empowering the Commander to successfully integrate and synchronize logistics information with warfighter functions in time and space to maximize potential for mission success. ADDITIONAL CAPABILITIES: LIW provides the data and custom business intelligence environment to enable Command-specific analysis and presentation of business intelligence displays to satisfy unique command management requirements. LIW serves as the single logistics repository which bridges the Army ERP systems (GCSS-Army, LMP, AESIP, GFEBs) with enduring legacy systems.

LOGSA is requesting RDTE funds to develop and enhance the Materiel Common Operating Picture (M-COP). The M-COP provides interactive views, models, and simulations that directly address Warfighter priorities by giving senior Army leaders the ability to visualize current and future materiel requirements, materiel readiness levels and Warfighter materiel readiness options of the Logistics Readiness Center (LRC) at the installation level. Data from many agencies is integrated into M-COP views, assisting with information superiority for joint and inter-agency operations (examples: assisting CENTCOM, NORTHCOM, and FEMA).

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

	FY 2015	FY 2016	FY 2017
Title: LIW	1.421	0.301	1.957
Description: Execution of tasks to create Army Logistics Repository.			
FY 2015 Accomplishments: Execute Priority Group 3 Sprint, continue Best of Breed.			
FY 2016 Plans: Develop Materiel Common Operating Picture (M-COP), continuing Best of Breed.			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607141A / <i>Logistics Automation</i>	Project (Number/Name) DY1 / <i>Logistics Information Warehouse (LIW)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue Develop Materiel Common Operating Picture (M-COP), continuing Best of Breed			
Accomplishments/Planned Programs Subtotals	1.421	0.301	1.957

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

N/A

Remarks

D. Acquisition Strategy

Utilize contract services available through LiTES contract vehicle in CHESS.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607141A / <i>Logistics Automation</i>	Project (Number/Name) DY1 / <i>Logistics Information Warehouse (LIW)</i>
--	---	--

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				
Priority Group 3 Sprint, Best of Breed.																																
Develop Materiel Common Operating Picture (M-COP)																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607141A / <i>Logistics Automation</i>	Project (Number/Name) DY1 / <i>Logistics Information Warehouse (LIW)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Priority Group 3 Sprint, Best of Breed.	4	2014	4	2017
Develop Materiel Common Operating Picture (M-COP)	4	2015	4	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607141A / <i>Logistics Automation</i>				Project (Number/Name) DY2 / <i>Lead Material Integrator (LMI) (DST)</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
DY2: <i>Lead Material Integrator (LMI) (DST)</i>	-	2.092	1.372	2.606	-	2.606	2.484	2.170	2.197	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Lead Materiel Integrator Decision Support Tool (LMI DST) is a software solution, resident within the Logistics Information Warehouse, that supports the Army Materiel Command in its mission as the Army Lead Materiel Integrator as well as materiel managers at Army Commands, Army Service Component Commands, Direct Reporting Units, Corps and Divisions with making informed equipping decisions. The LMI DST directly supports Army Forces Generation (ARFORGEN) by linking available equipment to the Generated Force model.

Specifically, development will enable the tool to consume and display additional data sources, such as maintenance data from both legacy and Enterprise data sources - a critical capability during the fielding of GCSS-Army; provide additional modules, including Second Destination Transportation Planning, supporting USARC and NGB requirements to deprecate legacy systems and a Readiness Cost Banding module to implement analysis algorithms to deliver decisions to optimize readiness within Army cost constraints. New development will also enable equippers to redistribute items, based on their level of modernization, limiting transportation costs of moving outdated equipment.

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

	FY 2015	FY 2016	FY 2017
Title: LMI/DST	2.092	1.372	2.606
Description: The Lead Materiel Integrator Decision Support Tool (LMI DST) is a software solution, resident within the Logistics Information Warehouse.			
FY 2015 Accomplishments: Development of LMI DST Version 5.			
FY 2016 Plans: Development of LMI DST Version 5.			
FY 2017 Plans: Development of LMI DST Version 5.			
Accomplishments/Planned Programs Subtotals	2.092	1.372	2.606

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

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607141A / <i>Logistics Automation</i>	Project (Number/Name) DY2 / <i>Lead Material Integrator (LMI) (DST)</i>
--	---	---

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

Remarks

D. Acquisition Strategy

The LMI DST is a development effort to meet the Secretary of the Army's intent in designating the Army Materiel Command as the Lead Materiel Integrator and the Logistics Information Warehouse (LIW) as the authoritative repository of Army logistics domain data. The LMI DST integrates logistics domain data from the LIW with materiel demand requirements from the Readiness Enterprise to enable automated decision support for equippers throughout the Army. In August 2011, a sole source contract was awarded to ProModel Corporation to leverage their COTS modeling and simulation capability, the ProModel Application Framework to develop the Lead Materiel Integrator Decision Support Tool, which is a GOTS product. The project utilizes an agile development methodology. Versions 1-4 were released on a six-month cadence between December 2011 and April 2013. LMI DST development and sustainment have been transitioned to LOGSA's Information and Technology Services Contract. Requirements for additional development were collected from Army Commands and vetted through a General Officer Steering Committee, chaired by Army Materiel Command. RDTE funding supports future major version releases.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607141A / <i>Logistics Automation</i>	Project (Number/Name) DY2 / <i>Lead Material Integrator (LMI) (DST)</i>
--	---	---

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				
Development of LMI DST Version 5																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607141A / <i>Logistics Automation</i>	Project (Number/Name) DY2 / <i>Lead Material Integrator (LMI) (DST)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Development of LMI DST Version 5	4	2014	4	2017

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607665A / <i>Family of Biometrics</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	1.332	13.237	12.098	-	12.098	0.531	1.294	1.317	1.325	Continuing	Continuing
DT2: <i>Non-MIP Biometrics</i>	-	1.332	11.770	10.848	-	10.848	0.000	0.000	0.000	0.000	0.000	23.950
DU2: <i>Management Agency</i>	-	0.000	1.467	1.250	-	1.250	0.531	1.294	1.317	1.325	Continuing	Continuing

Note
Project 0607664A was created to clearly delineate between the future Biometrics Enabling Capability (Authoritative Biometrics System) and Family of Biometrics (current Authoritative Biometrics Repository System) efforts.

A. Mission Description and Budget Item Justification

The Biometrics Enabling Capability (BEC) product office has full life-cycle management responsibility of the upgraded authoritative biometrics enterprise repository system, known as DoD Automated Biometrics Identification System (DoD ABIS). DoD ABIS is an information technology system that supports identity superiority by providing the critical capability for Warfighters to identify known or suspected terrorists and third country nationals in the course of military operations. DoD ABIS is the authoritative biometrics enterprise system that provides matching, sharing and storing of biometrics data. The capability can receive multi-modal biometrics submissions to include iris, face, palm and finger prints from biometrics collection devices, which will support the Warfighter in making, retain, capture or release decisions. The system has a direct impact on the availability of critical intelligence information that is of vital interest to DoD and other government agencies, including Department of Justice (DoJ), Federal Bureau of Investigation (FBI), Department of Homeland Security (DHS), and Department of State (DoS).

The Defense Forensics and Biometrics Agency (DFBA) as the Executive Manager for Army Biometrics acts as the DoD proponent to establish and maintain Research, Development, Test & Evaluation (RDTE) and information management support throughout the Armed Services. DFBA leads in the development and implementation of biometric technologies for Combatant Commands (CCMDs), Services, and Agencies; delivers capabilities that contribute to the enhancement of the biometric community; increases Joint Service interoperability and; empowers the warfighter by improving operational effectiveness on the battlefield. The DFBA strategy pursues technology opportunities through scientific discovery and makes investments responsive to specific requirements identified by combat developers. These directives are carried out by DFBA's Office of the Chief Scientist (OCS). OCS coordinates all science and technology (S&T) efforts and oversees the RDT&E program.

Justification:
FY 2017 Research Development Test and Evaluation (RDT&E) funding in the amount of \$10.853 million will support the completion of end of life upgrades and associated developmental testing to support of a service life extension to the DoD ABIS system baseline that will extend the life of the system through FY 2022. These upgrades are required to maintain the systems security accreditation and performance.

FY 2017 funding in the amount of \$1.250 million will provide DFBA the ability to actively manage internal and external research efforts to ensure scientific merit, feasibility, and DFBA objectives and requirements are met. DFBA conducts biometric T&E activities, including standards conformance and Automated Biometric Identification System (ABIS) interoperability assessments, supporting DoD acquisition organizations, and providing subject matter expertise to DoD and non-DoD government stakeholders.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607665A / <i>Family of Biometrics</i>
---	---

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	13.237	1.459	-	1.459
Current President's Budget	1.332	13.237	12.098	-	12.098
Total Adjustments	1.332	0.000	10.639	-	10.639
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	1.332	-			
• Adjustments to Budget Years	-	-	10.639	-	10.639

Change Summary Explanation

The funding increase in the amount of \$10.639 million will support the completion of end of life upgrades and associated testing to support a service life extension to the DoD ABIS system baseline that will extend the life of the system through FY 2022. These upgrades are required to maintain the systems security accreditation and performance.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607665A / Family of Biometrics				Project (Number/Name) DT2 / Non-MIP Biometrics			
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
DT2: Non-MIP Biometrics	-	1.332	11.770	10.848	-	10.848	0.000	0.000	0.000	0.000	0.000	23.950
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Biometrics Enabling Capability (BEC) product office has full life-cycle management responsibility of the upgraded authoritative biometrics enterprise repository system, known as DoD Automated Biometrics Identification System (DoD ABIS). DoD ABIS is an information technology system that supports identity superiority by providing the critical capability for Warfighters to identify known or suspected terrorists and third country nationals in the course of military operations. DoD ABIS is the authoritative biometrics enterprise system that provides matching, sharing and storing of biometrics data. The capability can receive multi-modal biometrics submissions to include iris, face, palm and finger prints from biometrics collection devices, which will support the Warfighter in making, retain, capture or release decisions. The system has a direct impact on the availability of critical intelligence information that is of vital interest to DoD and other government agencies, including Department of Justice (DoJ), Federal Bureau of Investigation (FBI), Department of Homeland Security (DHS), and Department of State (DoS).

Justification:

FY 2017 Research Development Test and Evaluation (RDT&E) funding in the amount of \$10.853 million will support the completion of end of life upgrades and associated developmental testing to support of a service life extension to the DoD ABIS system baseline that will extend the life of the system through FY 2022. These upgrades are required to maintain the systems security accreditation and performance.

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

	FY 2015	FY 2016	FY 2017
Title: DoD ABIS v1.2	1.332	11.770	10.848
Description: Supports development and testing activities for the DoD ABIS v1.2			
FY 2015 Accomplishments: FY15 Base RDT&E supports initial software development activities to include upgraded authoritative biometrics enterprise repository system.			
FY 2016 Plans: FY16 Base RDT&E funding will start key software development activities to include an upgraded Search Core, upgraded Oracle Database and transaction/workflow manager to maintain system performance.			
FY 2017 Plans: FY17 Base RDT&E funding will support the completion of end of life upgrades and associated developmental testing in support of a service life extension to the DoD ABIS system baseline that will extend the life of the system through FY22.			
Accomplishments/Planned Programs Subtotals	1.332	11.770	10.848

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607665A / Family of Biometrics	Project (Number/Name) DT2 / Non-MIP Biometrics
--	--	--

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>
• OPA: Biometrics <i>Enabling Capability-OPA</i>	-	-	2.978	-	2.978	-	-	-	-	0.000	2.978
• OMA: Biometrics <i>Enabling Capability-OMA</i>	5.748	16.675	19.567	-	19.567	18.449	18.240	18.600	18.693	0	115.972

Remarks

D. Acquisition Strategy

The Army Acquisition Strategy for this program is to upgrade critical software components to extend the service life of the current capability and transition to sustainment.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607665A / Family of Biometrics	Project (Number/Name) DT2 / Non-MIP Biometrics
--	--	--

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			
PM Management Services	C/FFP	Alexandria : Virginia	15.829	-		-		-		-		-	0	15.829	0
Subtotal			15.829	-		-		-		-		-	0.000	15.829	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			
Product Development	C/CPFF	Various : various	86.019	1.332		-		-		-		-	0	87.351	0
Service Life Extension	C/CPFF	Various : Various	0.000	-		-		10.848		-		10.848	0	10.848	0
EBTS 3.0 Upgrade	C/CPFF	TBD : TBD	0.000	-		2.500		-		-		-	0	2.500	0
Search Core Upgrade	C/CPFF	TBD : TBD	0.000	-		9.270		-		-		-	0	9.270	0
Subtotal			86.019	1.332		11.770		10.848		-		10.848	0.000	109.969	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PM Civilian Personnel	TBD	Alexandria : Virginia	3.358	-		-		-		-		-	0	3.358	0
Other Support Costs (Facility Related Expenses)	TBD	Alexandria : Virginia	0.794	-		-		-		-		-	0	0.794	0
Subtotal			4.152	-		-		-		-		-	0.000	4.152	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation (System Testing)	MIPR	Army Test and Evaluation (ATEC); Joint Interoperability Test Command : Various Locations	3.282	-		-		-		-		-	0	3.282	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607665A / <i>Family of Biometrics</i>	Project (Number/Name) DT2 / <i>Non-MIP Biometrics</i>
--	---	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
(1) DoD ABIS v1.2 Sustainment	1	2015	1	2018
(2) DoD ABIS Service Life Extension	2	2016	1	2018
(3) DoD ABIS Service Life Extension Sustainment	2	2018	4	2023

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607665A / Family of Biometrics				Project (Number/Name) DU2 / Management Agency			
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
DU2: Management Agency	-	0.000	1.467	1.250	-	1.250	0.531	1.294	1.317	1.325	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Defense Forensics and Biometrics Agency (DFBA) as the Executive Manager for Army biometrics acts as the DoD proponent to establish and maintain Research, Development, Test & Evaluation (RDTE) and information management support throughout the armed services. DFBA leads in the development and implementation of biometric technologies for Combatant Commands (CCMDs), Services, and Agencies; delivers capabilities that contribute to the enhancement of the biometric community; increases Joint Service interoperability and; empowers the warfighter by improving operational effectiveness on the battlefield. The DFBA strategy pursues technology opportunities through scientific discovery and makes investments responsive to specific requirements identified by combat developers. These directives are carried out by DFBA's Office of the Chief Scientist (OCS). OCS coordinates all science and technology (S&T) efforts and oversees the RDT&E program.

Justification:

FY2017 funding in the amount of \$1.250 million will provide DFBA the ability to actively manage internal and external research efforts to ensure scientific merit, feasibility, and DFBA objectives and requirements are met. DFBA conducts biometric T&E activities, including standards conformance and Automated Biometric Identification System (ABIS) interoperability assessments, supporting DoD acquisition organizations, and providing subject matter expertise to DoD and non-DoD government stakeholders.

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

	FY 2015	FY 2016	FY 2017
Title: Development and Implementation of Biometric Technologies	-	1.467	1.250
Description: Development and Implementation of Biometric Technologies			
FY 2016 Plans: FY2016 funding in the amount of \$1.467 million will provide DFBA the ability to actively manage internal and external research efforts to ensure scientific merit, feasibility, and DFBA objectives and requirements are met. DFBA conducts biometric T&E activities, including standards conformance and Automated Biometric Identification System (ABIS) interoperability assessments, supporting DoD acquisition organizations, and providing subject matter expertise to DoD and non-DoD government stakeholders.			
FY 2017 Plans: FY2017 funding in the amount of \$1.250 million will provide DFBA the ability to actively manage internal and external research efforts to ensure scientific merit, feasibility, and DFBA objectives and requirements are met. DFBA conducts biometric T&E activities, including standards conformance and Automated Biometric Identification System (ABIS) interoperability assessments, supporting DoD acquisition organizations, and providing subject matter expertise to DoD and non-DoD government stakeholders.			
Accomplishments/Planned Programs Subtotals	-	1.467	1.250

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607665A / <i>Family of Biometrics</i>	Project (Number/Name) DU2 / <i>Management Agency</i>
--	---	--

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

N/A

Remarks

D. Acquisition Strategy

Support DoD Acquisition organizations in developmental testing, systems integration, and/or independent verification and validation of biometric systems.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607665A / Family of Biometrics	Project (Number/Name) DU2 / Management Agency
--	--	---

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
BIMA RDTE Efforts	BIMA RDTE Efforts																											

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607665A / <i>Family of Biometrics</i>	Project (Number/Name) DU2 / <i>Management Agency</i>
--	---	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BIMA RDTE Efforts	1	2016	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607865A / <i>Patriot Product Improvement</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	57.962	89.816	49.482	-	49.482	119.426	53.442	30.850	63.422	Continuing	Continuing
DV8: <i>Patriot Product Improvement</i>	-	57.962	89.816	49.482	-	49.482	119.426	53.442	30.850	63.422	Continuing	Continuing

Note

Beginning FY17, funding specific to LTAMD-C realigned to PE 0604114A, Lower Tier Missile Defense (LTAMD) Capability.

A. Mission Description and Budget Item Justification

PATRIOT is an advanced Surface-to-Air guided missile system with a high probability of kill, capable of operation in the presence of Electronic Countermeasures (ECM) and able to conduct multiple simultaneous engagements against high performance air breathing targets and ballistic missiles likely to be encountered by U.S. Forces. The PATRIOT Product Improvement Program provides for the upgrade of the PATRIOT System through individual materiel changes and upgrades to the PATRIOT system to address operational lessons learned, enhancements to joint force interoperability, and other system performance improvements to provide overmatch capability with the emerging threat. Efforts will be made to expedite PATRIOT materiel solutions (e.g. Radar Digital Processor, Communications Upgrades, address Tactical Ballistic Missile (TBM) capability, Combat ID, and Advanced ECM improvements) to both enhance capability and facilitate integration into the Integrated Air and Missile Defense (IAMD) architecture.

The software funding provides improvements to the PATRIOT system against the evolving threat. This effort supports work with national agencies to evaluate, assess, and develop means to mitigate threat trends and specific threat developments potentially impacting system performance. Specific improvements may be developed and fielded under this task if warranted. The effort maintains the Mission Tailoring Database, responding to immediate tactical concerns. Database updates are fielded between major software upgrades as necessary.

FY2017 base dollars will add assured Positioning, Navigation, and Timing (PNT) activities and continue Software Improvement for Threat Evolution, Advanced Electronic Counter Measures (AECM), Tasks 2, 6, and 7 activities, and Combat ID Enhancements for the PATRIOT Product Improvement Program (PIP).

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607865A / <i>Patriot Product Improvement</i>
---	--

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	57.962	105.816	131.365	-	131.365
Current President's Budget	57.962	89.816	49.482	-	49.482
Total Adjustments	0.000	-16.000	-81.883	-	-81.883
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-16.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-81.883	-	-81.883

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607865A / <i>Patriot Product Improvement</i>				Project (Number/Name) DV8 / <i>Patriot Product Improvement</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
DV8: <i>Patriot Product Improvement</i>	-	57.962	89.816	49.482	-	49.482	119.426	53.442	30.850	63.422	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning FY17, funding specific to LTAMD-C realigned to PE 0604114A, Lower Tier Missile Defense (LTAMD) Capability.

A. Mission Description and Budget Item Justification

Software Improvements for threat evolution: Performs necessary analysis and development efforts to maintain PATRIOT system effectiveness against evolving threat technologies and specific threat capabilities. This effort identifies evolving threats and threat characteristics that might present a challenge to PATRIOT's current capabilities and develops initial concepts to maintain system effectiveness relative to these threats.

Upper-Tier Debris Mitigation (UTDM): Implements algorithms to mitigate system impacts of debris from Upper Tier intercepts associated with operating in the Ballistic Missile Defense System (BMDS) environment. Debris from Upper Tier intercepts can cause significant radar loading effects and the potential for erroneous engagements and missile wastage on debris.

Radar Digital Processor (RDP) Development: Incorporates improvements to mitigate radar hardware obsolescence, improves Reliability, Availability and Maintainability (RAM) and improves performance of the PATRIOT Radar Set against evolving threat sets. This program includes the implementation of Identification Friend or Foe Mode 5 Level 1 / Level 2, and a Non-Cooperative Target Recognition Combat ID technique to mitigate potential fratricide risk, and the development of CONOPS to incorporate the new Combat ID capabilities into system operation. The RDP also provides the necessary radar processing capability to support follow-on Evolutionary Development Program (EDP) Tasks 6 and 7 to counter emerging threats and provide data necessary to support migration to IAMD. The RDP is a pre-requisite for migration to an IAMD Netted Sensor.

RDP Waveform Suite: Develops a comprehensive set of waveforms in the RDP to improve PATRIOT radar capabilities against current and evolving threats, including support to Task 6 and 7 efforts (see below), and implements advanced data collection enabled by the RDP to support further system improvements. The RDP implementation allows significant radar waveform improvements necessary to counter evolving threats.

SIPRNet/NIPRNet Access Point/Troposcatter (SNAP/TROPO): Provides hardware interfaces to support extended range communications within the battalion (TROPO) and Force Operations interfaces to satellite for access to SIPR/NIPR worldwide communication networks.

THAAD/PATRIOT Interoperability: Implements improvements to THAAD/PATRIOT Interoperability and addresses Joint Defense Network deficiencies that impact Tactical Ballistic Missile battle management and force/engagement operations. Efforts will be concentrated on joint, collaborative force operations (defense design and planning) and enhanced Tactical Digital Information Link - Joint interoperability.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607865A / <i>Patriot Product Improvement</i>	Project (Number/Name) DV8 / <i>Patriot Product Improvement</i>
<p>Advanced Electronic Counter Measures (AECM): This task investigates the implications of advanced technology Digital Radio Frequency Memory available on airborne platforms that enables new ECM techniques which could adversely affect Air and Missile Defense System effectiveness.</p> <p>Task 2: Implements improved ground system and interceptor capabilities (Patriot Advanced Capability-2/Guidance Enhanced Missiles, Patriot Advanced Capability-3, and Missile Segment Enhancement) to counter emerging Tactical Ballistic Missile threats.</p> <p>Task 6: Software improvements enhance discrimination of higher altitude Tactical Ballistic Missile Re-entry Vehicles (RVs) from associated objects to support the full engagement capabilities of the interceptor. Longer-range detection, track, and improved high-altitude discrimination are required to achieve the required lethality performance against the RV and to mitigate missile wastage against separation debris. This task leverages the signal processing capabilities of the Radar Digital Processor, and supports the high altitude engagements required by the Patriot Advanced Capability-3 (PAC-3) and PAC-3 Missile Segment Enhancement missiles.</p> <p>Task 7: Software improvements analyze existing and evolving Tactical Ballistic Missile countermeasures and their effects on Patriot system effectiveness. Develops concepts to address countermeasure effects and ensure the Patriot system maintains its effectiveness. Develops detailed system requirements to implement concepts; design/code/test software implementation leveraging Radar Digital Processor, Modernized Adjunct Processor, Enhanced Weapons Control Computer - Emulator and Flight Solution Computer-Redesign processing capabilities.</p> <p>Assured Positioning, Navigation, and Timing (PNT): Efforts will develop and test the military's improved Global Position M-Code with Patriot Major End Items (MEI) integrating the improved anti-jamming and secure access of military GPS signals. This effort meets the requirement for Assured PNT through M-Code as mandated by FY2011 National Defense Act, public law 111-383 & 913.</p> <p>Combat ID Enhancements: Develop and implement improvements to the Radar Digital Processor-Capability Combat ID capabilities and additional Non-Cooperative Target Recognition techniques to further mitigate misclassification and fratricide risk, and to provide the Warfighter with improved situational awareness.</p> <p>Lower Tier Air & Missile Defense-Capability (LTAMD-C)/ Flat Panel Array Concept Study: This task provides studies for initial concepts and performance capabilities related to the implementation of an Active Electronically Scanned Array (AESA) transmitter/antenna into the Patriot radar. These assessments are needed to refine user community expectations and requirements, and to prepare a viable set of requirements to support a competitive modernization competition.</p> <p>Anti-Radiation Missile (ARM) Asset Defense: Provides improved capability for Patriot to protect other Army and Joint Services Sensors from ARM attacks. Builds on an initial capability provided in Post-Deployment Build-7 by determining remaining gaps, identifying and evaluating alternatives, and implementing further improvements.</p> <p>Lower Tier Air & Missile Defense-Capability (LTAMD-C): LTAMD-C tasks include all the programmatic and engineering activities needed for the LTAMD-C Materiel Development Decision, Analysis of Alternatives, and Business Case Analyses/Trades. Once the material solution has been determined, the development effort for LTAMD-C will be accomplished. These activities will continue through the Technology Maturation and Risk Reduction and Engineering and Manufacturing Development phase to enable the prototyping, development, and testing of the LTAMD-C continued under 0604114A in FY17.</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607865A / <i>Patriot Product Improvement</i>	Project (Number/Name) DV8 / <i>Patriot Product Improvement</i>

U.S. Government and contractor support for PIP efforts.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: PATRIOT Product Improvement</p> <p>Description: Continuous Improvement to Counter the Evolving Threat.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Continued Software Improvement for Threat Evolution. -Radar Digital Processor (RDP) development near completion. -Incorporated initial Advanced Electronic Countermeasures (AECM) Missile Guidance improvements and developed additional system concepts to address known AECM threats. -Supported improvements for SIPRNet/NIPRNet Access Point / Troposcatter (SNAP/TROPO) and Lower Tier Air & Missile Defense-Capability (LTAMD-C) Concept Study. -Continued efforts for LTAMD-C Analysis of Alternatives (AoA). -Continued concept development for Tasks 2, 6, and 7 capabilities, and Combat ID enhancements. -U.S. Government and contractor support to counter emerging threat. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Continues Software Improvement for Threat Evolution and continues efforts deferred from FY15 for Upper Tier Debris Mitigation, Combat ID enhancements, THAAD/ PATRIOT Interoperability and Tasks 2, 6, and 7 activities. -Continues RDP integration into the PDB-8 system configuration to support the U.S. FY2017 fielding, to provide the field with additional capability and growth potential to counter emerging threats. -Continues AECM development, Lower Tier Air & Missile Defense-Capability (LTAMD-C) Concept Study and begins Anti-Radiation Missile (ARM) Asset Defense development. -Completes RDP developmental efforts. -U.S. Government and contractor support to counter emerging threat. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> -Continues Software Improvement for Threat Evolution and efforts for Advanced Electronic Countermeasures (AECM). -Continues Combat ID Enhancements. -Continues Tasks 2, 6, and 7 activities. -U.S. Government and contractor support to counter emerging threat. -Initiate development activities associated with Positioning, Navigation, and Timing (PNT). 	57.962	89.816	49.482
Accomplishments/Planned Programs Subtotals	57.962	89.816	49.482

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607865A / <i>Patriot Product Improvement</i>	Project (Number/Name) DV8 / <i>Patriot Product Improvement</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• C50700: <i>Patriot Mods (C50700)</i>	183.838	241.883	197.107	-	197.107	318.940	304.064	201.403	168.760	Continuing	Continuing

Remarks

The improvements/enhancements developed through the PATRIOT Product Improvement Program (PIP) are interrelated with the hardware kits that are procured and installed under the Missile Procurement, Army (MIPA) appropriation's PATRIOT Mods program and maximize the PAC-3 MSE capabilities.

D. Acquisition Strategy

The design objective of the PATRIOT system was to provide a baseline system capable of modification to cope with continuing threat evolution. This program minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems. The PATRIOT Product Improvement Program upgrades the PATRIOT system to address operational lessons learned, enhancements to joint force interoperability and communications, and other system performance improvements to provide overmatch capability against the emerging threat. Upgrades are implemented through individual hardware and software materiel changes and fielded incrementally. This program encompasses several changes which will require the use of a variety of acquisition methods to develop, test, procure and field. Future software capabilities will be incorporated into future Post Deployment Build (PDB) releases.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607865A / Patriot Product Improvement	Project (Number/Name) DV8 / Patriot Product Improvement
--	---	---

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			
Government Program Management	Various	RSA, AL : MIPR	1.138	0.762	Oct 2014	4.000	Oct 2015	2.379	Oct 2016	-		2.379	Continuing	Continuing	Continuing
U.S. Contracts	Various	Multiple : Multiple	0.361	1.800	Feb 2015	1.600	Feb 2016	1.600	Feb 2017	-		1.600	Continuing	Continuing	Continuing
Subtotal			1.499	2.562		5.600		3.979		-		3.979	-	-	-

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			
Software Improvement for Threat Evolution	Various	Multiple : Multiple	12.870	8.900	Jan 2015	9.600	Jan 2016	8.442	Jan 2017	-		8.442	Continuing	Continuing	0
Upper Tier Debris Mitigation (UTDM)	Various	Multiple : Multiple	0.000	-		1.000	Jan 2016	-		-		-	Continuing	Continuing	0
Radar Digital Processor (RDP) Development	Various	Raytheon : Andover, Massachusetts	39.635	8.700	Jan 2015	1.500	Jan 2016	-		-		-	Continuing	Continuing	0
SNAP/TROPO	Various	Multiple : Multiple	2.000	0.400	Feb 2015	-		-		-		-	0	2.400	0
RDP Waveform Suite	TBD	Raytheon : Andover, Massachusetts	0.000	-		-		-		-		-	0	0	2.500
THAAD PATRIOT Interoperability	TBD	Raytheon : Andover, Massachusetts	1.200	-		2.000	Feb 2016	-		-		-	Continuing	Continuing	0
Advanced Electronic Counter Measures (AECM)	Various	Multiple : Multiple	6.700	20.000	Jan 2015	15.000	Jan 2016	9.000	Jan 2017	-		9.000	Continuing	Continuing	0
Task 2 Non-Ballistic Tactical Ballistic Missile (TBM)	Various	Multiple : Multiple	5.200	5.500	Jan 2015	14.000	Jan 2016	5.400	Jan 2017	-		5.400	Continuing	Continuing	0
Task 6 Discrimination Improvements	Various	Multiple : Multiple	4.100	2.400	Feb 2015	15.500	Feb 2016	6.000	Feb 2017	-		6.000	Continuing	Continuing	0
Task 7 Tactical Ballistic Missile (TBM) Countermeasures	Various	Multiple : Multiple	0.000	1.000	Jan 2015	12.000	Jan 2016	4.000	Jan 2017	-		4.000	Continuing	Continuing	0
Assured PNT	TBD	Multiple : Multiple	0.000	-		-		7.440	Apr 2017	-		7.440	Continuing	Continuing	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607865A / Patriot Product Improvement	Project (Number/Name) DV8 / Patriot Product Improvement
--	---	---

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			
Combat ID Enhancements	Various	Multiple : Multiple	0.800	1.000	Feb 2015	9.016	Feb 2016	4.621	Feb 2017	-		4.621	Continuing	Continuing	0
Lower-Tier Air & Missile Defense-Capability Concept Study (Flat Panel Array Concept Development)	Various	Multiple : Multiple	0.300	1.000	Jan 2015	2.000	Jan 2016	-		-		-	0	3.300	0
Anti-Radiation Missile (ARM) Asset Defense	TBD	Raytheon : Andover, Massachusetts	0.000	-		2.000	Feb 2016	-		-		-	0	2.000	0
Lower Tier Air & Missile Defense-Capability	Various	Multiple : Multiple	0.000	5.000	Feb 2015	-		-		-		-	Continuing	Continuing	0
Subtotal			72.805	53.900		83.616		44.903		-		44.903	-	-	2.500

Remarks
The contract method type Sole Source/Various is Fixed Price Level of Effort which includes Cost Plus Fixed Fee for material, ODC, and travel.

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			
RDEC and Other Govt Agencies	Various	RSA, AL : MIPR	1.812	1.500	Jan 2015	0.600	Jan 2016	0.600	Jan 2017	-		0.600	Continuing	Continuing	Continuing
Subtotal			1.812	1.500		0.600		0.600		-		0.600	-	-	-

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	76.116	57.962	89.816	49.482	-	49.482	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607865A / <i>Patriot Product Improvement</i>	Project (Number/Name) DV8 / <i>Patriot Product Improvement</i>
--	--	--

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
Software Build	Software Build																											
Advanced Electronic Counter Measures (AECM)	AECM																											
Software Improvement for Threat Evolution	Software Threat																											
Combat ID Enhancements	Combat ID Enhancements																											
(1) PDB 8 IOC													PDB-8 Fielding															
PDB 8 Fielding																												
Task 2 Non-Ballistic Tactical Ballistic Missile (TBM)	Task 2 Non-Ballistic TBM																											
Task 6 Discrimination Improvements	Task 6 Discrimination Improvements																											
Task 7 Tactical Ballistic Missile (TBM) Countermeasures	Task 7 TBM Countermeasures																											
Assured PNT	Assured PNT																											
Radar Digital Processor Development	RDP Development																											
Lower Tier Air & Missile Defense-Capability (LTAMD-C) Concept Study	LTAMD-C Concept Study																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607865A / <i>Patriot Product Improvement</i>	Project (Number/Name) DV8 / <i>Patriot Product Improvement</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Software Build	4	2005	4	2021
Advanced Electronic Counter Measures (AECM)	1	2014	4	2021
Software Improvement for Threat Evolution	1	2014	4	2021
Combat ID Enhancements	1	2014	4	2021
PDB 8 IOC	1	2018	2	2018
PDB 8 Fielding	1	2018	4	2021
Task 2 Non-Ballistic Tactical Ballistic Missile (TBM)	1	2015	4	2021
Task 6 Discrimination Improvements	1	2014	4	2021
Task 7 Tactical Ballistic Missile (TBM) Countermeasures	1	2015	4	2021
Assured PNT	1	2017	4	2021
Radar Digital Processor Development	1	2012	3	2016
Lower Tier Air & Missile Defense-Capability (LTAMD-C) Concept Study	1	2014	4	2016

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0202429A / Aerostat Joint Project - COCOM Exercise
--	---

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	-	43.248	10.565	45.482	-	45.482	6.746	0.000	0.000	0.000	0.000	106.041
EP8: COCOM Exercise	-	43.248	10.565	45.482	-	45.482	6.746	0.000	0.000	0.000	0.000	106.041

A. Mission Description and Budget Item Justification

Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) is a supporting program for Army and Joint Integrated Air and Missile Defense, providing elevated, persistent, over the horizon surveillance and fire control quality data on Army and Joint networks, enabling protection of the U.S. and coalition forces as well as critical geo political assets from Cruise Missiles, Aircraft, Unmanned Aerial Vehicles, Tactical Ballistic Missiles, Large Caliber Rockets, and Surface Moving Targets. A JLENS Orbit consists of two systems: a fire control radar system and a wide-area surveillance radar system. Each radar system consists of a separate 74-meter tethered aerostat, mobile mooring station, radar and communications payload, processing station, and associated ground support equipment. The systems are designed to work together, but can operate independently. The JLENS Orbit is transportable by road, rail, sea and air.

JLENS uses advanced sensor and networking technologies to provide persistent, 360-degree, wide-area surveillance and precision tracking of Land Attack Cruise Missiles and other types of Air Breathing Threats. This information is distributed via joint service networks and provides fire control quality data to Surface to Air missile systems, such as Army Patriot and Navy Aegis, increasing the weapons' capabilities by allowing systems to engage targets normally below, outside, or beyond surface based weapons' field of view. JLENS also provides fire control quality data to fighter aircraft, allowing the aircraft to engage hostile threats from extended ranges, and contributes to the development of a single integrated air picture.

JLENS is participating in Operation Noble Eagle (ONE) with NORAD-USNORTHCOM National Capital Region (NCR) Integrated Air Defense System (IADS) Operational Exercise (OPEX) from FY14-FY17. The OPEX will include an operational assessment to "inform a future decision for enduring operational employment", in accordance with Joint Requirements Oversight Council Memorandum (JROCM) 021-13. The Combatant Command (CCMD) objective for the OPEX is to provide the full range of JLENS Orbit level capability to include: Persistent Wide Area Surveillance (WAS) through Battle Command System Fixed (BCS-F) Integration Combat Identification (CID) / Electronic Identification (EID) Precision Cue to Fighters/Ground-Based Air Defense (GBAD) via Tactical Data Link (TDL) Integrated Fire Control to Fighters (IFC)/ GBAD via TDL.

The JLENS Product Office has a requirement for the acquisition of services through the JLENS Exercise Contract to support the deployment of a JLENS Orbit at Aberdeen Proving Grounds (APG), MD as directed by the Joint Requirements Oversight Council Memorandum (JROCM) 021-13 signed by the Vice Chairman of the Joint Chiefs of Staff on 31 January 2013.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0202429A / <i>Aerostat Joint Project - COCOM Exercise</i>
---	--

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	43.248	40.565	46.371	-	46.371
Current President's Budget	43.248	10.565	45.482	-	45.482
Total Adjustments	0.000	-30.000	-0.889	-	-0.889
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-30.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.889	-	-0.889

Change Summary Explanation

The program received a \$30.000 million reduction in FY 2016 due to a test schedule delay.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0202429A / <i>Aerostat Joint Project - COCOM Exercise</i>				Project (Number/Name) EP8 / <i>COCOM Exercise</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
EP8: <i>COCOM Exercise</i>	-	43.248	10.565	45.482	-	45.482	6.746	0.000	0.000	0.000	0.000	106.041
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

JLENS is a supporting program for Army and Joint Integrated Air and Missile Defense, providing elevated, persistent, over the horizon surveillance and fire control quality data on Army and Joint networks, enabling protection of the U.S. and coalition forces as well as critical geo-political assets from Cruise Missiles, Aircraft, Unmanned Aerial Vehicles, Tactical Ballistic Missiles, Large Caliber Rockets, and Surface Moving Targets. A JLENS Orbit consists of two systems: a fire control radar system and a wide-area surveillance radar system. Each radar system consists of a separate 74-meter tethered aerostat, mobile mooring station, radar and communications payload, processing station, and associated ground support equipment. The systems are designed to work together, but can operate independently. The JLENS Orbit is transportable by road, rail, sea and air.

JLENS uses advanced sensor and networking technologies to provide persistent, 360-degree, wide-area surveillance and precision tracking of Land Attack Cruise Missiles and other types of Air Breathing Threats. This information is distributed via joint service networks and provides fire control quality data to Surface to Air missile systems, such as Army Patriot and Navy Aegis, increasing the weapons' capabilities by allowing systems to engage targets normally below, outside, or beyond surface based weapons' field of view. JLENS also provides fire control quality data to fighter aircraft, allowing the aircraft to engage hostile threats from extended ranges, and contributes to the development of a single integrated air picture.

JLENS is participating in the NORAD-USNORTHCOM National Capital Region (NRC) Integrated Air Defense System (IADS) Operational Exercise (OPEX) for Operation Noble Eagle (ONE) from FY14- FY17. The OPEX will include an operational assessment to "inform a future decision for enduring operational employment", in accordance with Joint Requirements Oversight Council Memorandum (JROCM) 021-13. The Combatant Command (CCMD) objective for the OPEX is to provide the full range of JLENS Orbit level capability to include: Persistent Wide Area Surveillance (WAS) through Battle Command System Fixed (BCS-F) Integration Combat Identification (CID) / Electronic Identification (EID) Precision Cue to Fighters/Ground-Based Air Defense (GBAD) via Tactical Data Link (TDL) Integrated Fire Control to Fighters (IFC)/GBAD via TDL.

The JLENS Product Office has a requirement for the acquisition of services through the JLENS Exercise Contract to support the deployment of a JLENS Orbit at Aberdeen Proving Grounds (APG), MD as directed by the Joint Requirements Oversight Council Memorandum (JROCM) 021-13 signed by the Vice Chairman of the Joint Chiefs of Staff on 31 January 2013.

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

	FY 2015	FY 2016	FY 2017
Title: JLENS Exercise	43.248	10.565	45.482
Description: Plan and execute JLENS participation in the NORAD-USNORTHCOM National Capital Region Integrated Air Defense System (IADS) OPEX.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0202429A / <i>Aerostat Joint Project - COCOM Exercise</i>	Project (Number/Name) EP8 / <i>COCOM Exercise</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Provides new equipment training, execution of operations of the JLENS Exercise program in support of North American Aerospace Defense Command (NORAD)/United States Northern Command (NORTHCOM) Operation Noble Eagle, and government program management support of the JLENS Exercise. Supports the completion of the emplacement of the Fire Control System (FCS) at APG. Begins support of the Combatant Commander's Independent Assessment (CCIA). Perform technical assessments, studies, cost reduction, risk reduction, and complete required program documentation to include necessary enhancements, as required, to address NCR specific requirements for JLENS, Information Assurance, Cyber Security, and System Trouble Reports. Provides for the continued readiness support of all Orbits, to include staging of a second JLENS Orbit.</p> <p><i>FY 2016 Plans:</i> Provides new equipment training, execution of operations of the JLENS Exercise program in support of North American Aerospace Defense Command (NORAD)/United States Northern Command (NORTHCOM) Operation Noble Eagle, and government program management support of the JLENS Exercise. Continue to support CCIA. Conduct failure review board to determine root cause analysis and corrective actions in response to an aerostat breakaway accident. Pack, store and maintain Orbit 1 to be available for re-participation for the Operational Exercise (OPEX) in Fy17. Perform technical assessments, studies, cost reduction, risk reduction, and complete required program documentation to include necessary enhancements, as required, to address NCR specific requirements for JLENS, Information Assurance, Cyber Security, and System Trouble Reports. Provides for the continued support of all Orbits, to include maintaining components of a second JLENS Orbit in storage.</p> <p><i>FY 2017 Plans:</i> Provides new equipment training, execution of operations of the JLENS Exercise program in support of North American Aerospace Defense Command (NORAD)/United States Northern Command (NORTHCOM) Operation Noble Eagle, and government program management support of the JLENS Exercise. Reconstitute the equipment damaged as a result of the breakaway accident and implement corrective actions, as required, based on Failure Review Board recommendations, to allow safe return to flight. Re-establish Orbit 1 from storage to Operational configuration to allow re-participation in the OPEC. Continue to support CCIA. Perform technical assessments, studies, cost reduction, risk reduction, and complete required program documentation to include necessary enhancements, as required, to address NCR specific requirements for JLENS, Information Assurance, Cyber Security, and System Trouble Reports. Provides for the continued support of all Orbits, to include maintaining components of a second JLENS Orbit in storage. Support to the Exercise will continue through completion of FY2017 including displacement of the system.</p>			
Accomplishments/Planned Programs Subtotals	43.248	10.565	45.482

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0202429A / <i>Aerostat Joint Project - COCOM Exercise</i>	Project (Number/Name) EP8 / <i>COCOM Exercise</i>

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

Remarks

D. Acquisition Strategy

JLENS has been directed to support the Homeland Defense Operational Exercise in the National Capital Region from FY 2014 to FY 2017 and will be assessed during the exercise to support a follow on decision from Joint Requirements Oversight Council (JROC). The JLENS Product Office has a requirement for the acquisition of services through the JLENS Exercise Contract to support the deployment of JLENS Orbit deployed at Aberdeen Proving Grounds (APG), MD as directed by the Joint Requirements Oversight Council Memorandum (JROCM) 021-13 signed by the Vice Chairman of the Joint Chiefs of Staff on 31 January 2013.

Exercise preparation was conducted in FY 2013 on a limited basis to facilitate 2014 Activities as funding became available. Site development was projected to be completed 2014 with MILCON funding, followed by emplacement of the Orbit on the developed tactical sites at APG in 1Q 2015. Due to new start constraints related to the Continuing Resolution Act (CRA), MILCON funding was not received in time to complete construction in 2014 as planned. The sites were constructed sequentially with the Surveillance Radar System (SuS) being completed first. Both sites were completed by October 2016. To allow operations to commence as early as possible, the MILCON contractor agreed to co-occupancy of the SuS site to allow JLENS System Integration and Check-out concurrent with completion of MILCON activities.

Transfer of operational control for operations to the Combatant Command occurred in 1QFY16. End of flying in support of the exercise is projected to be the end of 3QFY2017. 4QFY2017 will be reserved for displacement and storage of Orbit 1 unless an enduring mission is directed otherwise. The COCOM Exercise Contract is to support the JLENS NCR Exercise at APG, MD. December 5, 2014 the contract was awarded as an Indefinite-Delivery Contract Action (UCA) for the 6 month base period of the contract. The contract was definitized and Option 1 awarded in June 2015.

The JLENS system is sustained by a two-Level maintenance concept consisting of Field and Sustainment Levels. Sustainment level maintenance for common support equipment is supported by standard Army procedures and all sustainment level maintenance for JLENS peculiar or unique equipment is provided by the Prime Contractor. Prime Contractor will serve as the supply chain manager and ensure failed spares are requisitioned and replaced to ensure system is operational. There is no organic capability for the JLENS peculiar equipment at this time. The JLENS Product Office retains major end item management responsibilities and performs oversight of the contractor's efforts.

A recommendation for continuing JLENS operations as an enduring mission will be considered by the Joint Requirements Oversight Council (JROC) based on results of the Combatant Commander's assessment of the initial operations period in support of the NCR Exercise. The date for enduring mission decision is to be determined (TBD) since testing was delayed due to the tether break incident in October 2015. Upon receipt of direction to proceed with Enduring Mission or to store or dispose of the system, the Department of Defense will address funding needs to meet the requirements of the decision. Based on the system being an EMD versus Production unit, an enduring mission decision will require major technical refresh of the system due to obsolescence and wear and tear. A competitive or sole source contract will be pursued if the decision is for an enduring mission. The current budget provides funding through FY 2017 for the JLENS Homeland Defense Operational Exercise and FY 2018 for program close-out. Depending on the results of the enduring mission decision, funding may be required for continued operations, to include technical refresh, for transportation to storage and cost of storage, or for transportation to appropriate location for demilitarization along with the cost of demilitarization.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0202429A / <i>Aerostat Joint Project - COCOM Exercise</i>	Project (Number/Name) EP8 / <i>COCOM Exercise</i>

The EMD contract was completed 31 December 2013 and close-out tasks were initiated. The EMD JLENS Systems, sub-systems, components, etc. were transferred to the Government on 19 December 2013 via DD250s. A modification to the current Engineering Services contract was awarded on 20 December 2013, incorporating all Government Furnished Property (GFP). The Engineering Services Contract for technical refresh assessments; conducting analysis required in support of the Homeland Defense Exercise; training of soldiers; maintaining equipment until ready for shipment to the exercise location; packaging, handling and transportation of equipment to the exercise location; and system set-up, integration and check-out, was completed on 31 December 2015 and close-out tasks were begun. The JLENS Product Office anticipates that a new technical requirements contract will be awarded in the first quarter of 2016 for contractor technical requirements support during the Exercise.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0202429A / Aerostat Joint Project - COCOM Exercise	Project (Number/Name) EP8 / COCOM Exercise
--	--	--

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			
JLENS Exercise - Program Management Support, OGA, Travel, Transportation, Licenses and Agreements	MIPR	Multiple Various : AL/MD/UT/SC	0.000	8.298		2.326		6.203		-		6.203	4.396	21.223	0
JLENS Exercise Aberdeen Proving Ground, MD (APG) Support	MIPR	Multiple Various : MD	3.532	6.016		0.266		3.753		-		3.753	2.350	15.917	0
Subtotal			3.532	14.314		2.592		9.956		-		9.956	6.746	37.140	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JLENS - COCOM Exercise, Failure Review Board and Displacement Contract	SS/FFP	Multiple Various : AL/MD/NC/MA/CA	12.001	26.100	Jun 2015	7.550	Jan 2016	17.090	Oct 2016	-		17.090	0	62.741	0
JLENS - Technical Services Contract	SS/FFP/LOE	Multiple Various : MD/MA/CA	0.000	2.000	Dec 2015	-		18.000	Jan 2017	-		18.000	0	20.000	0
UTTR Orbit 2 Staging	IA	Various : UT	0.000	0.834		0.423		0.436		-		0.436	0	1.693	0
Subtotal			12.001	28.934		7.973		35.526		-		35.526	0.000	84.434	0.000

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	15.533	43.248	10.565	45.482	-	45.482	6.746	121.574	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0202429A / Aerostat Joint Project - COCOM Exercise	Project (Number/Name) EP8 / COCOM Exercise
--	--	--

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
Aberdeen Proving Grounds (APG) Site Planning and Preparation	Planning & Preparation				Contract																							
JLENS NCR Exercise Contract	UCA Awarded				Contract Award																							
(1) Undefinitized Contract Action (UCA)	▲1				Contract																							
(2) Definitized Contract Award		▲2			Contract																							
JLENS NCR Operations	JLENS NCR Operations				JLENS NCR Operations																							
JLENS System Displacement									JLENS Training																			
(3) Surveillance System (SuS) Initial Capability Delivery (ICD)	▲3																											
(4) Fire Control System (FCS) Initial Capability Delivery (ICD)			▲4																									
(5) Orbit Initial Capability Delivery (ICD)				▲5																								
Combatant Command (COCOM) Assessment									COCOM Assessment																			
(6) Enduring Operation Decision Point													Enduring Operation Decision															
(7) JLENS NCR Operations Final Data Submission													Final Data Submission															
New Equipment Training for Replacement Soldiers	JLENS Training				JLENS Training																							

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0202429A / <i>Aerostat Joint Project - COCOM Exercise</i>	Project (Number/Name) EP8 / <i>COCOM Exercise</i>
--	--	---

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
Continued New Equipment Training for Replacement Soldiers									<div style="background-color: #000080; width: 100%; height: 15px; margin-bottom: 5px;"></div> JLENS Training																			
Program Disposition of Assets and contract closeout									<div style="background-color: #000080; width: 100%; height: 15px; margin-bottom: 5px;"></div> Program Closeout																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0202429A / <i>Aerostat Joint Project - COCOM Exercise</i>	Project (Number/Name) EP8 / <i>COCOM Exercise</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Aberdeen Proving Grounds (APG) Site Planning and Preparation	1	2014	4	2015
JLENS NCR Exercise Contract	1	2015	4	2017
Unfinitized Contract Action (UCA)	1	2015	1	2015
Definitized Contract Award	3	2015	3	2015
JLENS NCR Operations	1	2015	3	2017
JLENS System Displacement	4	2017	4	2017
Surveillance System (SuS) Initial Capability Delivery (ICD)	2	2015	2	2015
Fire Control System (FCS) Initial Capability Delivery (ICD)	4	2015	4	2015
Orbit Initial Capability Delivery (ICD)	4	2015	4	2015
Combatant Command (COCOM) Assessment	3	2017	3	2017
Enduring Operation Decision Point	3	2017	3	2017
JLENS NCR Operations Final Data Submission	3	2017	3	2017
New Equipment Training for Replacement Soldiers	2	2015	1	2016
Continued New Equipment Training for Replacement Soldiers	2	2017	2	2017
Program Disposition of Assets and contract closeout	1	2018	4	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0203726A / <i>Adv Field Artillery Tactical Data System</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	1.224	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.224
DU5: <i>AFATDS Increment II</i>	-	1.224	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.224

Note

The program office was directed to move all non-AFATDS Increment II funding out of the AFATDS PE 0203726A (PB2014 BLIN 161) to comply with the Major Automated Information System (MAIS) transparency guidance. The Joint Automated Deep Operation Coordination System (JADOCs) PE 0203728A will contain three project codes: project code EF6 justifies the Joint Automated Deep Operations Coordination System (JADOCs) Version (v) 2.0 development; project code EF7 justifies the Pocket-sized Forward Entry Device (Increment II) development; and project code EF8 justifies the Advanced Field Artillery Tactical Data System (AFATDS) (Increment I).

The Army Acquisition Executive (AAE) determined that AFATDS Increment 2 (program element 0203726A project code DU5) was a software modernization effort of the existing AFATDS program. The Army moved funding for AFATDS Increment 2 from program element 0203726A project code DU5, to the current AFATDS funding (program element 0203728A project code EF8) as AFATDS version 7.0. Previous "AFATDS Increment 1" efforts are delineated as V6.8.x in program element 0203728A project code EF8.

A. Mission Description and Budget Item Justification

The Advanced Field Artillery Tactical Data System (AFATDS) provides the Army, Navy, and Marine Corps automated fire support command, control and communications. AFATDS is used to plan, execute, and deliver lethal and non-lethal effects. AFATDS provides Joint/Coalition Situational Awareness for fires execution and mission management. The system interoperates and integrates with over 80 different battlefield systems, including Navy and Air Force command and control weapon systems; and the German, French, Turkish, and Italian fire support systems. AFATDS automates the planning, coordination, and control of all fire support assets (field artillery, mortars, close air support, naval gunfire, attack helicopters, offensive electronic warfare, fire support meteorological systems, forward observers, and fire support radars). AFATDS provides eleven core services that manage user input and handle dissemination of complex fires processes. These core services are: Attack/Engagement Analysis, Fire Support Planning, Mission Guidance, Target Definition, Mission Area Definition, Cross-System Graphics/Mapping management, Unit Task Organization Data, Fires Conflict Detection, Mobile Air/Ground Tracking, Mission Execution and Mission Trigger Events. These AFATDS services promote situational awareness of data, intelligence information and targeting data, in near real time, in order to effectively manage target selection and target engagement in accordance with the Maneuver Commanders guidance and priorities.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0203726A / <i>Adv Field Artillery Tactical Data System</i>
---	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	1.273	0.000	0.000	-	0.000
Current President's Budget	1.224	0.000	0.000	-	0.000
Total Adjustments	-0.049	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.049	-			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203726A / Adv Field Artillery Tactical Data System	Project (Number/Name) DU5 / AFATDS Increment II
--	--	---

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
DU5: AFATDS Increment II	-	1.224	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.224
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

The Army Acquisition Executive (AAE) determined that AFATDS Increment 2 (program element 0203726A project code DU5) is a software modernization effort of the existing AFATDS program. Therefore, the Army moved funding for AFATDS Increment 2 from program element 0203726A project code DU5, to the current AFATDS funding (program element 0203728A project code EF8) as AFATDS version 7.0. Previous "AFATDS Increment 1" efforts are delineated as V6.x in program element 0203728A project code EF8.

A. Mission Description and Budget Item Justification

The Advanced Field Artillery Tactical Data System (AFATDS) provides the Army, Navy, and Marine Corps automated fire support command, control and communications. AFATDS is used to plan, execute, and deliver lethal and non-lethal effects. AFATDS provides Joint/Coalition Situational Awareness for fires execution and mission management. The system interoperates and integrates with over 80 different battlefield systems, including Navy and Air Force command and control weapon systems; and the German, French, Turkish, and Italian fire support systems. AFATDS automates the planning, coordination, and control of all fire support assets (field artillery, mortars, close air support, naval gunfire, attack helicopters, offensive electronic warfare, fire support meteorological systems, forward observers, and fire support radars).

AFATDS provides eleven core services that manage user input and handle dissemination of complex fires processes. These core services are: Attack/Engagement Analysis, Fire Support Planning, Mission Guidance, Target Definition, Mission Area Definition, Cross-System Graphics/Mapping management, Unit Task Organization Data, Fires Conflict Detection, Mobile Air/Ground Tracking, Mission Execution and Mission Trigger Events. These AFATDS services promote situational awareness of data, intelligence information and targeting data, in near real time, in order to effectively manage target selection and target engagement in accordance with the Maneuver Commanders guidance and priorities.

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

	FY 2015	FY 2016	FY 2017
Title: Program Support Costs for AFATDS software development	0.140	-	-
Description: Provide program support for AFATDS software development efforts for Version 7.0			
FY 2015 Accomplishments: Provide program support for AFATDS software development efforts for Version 7.0. Program managements functions include oversight, planning, engineering, business, funds execution and contract management.			
Title: AFATDS V7.0 Acquisition and Contracting Efforts	1.084	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203726A / Adv Field Artillery Tactical Data System	Project (Number/Name) DU5 / AFATDS Increment II

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Description: Risk reduction analysis, solution refinement and initiate software development of version 7.0.			
FY 2015 Accomplishments: Conduct Risk Reduction Analysis, Solution Refinement, Requirements Development, RFP Development for AFATDS V7.0.			
Accomplishments/Planned Programs Subtotals	1.224	-	-

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

N/A

Remarks

D. Acquisition Strategy

Development of future AFATDS capabilities will be considered based on requirements approved through the Fires Center of Excellence (FCoE) Tactical Software Requirements Governance Board.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203726A / <i>Adv Field Artillery Tactical Data System</i>	Project (Number/Name) DU5 / <i>AFATDS Increment II</i>
--	---	--

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
AFATDS V7.0 Risk Reduction Analysis, Solution Refinement.																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203726A / <i>Adv Field Artillery Tactical Data System</i>	Project (Number/Name) DU5 / <i>AFATDS Increment II</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AFATDS V7.0 Risk Reduction Analysis, Solution Refinement.	4	2015	1	2016

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)
--	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	33.996	35.719	30.455	-	30.455	37.442	27.333	15.634	14.550	Continuing	Continuing
EF6: JADOCS	-	13.578	13.002	2.825	-	2.825	0.000	0.000	0.000	0.000	0.000	29.405
EF7: Pocket-Sized Forward Entry Device (PFED) Inc 2	-	3.370	3.494	1.966	-	1.966	4.537	3.926	0.000	0.000	Continuing	Continuing
EF8: AFATDS Increment 1	-	17.048	19.223	25.664	-	25.664	32.905	23.407	15.634	14.550	0.000	148.431

A. Mission Description and Budget Item Justification

There are three developmental efforts that are being executed concurrently: Joint Automated Deep Operations Coordination System (JADOCS) (project code EF6); Pocket-sized Forward Entry Device (Increment II) (project code EF7) and Advanced Field Artillery Tactical Data System (AFATDS) (Increment I) (project code EF8).

Joint Automated Deep Operations Coordination System (JADOCS) is a Joint and Coalition targeting, coordination mission management software application. It links Command and Control (C2), Intelligence, and Air operations information with execution systems using real time collaborative targeting managers, customized for each service or specific functional area. JADOCS is used to significantly enhance the Joint Force and Component Command's capability to simultaneously develop, coordinate and execute Dynamic and Time Sensitive targets and fire missions, as well as battle space coordination, search and rescue, and disaster relief/recover operations worldwide. JADOCS provides coordination and de-confliction of targeting information at all levels of command structure for the military. JADOCS is used by Air, Ground, Maritime, and Special Operations forces. It provides horizontal (across Services) as well as vertical (within Services) coordination of missions to ensure a common picture of targeting operational status across the entire joint force. As a software application, JADOCS can be configured and customized for each user and location. The client and server software can be installed on typical Windows Operating System.

Pocket-sized Forward Entry Device (PFED) Increment II will be a software only application that operates on the Nett Warrior End User Device (EUD). It will provide the dismounted Forward Observer (FO) and Fire Support Teams (FISTs) the capability to accurately and rapidly locate ground targets and enable the Soldier wearing the NETT Warrior ensemble to digitally process a Call For Fire. PFED Increment II complies with the Mobile Handheld Computing Environment requirement that all handheld applications reside on the Nett Warrior End User Device.

The Advanced Field Artillery Tactical Data System (AFATDS) provides Army, Navy, and Marine Corps automated fire support command, control and communications. AFATDS is used to plan, execute, and deliver lethal and non-lethal effects. AFATDS provides Joint/Coalition capability for fires execution and mission management. The system interoperates and integrates with over 80 different battlefield systems, including Navy and Air Force command and control weapon systems; As a member of the Artillery System Cooperation Agreement (ASCA), AFATDS is interoperable with the German, French, Turkish, and Italian fire support systems. AFATDS automates the planning, coordination, and control of all fire support assets (field artillery, mortars, close air support, naval helicopters, offensive electronic warfare, fire support meteorological systems, forward observers, and fire support radars).

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0203728A / <i>Joint Automated Deep Operation Coordination System (JADOCS)</i>
---	--

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	36.658	35.719	37.078	-	37.078
Current President's Budget	33.996	35.719	30.455	-	30.455
Total Adjustments	-2.662	0.000	-6.623	-	-6.623
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.268	-			
• SBIR/STTR Transfer	-1.394	-			
• Adjustments to Budget Years	-	-	-6.623	-	-6.623

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF6 / JADOCS
--	--	--

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
EF6: JADOCS	-	13.578	13.002	2.825	-	2.825	0.000	0.000	0.000	0.000	0.000	29.405
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Joint Automated Deep Operations Coordination System (JADOCS) is a Joint and Coalition targeting, coordination mission management software application. It links Command and Control (C2), Intelligence, and Air operations information with execution systems using real time collaborative targeting managers, customized for each service or specific functional area. JADOCS is used to significantly enhance the Joint Force and Component Command's capability to simultaneously develop, coordinate and execute Dynamic and Time Sensitive targets and fire missions, as well as battle space coordination, search and rescue, and disaster relief/recover operations worldwide. JADOCS provides coordination and de-confliction of targeting information at all levels of command structure for the military.

JADOCS is used by Air, Ground, Maritime, and Special Operations forces. It provides horizontal (across Services) as well as vertical (within Services) coordination of missions to ensure a common picture of targeting operational status across the entire joint force. As a software application, JADOCS can be configured and customized for each user and location. The client and server software can be installed on typical Windows Operating System.

JADOCS fires and targeting capabilities will migrate to AFATDS Version 7.0. JADOCS capabilities will be sustained until AFATDS meets the Joint Users requirements. JADOCS v 2.0 software is being developed by CECOM Life Cycle Management Command, Software Engineering Center (SEC).

FY17 funding in the amount of \$2.825 million will be used to complete development and test efforts on JADOCS version 2.0.

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

	FY 2015	FY 2016	FY 2017
Title: JADOCS Software Development Efforts	11.838	11.902	1.329
Description: Software development of JADOCS v2.0 software.			
FY 2015 Accomplishments: Continued Software Development Process; including coordination with Joint stakeholders and development of requirements definition document. Completed engineering software release ER 1. Began activities required for materiel release (e.g. program protection plan, safety assessment, training analysis and documentations).			
FY 2016 Plans: Continue development of JADOCS v2.0 software. Complete software ER 2 and ER 3. Test each ER to meet all JADOCS 2.0 requirements. JADOCS 2.0 completes development in the fourth quarter FY16.			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF6 / JADOCS		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Finalize JADOCS v2.0 software development including the Test Readiness Review (TRR), Formal Qualification Test (FQT) and delivery of JADOCS 2.0 software. Finalize and deliver JADOCS 2.0 documentation and training materials.				
Title: Program Support Costs for JADOCS Software Development Efforts		0.700	0.700	0.596
Description: Program support for JADOCS v2.0 software development efforts.				
FY 2015 Accomplishments: Continued program support for JADOCS version 2.0 software development.				
FY 2016 Plans: Continue program support for JADOCS version 2.0 software development.				
FY 2017 Plans: Continue program support for JADOCS version 2.0 through test and materiel release of the software. Finalize and deliver JADOCS 2.0 documentation and training materials.				
Title: Army and Joint Testing Activities		0.300	0.400	0.900
Description: Conduct and support Army and Joint Testing Activities.				
FY 2015 Accomplishments: Continued support of Army and Joint testing activities; conducted Independent Validation and Verification (IV&V) of the JADOCS version 2.0 software.				
FY 2016 Plans: Continue support of Army and Joint testing activities; conduct Independent Validation and Verification (IV&V) of the JADOCS version 2.0 software.				
FY 2017 Plans: Continue support of Army and Joint test planning activities; conduct IV&V of the JADOCS version 2.0 software. Finalize JADOCS v2.0 software development including Army Confidence Demo at Fort Sill, Ok, Joint development and operational test and Army Interoperability Certification (AIC) testing.				
Title: Contractor Management Services and Support		0.740	-	-
Description: Funds Systems Engineering and Technical Assistance support.				
FY 2015 Accomplishments:				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / <i>Joint Automated Deep Operation Coordination System (JADOCS)</i>	Project (Number/Name) EF6 / <i>JADOCS</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continued program support for JADOCS training activities.			
Accomplishments/Planned Programs Subtotals	13.578	13.002	2.825

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
• B28504: <i>JOINT AUTOMATED DEEP OPNS COORDINATION SYSTEM</i>	-	-	1.969	-	1.969	1.722	-	-	-	0.000	3.691

Remarks

D. Acquisition Strategy

JADOCS v2.0 will be the last major version of JADOCS software. JADOCS v2.0 will interoperate with AFATDS. JADOCS v 2.0 will be maintained and sustained until the Joint Users requirements are met by AFATDS and other systems. JADOCS 2.0 is developed under agreement with the LCCE SEC.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF6 / JADOCS
--	--	--

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Business/Technical Services	MIPR	Chenega Federal Systems : Alexandria, VA	0.000	0.740		-		-		-		-	0	0.740	0
Subtotal			0.000	0.740		-		-		-		-	0.000	0.740	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			
Software Development	IA	CECOM LCMC SEC FD : Ft. Sill, OK	0.000	11.838	Feb 2015	11.902		1.329		-		1.329	0	25.069	0
Subtotal			0.000	11.838		11.902		1.329		-		1.329	0.000	25.069	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	Various	PM Mission Command (MC) : APG, MD	0.000	0.700		0.700		0.596		-		0.596	0	1.996	0
Subtotal			0.000	0.700		0.700		0.596		-		0.596	0.000	1.996	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Army and Joint Test Support	Various	Joint Service Testing : Various	0.000	0.300		0.400		0.900		-		0.900	0	1.600	0
Subtotal			0.000	0.300		0.400		0.900		-		0.900	0.000	1.600	0.000

UNCLASSIFIED

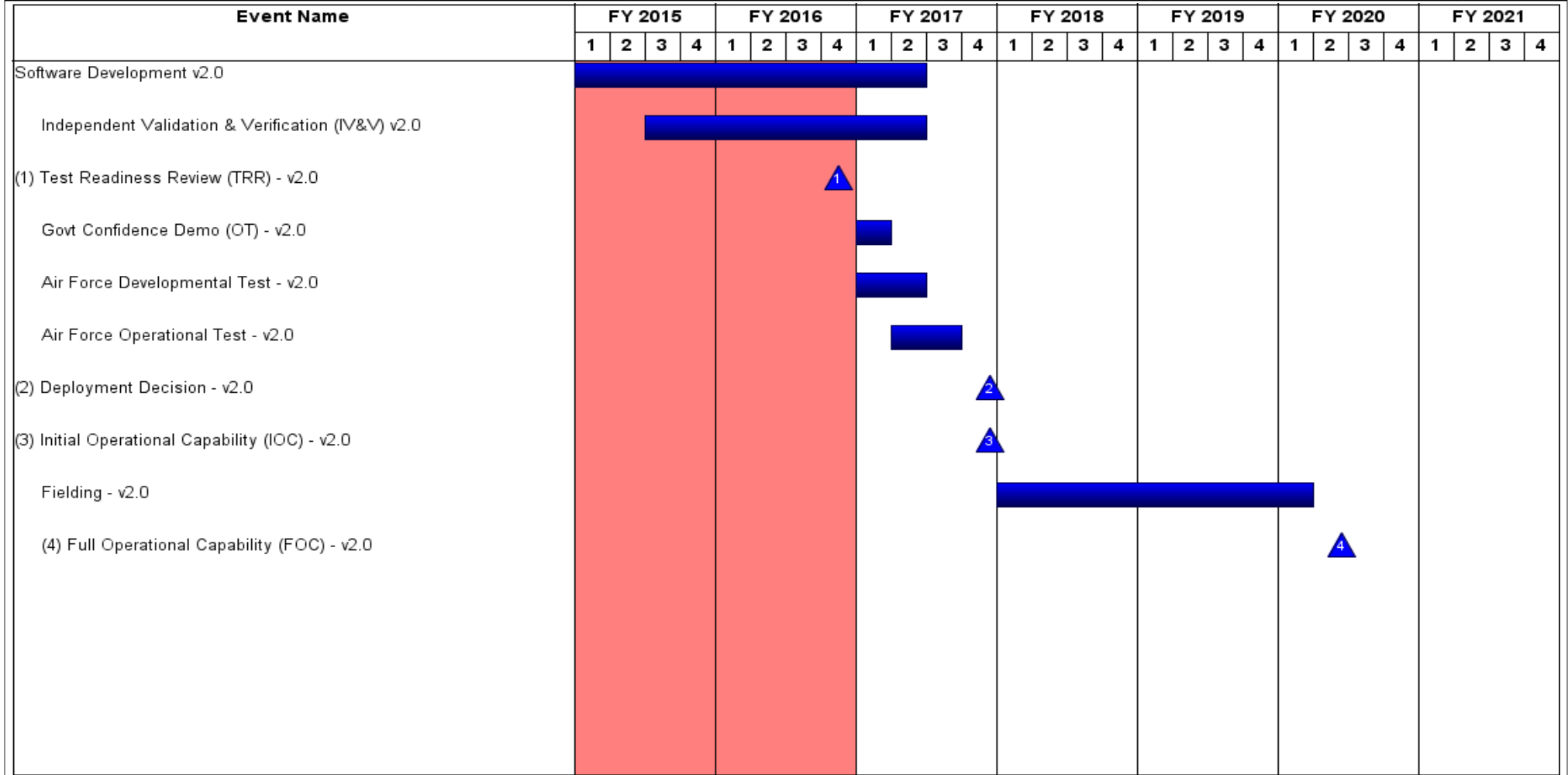
Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016					
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)				Project (Number/Name) EF6 / JADOCS					
	Prior Years	FY 2015		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	13.578		13.002		2.825		-		2.825	0.000	29.405	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF6 / JADOCS
--	--	--



UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / <i>Joint Automated Deep Operation Coordination System (JADOCS)</i>	Project (Number/Name) EF6 / JADOCS

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Software Development v2.0	3	2014	2	2017
Independent Validation & Verification (IV&V) v2.0	3	2015	2	2017
Test Readiness Review (TRR) - v2.0	4	2016	4	2016
Govt Confidence Demo (OT) - v2.0	1	2017	1	2017
Air Force Developmental Test - v2.0	1	2017	2	2017
Air Force Operational Test - v2.0	2	2017	3	2017
Deployment Decision - v2.0	4	2017	4	2017
Initial Operational Capability (IOC) - v2.0	4	2017	4	2017
Fielding - v2.0	1	2018	1	2020
Full Operational Capability (FOC) - v2.0	2	2020	2	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)				Project (Number/Name) EF7 / Pocket-Sized Forward Entry Device (PFED) Inc 2			
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
EF7: Pocket-Sized Forward Entry Device (PFED) Inc 2	-	3.370	3.494	1.966	-	1.966	4.537	3.926	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Pocket-sized Forward Entry Device (PFED) Increment II will be a software-only application that operates on the Nett Warrior End User Device (EUD). It will provide the dismounted Forward Observer (FO) and Fire Support Teams (FISTs) the capability and functionality to accurately and rapidly locate ground targets and digitally process a Call For Fire. PFED Increment II answers the Mobile Handheld Computing Environment requirement that all handheld applications reside on the Nett Warrior End User Device.

FY17 funding of \$1.966 million supports the evolutionary software development and testing of this handheld Fires Command and Control (C2) system.

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

	FY 2015	FY 2016	FY 2017
<p>Title: PFED INC II Software Development</p> <p>Description: PFED INC II Software Development</p> <p>FY 2015 Accomplishments: Milestone B decision. Transitioned and began Block 1 software development. Completed Milestone B statutory and regulatory requirements.</p> <p>FY 2016 Plans: Continue software development for the Block 1 capability. Conduct developmental test events, operational test and evaluation events, and Independent Verification and Validation testing. Conduct a Preliminary Design Review for the Block 2 capability.</p> <p>FY 2017 Plans: Complete software development for the Block 1 capability. Conduct a Full Deployment Decision in order to obtain a Full Materiel Release of the Block 1 capability. Develop the performance specification for Block 2 capabilities based on validated requirements. Begin development of Block 2 capability.</p>	2.667	2.634	1.453
<p>Title: Program Support Costs for PFED Increment II Software Development Efforts</p> <p>Description: Program support for PFED INC II software development efforts.</p> <p>FY 2015 Accomplishments:</p>	0.403	0.600	0.267

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF7 / Pocket-Sized Forward Entry Device (PFED) Inc 2
--	---	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Program support for PFED INC II software development. FY 2016 Plans: Continue program support for PFED INC II software development. FY 2017 Plans: Continue program support for PFED INC II software development.			
Title: Testing Description: Conduct and Support Army Testing Activities FY 2015 Accomplishments: Conducted Developmental and Operational Testing and Evaluation of the Block 1 capability. FY 2016 Plans: Plan Developmental Testing and conduct Operational Testing and Evaluation of the Block 1 capability. FY 2017 Plans: Complete Operational Testing and Evaluation of the Block 1.0 capability. Begin test planning for Block 2 capabilities.	0.300	0.260	0.246
Accomplishments/Planned Programs Subtotals	3.370	3.494	1.966

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
• BZ9851: BZ9851 POCKET FORWARD ENTRY DEVICE (PFED) - OPA	2.289	1.190	4.093	-	4.093	4.197	3.487	3.772	3.821	Continuing	Continuing

Remarks

D. Acquisition Strategy
On 18 May 2015, the Milestone Decision Authority (PEO C3T) signed the Acquisition Decision Memorandum (ADM) approving the PFED Increment II Milestone B. The Acquisition Decision Memorandum (ADM) officially approved entry into the Development phase as an Acquisition Category (ACAT) III program.

PFED Increment II leverages an Army Science and Technology investment by transitioning a software application that has been developed and used in proponent experimentation events (i.e. Army Expeditionary Warrior Experiment (AEWE) and Bold Quest). Upon a successful Milestone B decision in FY2015, this software application transitioned to PM Mission Command to conduct all Army developmental and operational test and evaluation requirements. PFED Increment II will be

UNCLASSIFIED

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

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 7	PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	EF7 / Pocket-Sized Forward Entry Device (PFED) Inc 2

integrated onto the Nett Warrior End User Devices (EUDs) and will be fielded by PM Soldier Warrior (PM SWAR). Training on the PFED Increment II software will be conducted by PM Mission Command as units are fielded the capability.

PM Mission Command will continue to manage future capability Blocks of software development. PM Mission Command will continue to coordinate with PM Soldier Warrior to field and train future versions of the software, as described above.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 7				PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)				EF7 / Pocket-Sized Forward Entry Device (PFED) Inc 2								
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	
PFED Increment II Software Development efforts	IA	AMRDEC : Redstone, AL	0.000	2.667	Jun 2015	2.634	Dec 2015	1.453	Dec 2016	-		1.453	Continuing	Continuing	Continuing	
Subtotal			0.000	2.667		2.634		1.453		-		1.453	-	-	-	
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	
Program Management Support	Various	PM Mission Command (MC) : APG, MD	0.000	0.403	Jun 2015	0.600	Nov 2015	0.267	Nov 2016	-		0.267	Continuing	Continuing	Continuing	
Subtotal			0.000	0.403		0.600		0.267		-		0.267	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Test Support	Various	Testing : Various	0.000	0.300		0.260		0.246		-		0.246	Continuing	Continuing	Continuing	
Subtotal			0.000	0.300		0.260		0.246		-		0.246	-	-	-	
Project Cost Totals			0.000	3.370		3.494		1.966		-		1.966	-	-	-	
Remarks																

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF7 / Pocket-Sized Forward Entry Device (PFED) Inc 2
--	---	--

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) Milestone B																												
Software Development & Testing Block 1																												
Developmental Test (DT) Block 1																												
(2) Limited Deployment Decision (LDD) Block 1																												
Operational Test (OT) Block 1																												
(3) Full Deployment Decision (FDD) Block 1																												
(4) Initial Operational Capability (IOC) Block 1																												
Fielding Block 1 (OPA Funded)																												
Software Development & Testing Block 2																												
Developmental Test (DT) Block 2																												
(5) Limited Deployment Decision (LDD) Block 2																												
Operational Test (OT) Block 2																												
(6) Full Deployment Decision (FDD) Block 2																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF7 / Pocket-Sized Forward Entry Device (PFED) Inc 2
--	--	---

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																																																																																																
Fielding Block 2 (OPA Funded)																																																																																																																												
Software Development & Testing Block 3																																																																																																																												
Developmental Test (DT) Block 3																																																																																																																												
(1) Limited Deployment Decision (LDD) Block 3																																																																																																																												
Operational Test (OT) Block 3																																																																																																																												
(2) Full Deployment Decision (FDD) Block 3																																																																																																																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF7 / Pocket-Sized Forward Entry Device (PFED) Inc 2

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B	3	2015	3	2015
Software Development & Testing Block 1	3	2015	1	2017
Developmental Test (DT) Block 1	2	2016	3	2016
Limited Deployment Decision (LDD) Block 1	2	2016	2	2016
Operational Test (OT) Block 1	2	2016	3	2016
Full Deployment Decision (FDD) Block 1	1	2017	1	2017
Initial Operational Capability (IOC) Block 1	3	2017	3	2017
Fielding Block 1 (OPA Funded)	2	2017	3	2018
Software Development & Testing Block 2	2	2017	1	2019
Developmental Test (DT) Block 2	2	2018	2	2018
Limited Deployment Decision (LDD) Block 2	3	2018	3	2018
Operational Test (OT) Block 2	4	2018	4	2019
Full Deployment Decision (FDD) Block 2	2	2019	2	2019
Fielding Block 2 (OPA Funded)	2	2019	4	2020
Software Development & Testing Block 3	3	2019	1	2021
Developmental Test (DT) Block 3	2	2020	2	2020
Limited Deployment Decision (LDD) Block 3	3	2020	3	2020
Operational Test (OT) Block 3	3	2020	4	2020
Full Deployment Decision (FDD) Block 3	2	2021	2	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF8 / AFATDS Increment 1
--	---	--

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
EF8: AFATDS Increment 1	-	17.048	19.223	25.664	-	25.664	32.905	23.407	15.634	14.550	0.000	148.431
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Advanced Field Artillery Tactical Data System (AFATDS) provides Army, Navy, and Marine Corps automated fire support command, control and communications. AFATDS is used to plan, execute, and deliver lethal and non-lethal effects. AFATDS provides Joint/Coalition for fires execution and mission management. The system interoperates and integrates with over 80 different battlefield systems, including Navy and Air Force command and control weapon systems; As a member of the Artillery System Cooperation Agreement (ASCA), AFATDS is interoperable with the German, French, Turkish, and Italian fire support systems. AFATDS automates the planning, coordination, and control of all fire support assets (field artillery, mortars, close air support, naval helicopters, offensive electronic warfare, fire support meteorological systems, forward observers, and fire support radars

FY17 funding in the amount of \$25.664 million will be used to continue development efforts on AFATDS version 7.0.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Program Support Costs for AFATDS software development</p> <p>Description: Provide program support for AFATDS software development efforts.</p> <p>FY 2015 Accomplishments: Provided matrix support and Program Management Office (PMO) efforts. Conducted Risk Reduction Analysis, Solution Refinement, Requirements Development, and Request for Proposal (RFP) Development. Continued development and testing of V6.8.1.1.</p> <p>FY 2016 Plans: Provide matrix support and Program Management Office (PMO) efforts. Continue development and testing of V6.8.1.1. Conduct Risk Reduction Analysis, Solution Refinement, Requirements Development, Request for Proposal (RFP) Evaluation and award of V7.0 contract. Initiate V7.0 SW development.</p> <p>FY 2017 Plans: Provides Program Management Office (PMO) support (Core, Matrix, and SETA) for all aspects of the AFATDS program including requirements development, software development efforts, logistics, and business management support.</p>	1.247	4.140	2.350
<p>Title: AFATDS software development efforts</p> <p>Description: Development of AFATDS software - including V6.8.1.1 and V7.0</p>	12.600	14.733	21.791

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF8 / AFATDS Increment 1		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>FY 2015 Accomplishments: Continued the development on V6.8.1.1. This completes the addition of further Joint Automated Deep Operation Coordination System (JADOCS)-like requirements/capabilities into AFATDS.</p> <p>FY 2016 Plans: Initiate the development of V7.0. V7.0 will focus on architecture modernization to provide role/duty-based functionality for Fire Support, Fire Control, and Fire Direction Capabilities, support for net-centric operations, web-enabled network interoperability, execution of Joint critical operational activities, embedded training, and exploitation of Army Common Operating Environment (COE) Computing Environment. Complete development and testing of V6.8.1.1.</p> <p>FY 2017 Plans: Continue the development on V7.0. V7.0 will focus on architecture modernization to provide role/duty-based functionality for Fire Support, Fire Control, and Fire Direction Capabilities, support for net-centric operations, web-enabled network interoperability, execution of Joint critical operational activities, embedded training, and exploitation of Army Common Operating Environment (COE) Computing Environment.</p>				
<p>Title: Network Assisted Global Position System (GPS) for Precision Fires</p> <p>Description: Define system architecture and standardize tactical GPS Satellite data exchange solutions. Initiate WAN and LAN based system-of-systems Network Assisted GPS capability for PGMs.</p> <p>FY 2015 Accomplishments: Developed and tested Network-Assisted (NA) GPS for Precision Fires Capability as part of AFATDS COE v2 software: Verification component system's software interoperability in the network, algorithmic corrections to supplement the ephemeris navigation data incorporated into M777A2 Towed Howitzer Digital Fire Control System and Mortar Fire Control System software, conduct field test demonstration on standard message exchange of navigation data from the Air Force GPS Operations Center through all NA GPS capable systems, develop Capability Insertion Plan to document the results of developing and testing the system of systems Network Assisted GPS capability for Precision Fires.</p>		1.000	-	-
<p>Title: Defensive Cyber Tools</p> <p>Description: Integration of Tactical Public Key Infrastructure (T-PKI) defensive cyber tools into AFATDS v7.0</p> <p>FY 2017 Plans: Engineer and integrate the software architecture and system design of Tactical Public Key Infrastructure (T-PKI) defensive cyber tools into AFATDS v7.0.</p>		-	-	1.100
Title: Operational and Developmental Testing		2.201	0.350	0.423

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF8 / AFATDS Increment 1

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Conduct and support test activities for AFATDS development.</p> <p>FY 2015 Accomplishments: For AFATDS Version V6.8.1.1, prepared for: Army Interoperability Certification (AIC); Government Confidence Demonstration (GCD); Network Integration Evaluation (NIE); and Air Force Operation Testing. Conducted: Development Testing (DT); Independent Verification and Validation (IV&V); System-of-system (SoS) testing; and Air Force Developmental Testing.</p> <p>FY 2016 Plans: For AFATDS Version V6.8.1.1, conduct: Army Interoperability Certification (AIC); Government Confidence Demonstration (GCD); Network Integration Evaluation (NIE); and Air Force Operation Testing. For V7.0, conduct: Development Testing (DT); Independent Verification and Validation (IV&V); and Air Force Developmental Testing.</p> <p>FY 2017 Plans: For AFATDS Version 7.0, prepare for: Army Interoperability Certification (AIC); Development Testing (DT); and Army Warfighting Assessment (AWA).</p>			
Accomplishments/Planned Programs Subtotals	17.048	19.223	25.664

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
• B28620: MOD OF IN-SVC EQUIP, AFATDS	8.163	0.048	2.598	-	2.598	2.765	11.250	18.857	12.387	0.000	56.068

Remarks

D. Acquisition Strategy
AFATDS version 6.8.0.1 is the current fielded version of software. AFATDS version 6.8.1.1 remains under development with a Full Materiel Release projected for 4QFY2016.

Per Memorandum for Under Secretary of Defense (Acquisition, Technology and Logistics) dated 13 May 2015, the Army Acquisition Executive (AAE) determined that AFATDS Increment II is a modernization of the existing software code to provide Army Common Operating Environment (COE) standards to be executed as AFATDS 7.0. The PM will re-design AFATDS version 7.0 to provide the operator role/duty-based interaction, a dynamic embedded training capability, integration of COE compliant architectures and allowance for more efficient insertion of future capabilities.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF8 / AFATDS Increment 1
Development of future AFATDS capabilities will be considered based on requirements approved through the Fires Center of Excellence (FCoE) Tactical Software Requirements Governance Board.		
E. Performance Metrics N/A		

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF8 / AFATDS Increment 1
--	--	--

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support for AFATDS (Core)	Sub Allot	PM Mission Command (MC) : APG, MD	0.000	1.247		1.244		0.707		-		0.707	0	3.198	0
Program Management Support for AFATDS (Matrix)	IA	Various Matrix Orgs (Govt) : Aberdeen PG, MD	0.000	-		0.890		0.900		-		0.900	0	1.790	0
Program Management Support for AFATDS (SETA Contr)	C/FFP	CSC : Aberdeen PG, MD	0.000	-		0.500		0.743		-		0.743	0	1.243	0
Risk Reduction Analysis, Solution Refinement, Requirements Development, RFP Development.	TBD	PM Mission Command (MC) : APG, MD	0.000	-		1.506		-		-		-	0	1.506	0
Subtotal			0.000	1.247		4.140		2.350		-		2.350	0.000	7.737	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			
Network Assisted GPS for Precision Fires Development	IA	PM Combat Ammunition Systems, PM Mission Command, and various Army agencies : Various Locations	0.000	1.000		-		-		-		-	0	1.000	0
Software Development of AFATDS Version 6.8.1	C/CPFF	Raytheon Systems Corp. : Ft. Wayne, IN	0.000	12.600		-		-		-		-	0	12.600	33.188
Software Development of AFATDS Version 7.0	C/CPFF	TBD : TBD	0.000	-		14.733		20.791		-		20.791	0	35.524	0
Subtotal			0.000	13.600		14.733		20.791		-		20.791	0.000	49.124	33.188

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)				EF8 / AFATDS Increment 1							
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
Information Assurance and Engineering Support for AFATDS requirements	C/CPFF	CSC : Various Locations	0.000	1.060		-		-		-		-	0.000	1.060	0
Defensive Cyber Tools (T-PKI)	TBD	TBD : TBD	0.000	-		-		1.100		-		1.100	0	1.100	0
Subtotal			0.000	1.060		-		1.100		-		1.100	0.000	2.160	0.000
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Confidence Demo for AFATDS V6.8.x requirements.	IA	Army Test & Evaluation Command (ATEC)/Fires Test Directorate (FTD) : Various Locations	0.000	0.626		-		-		-		-	0	0.626	0
Independent Verification and Validation of AFATDS V7.0 requirements	C/CPFF	Engility : Various Locations	0.000	0.515		-		1.023		-		1.023	0	1.538	0
Developmental Testing for AFATDS v7.0	IA	Multiple Govt Test Agencies (ATEC, ATC, EPG) : Multiple	0.000	-		0.350		0.400		-		0.400	0	0.750	0
Subtotal			0.000	1.141		0.350		1.423		-		1.423	0.000	2.914	0.000
Project Cost Totals			0.000	17.048		19.223		25.664		-		25.664	0.000	61.935	33.188
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF8 / AFATDS Increment 1
--	--	--

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
Development and Testing V6.8.1.1																												
(1) Materiel Release V6.8.1.1																												
(2) V6.8.1.1 Customer Test																												
Fielding V6.8.1.1 (OPA Funding)																												
V7.0 Request For Proposal																												
(3) V7.0 Development (Primary) Contract Award																												
V7.0 Development (Base Period)																												
(4) V7.0 Independent Verification and Validation																												
V7.0 Test for Record																												
V7.0 Developmental/Operational Test																												
V7.0 Logistics and Training																												
V7.0 Fielding & New Equipment Training (OPA Funded)																												
(5) V7.0 Development (Option) Contract Award																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF8 / AFATDS Increment 1
--	--	--

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
V7.0 Development (Option Period)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203728A / Joint Automated Deep Operation Coordination System (JADOCS)	Project (Number/Name) EF8 / AFATDS Increment 1

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Development and Testing V6.8.1.1	3	2014	2	2016
Materiel Release V6.8.1.1	4	2016	4	2016
V6.8.1.1 Customer Test	2	2016	2	2016
Fielding V6.8.1.1 (OPA Funding)	1	2017	3	2017
V7.0 Request For Proposal	2	2016	2	2016
V7.0 Development (Primary) Contract Award	3	2016	3	2016
V7.0 Development (Base Period)	4	2016	1	2019
V7.0 Independent Verification and Validation	2	2017	3	2018
V7.0 Test for Record	3	2018	3	2018
V7.0 Developmental/Operational Test	3	2018	1	2019
V7.0 Logistics and Training	3	2018	1	2019
V7.0 Fielding & New Equipment Training (OPA Funded)	3	2019	3	2020
V7.0 Development (Option) Contract Award	4	2018	4	2018
V7.0 Development (Option Period)	1	2019	3	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	297.423	354.667	316.857	-	316.857	249.464	259.410	235.824	151.345	Continuing	Continuing
330: <i>Abrams Tank Improve Prog</i>	-	98.596	77.603	78.452	-	78.452	95.679	108.621	57.829	45.036	Continuing	Continuing
371: <i>Bradley Improve Prog</i>	-	73.294	73.775	101.882	-	101.882	73.514	89.118	118.893	67.738	Continuing	Continuing
EE2: <i>Stryker Improvement</i>	-	125.533	203.289	136.523	-	136.523	80.271	61.671	59.102	38.571	Continuing	Continuing

Note

PE Number 0203735A/Project EE2 funds the Stryker Engineering Change Proposal (ECP) 1, Stryker Operational Needs Statement (ONS) Lethality and Stryker ECP 2 efforts.

A. Mission Description and Budget Item Justification

The Army has approved engineering change proposals for the Abrams, Bradley and Stryker programs to restore lost platform capability and host inbound technologies.

This Program Element (PE) corrects vehicle deficiencies identified during Army operations; continues technical system upgrades to include the integration of applicable technologies on ground systems; addresses needed evolutionary enhancements to tracked combat vehicles; and develops technology improvements which have application to or insertion opportunities across multiple Ground Combat Systems vehicles. This PE provides combat effectiveness and Operating and Support (O&S) cost reduction enhancements for the Abrams tanks, Bradley Fighting Vehicles and Stryker Family of Vehicles (FOVs) through a series of product improvements.

The strategy for Abrams and Bradley will focus on incrementally delivering capability to the warfighter to meet both near-term limitations as well as mitigating gaps and maintaining combat overmatch in the future. This effort was approved by the Army Acquisition Executive in 3Q FY 2011.

The Abrams M1A2 SEP V2 and M2/M3A3 Bradley Fighting Vehicles are at or exceed Space, Weight, and Power-Cooling (SWaP-C) limitations. In order to host and restore lost platform capability, the Abrams Tank and Bradley Fighting Vehicle programs will execute a series of Engineering Change Proposals (ECPs) to support the current embedded systems and to facilitate integration of technologies currently in development under other existing Programs of Record. The ECPs are not intended to exceed the operational capability outlined in current system requirements documents, but rather to ensure that the existing system performance is not further degraded and that Army mission equipment packages can be integrated on the Abrams and Bradley Platforms.

Stryker Improvement will address the development of Lethality, Survivability, Mobility, and Communication, Command and Control (C3) improvements within the Stryker Family of Vehicles (FoV). Principal development efforts include upgrades associated with the ECP 1, Operational Needs Statement Lethality (ONS), and ECP 2 efforts. ECP 1 power generation, suspension, and network upgrades will both restore Stryker Double-V Hull (DVH) Space, Weight, and Power-Cooling (SWaP-C) lost as a result of incorporating vehicle changes to counter threats encountered during deployment operations while allowing the future network to be hosted without further degradation in vehicle protection and mobility. The Stryker ONS Lethality effort will address an Urgent Operational Need to increase the firepower of Stryker Infantry Carrier Vehicles (ICV) within the US Army European Command (USAREUR). The ONS Lethality effort will integrate a 30mm-equipped weapon station that will provide USAREUR with

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>
---	--

precision direct firepower to overwhelm the enemy in encounter actions and suppressive fire to preserve mounted and dismounted freedom of movement. The ECP 2 effort will focus on the integration of lethality upgrades such as a medium caliber weapon, under armor Javelin, and other capabilities that will improve suppressive fire and armored vehicle engagement capabilities across the Army's Stryker Brigade Combat Teams (SBCTs).

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	297.850	257.167	292.401	-	292.401
Current President's Budget	297.423	354.667	316.857	-	316.857
Total Adjustments	-0.427	97.500	24.456	-	24.456
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	97.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-0.427	-	24.456	-	24.456

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

Project: EE2: Stryker Improvement

Congressional Add: *Stryker ECP 1 Development (Engineering/Prototypes) Congressional Add*

Congressional Add: *Stryker ECP 1 Testing Congressional Add*

Congressional Add: *Stryker ECP 1 Contractor Support to Test Congressional Add*

Congressional Add: *Stryker Operational Needs Statement Lethality Development (Engineering/Prototypes) Congressional Add*

Congressional Add: *Stryker Operational Needs Statement Lethality Testing Congressional Add*

Congressional Add: *Stryker Operational Needs Statement Lethality Contractor Support to Test Congressional Add*

Congressional Add: *Stryker Operational Needs Statement Lethality Government Engineering and Project Management Congressional Add*

Congressional Add Subtotals for Project: EE2

Congressional Add Totals for all Projects

	FY 2015	FY 2016
	21.755	-
	3.918	-
	3.327	-
	9.217	60.587
	0.238	14.150
	-	16.370
	0.345	6.393
Congressional Add Subtotals for Project: EE2	38.800	97.500
Congressional Add Totals for all Projects	38.800	97.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>				Project (Number/Name) 330 / <i>Abrams Tank Improve Prog</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
330: <i>Abrams Tank Improve Prog</i>	-	98.596	77.603	78.452	-	78.452	95.679	108.621	57.829	45.036	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Army has approved engineering change proposals for the Abrams program to restore lost platform capability and host inbound technologies. The strategy for Abrams will focus on incrementally delivering capability to the warfighter to meet both near-term limitations as well as mitigating gaps and maintaining combat overmatch in the future. This approach was approved by the Army Acquisition Executive in 3Q FY2011.

The Abrams vehicle is at or exceeds Space, Weight, and Power-Cooling (SWaP-C) limitations. In order to host and restore lost platform capability, the Abrams Tank will execute a series of Engineering Change Proposals (ECPs) to support the current embedded systems and to facilitate integration of technologies currently in development under other existing Programs of Record. The ECPs are not intended to exceed the operational capability outlined in current system requirements documents, but rather to ensure that the existing system performance is not further degraded and that Army mission equipment packages can be integrated on the Abrams Platforms. The ECPs will incorporate lost power generation and distribution technologies, force protection and survivability improvements to counter evolving threats to include, but not limited to Active Protection Systems, mitigate obsolescence issues, and incorporate in-bound technologies under development in existing Programs of Record.

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

	FY 2015	FY 2016	FY 2017
Title: Abrams Engineering Change Proposals (ECP) 1A	72.251	16.943	8.886
Description: The improvements implemented through the Abrams ECP 1A program will restore lost power generation and distribution, mitigate impending obsolescence, and incorporate inbound technologies currently under development in other existing Programs of Record.			
FY 2015 Accomplishments: FY2015 efforts consisted of completing prototype builds, component qualification testing, contractor vehicle testing, and initial prototype handoff for government testing. Production contract preparation began.			
FY 2016 Plans: A System Verification Review and Production Readiness Review will be held in FY2016. The ECP 1A Technical Data Package (TDP) will be approved in 2Q FY2016 to support a production contract award in late FY2016. United States Government (USG) Production Prove-out Test (PPT) will continue throughout FY2016. Engineering will complete root cause and corrective action work as test incident reports arise. Logistics Support Analysis (LSA), technical manual development/updates, Level of Repair Analysis (LORA), and Source of Repair Analysis (SORA) will continue. Preparation for Next Evolution Armor installation into			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 330 / <i>Abrams Tank Improve Prog</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>prototypes for live fire testing will also begin. Engineering will integrate mine blast survivability improvements, support Cross Domain Solution (CDS) testing, update system software, and complete Root Cause & Corrective Action (RCCA) on test failures.</p> <p>FY 2017 Plans: Engineering will integrate mine blast survivability improvements, support Cross Domain Solution (CDS) testing, update system software, and complete Root Cause & Corrective Action (RCCA) on test failures. Three prototype vehicles will be updated for live fire testing. Production Prove-Out Testing (PPT) will continue throughout FY2017. Logistics products will continue to be developed throughout FY2017.</p>				
<p>Title: Training Device Updates</p> <p>Description: Development and design of training device upgrades to reflect upgrades to the vehicle.</p> <p>FY 2016 Plans: Development engineering for Crew Module Unit Recorder (CMUR) Ethernet interface cable for Training Port.</p>		-	0.300	-
<p>Title: Abrams Engineering Change Proposal (ECP) 1B (formerly ECP 2)</p> <p>Description: The Abrams ECP 1B (formerly ECP 2) program consists mainly of lethality improvements. The primary focus is the integration of 3GEN Forward Looking Infrared (FLIR) and the integration of Ammunition Data Link (ADL) for the Advanced Multi-purpose (AMP) round. Additional improvements to the target acquisition sensors consist of inclusion of color cameras and laser capabilities. Other potential improvements consist of an improved environmental control system, laser warning receiver, and vehicle smoke generation. Trade studies, analysis and technology maturation will be performed to evaluate prospective improvements, along with obsolescence mitigation, and incorporation of inbound technologies currently under development in other existing Programs of Record.</p> <p>FY 2016 Plans: The development contract award is expected 3Q FY2016. Continue synchronization with Product Managers (PMs) Bradley Fighting Vehicles, Ground Sensors, and Large Caliber Ammunition Systems. Trade studies, analysis, and technology maturation will be performed to evaluate 3GEN Forward Looking Infrared (FLIR) integration and the integration of Ammunition Data Link (ADL) for the Advanced Multi-purpose (AMP) round, and other prospective improvements, i.e. environmental controls, smoke generation and other potential force protection elements. Requirements decomposition and traceability efforts will start in FY2016.</p> <p>FY 2017 Plans: ECP 1B development engineering efforts will continue with the System Functional Review (SFR) in early FY2017. SFR will be followed by preliminary design activities, ensuring the design and basic system architecture are complete with technical confidence. The Preliminary Design Review will be in 4Q FY17. Abrams will continue to support Ground Sensors with 3GEN</p>		-	23.402	22.523

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 330 / <i>Abrams Tank Improve Prog</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Forward Looking Infrared (FLIR) integration engineering. Trade studies, analyses, and technology maturation will be performed to evaluate other potential improvements.				
<p>Title: Survivability Enhancements</p> <p>Description: PM Abrams will integrate and test survivability, lethality, mobility, reliability, and architecture improvements on the Abrams Family of Vehicles. Force protection and survivability improvements to counter evolving threats to include, but not limited to Active Protective Systems.</p> <p>FY 2017 Plans: PM Abrams will integrate and test survivability, lethality, mobility, reliability, and architecture improvements on the Abrams Family of Vehicles. Force protection and survivability improvements to counter evolving threats to include, but not limited to Active Protective Systems.</p>		-	-	15.300
<p>Title: Program Management Office (PMO) Support</p> <p>Description: Program Management Office Support includes Systems Engineering and Government and Contractor salaries, travel and other support costs required to effectively manage the program.</p> <p>FY 2015 Accomplishments: Continued Government Systems Engineering and Program Management Office Support in FY2015. This included labor, travel, training, supplies and equipment to effectively manage the program.</p> <p>FY 2016 Plans: Continue Government Systems Engineering and Program Management Office Support in FY2016. This will include labor, travel, training, supplies and equipment to effectively manage the program.</p> <p>FY 2017 Plans: Continue Government Systems Engineering and Program Management office support in FY2017. This will include labor, training, travel, supplies, and equipment to effectively manage the program.</p>		5.155	10.579	11.179
<p>Title: Test & Evaluation</p> <p>Description: Test and Evaluation activities includes contractor and government testing, as well as test documentation development. Contractor shakedown/proveout testing will be conducted using U.S. Army test facilities. Government development testing of prototype vehicles will evaluate vehicle performance, to include Reliability, Availability, and Maintainability testing. Early User evaluation will also be performed. Test and evaluation activities also include the testing of other platform inbound</p>		21.190	26.379	20.564

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 330 / <i>Abrams Tank Improve Prog</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
technologies, along with the development of test documentation to include Test and Evaluation Master Plans, test procedures, and reports.			
<i>FY 2015 Accomplishments:</i> Continued Test & Evaluation efforts to support component level test events and planning and development of test documentation. Original Equipment Manufacturer (OEM) testing to include software, mobility, communications, and slope and grade testing were conducted. Firing functionality of the main gun and secondary weapon systems occurred at Aberdeen Proving Grounds, MD and Yuma Proving Grounds, AZ.			
<i>FY 2016 Plans:</i> Continue Test and Evaluation to support vehicle level test events and planning and development of test documentation. In 1Q FY2016, gun firing and production prove-out testing as well as Automotive/Reliability, Availability and Maintainability (RAM) testing will begin. Electromagnetic Interference/Electromagnetic Compatibility (EMI/EMC) Testing will begin in 3Q FY2016. These test and evaluation events will occur at various test sites (Aberdeen Proving Ground, Yuma Proving Ground, and White Sands Missile Range).			
<i>FY 2017 Plans:</i> Continue Test and Evaluation to support vehicle level test events and documentation. Continue production prove-out testing, automotive reliability, availability, and maintainability (RAM) testing, and electromagnetic interface / electromagnetic compatibility (EMI/EMC) testing. Complete gun firing in mid FY2017. In mid FY2017 begin production configuration testing in preparation for live fire testing in FY2018. These test and evaluation events will occur at various sites (Aberdeen Proving Ground, Yuma Proving Ground, and White Sands Missile Range).			
Accomplishments/Planned Programs Subtotals	98.596	77.603	78.452

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
• Abrams Upgrade Program: <i>Abrams Upgrade Program (GA0750) WTCV</i>	120.000	-	-	-	-	-	-	-	-	0.000	120.000
• M1 Abrams Tank Mod (GA0700): <i>M1 Abrams Tank Mod (GA0700) WTCV</i>	237.023	430.939	480.166	-	480.166	529.924	500.838	501.025	543.353	16,622.398	19,845.666

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 330 / <i>Abrams Tank Improve Prog</i>

D. Acquisition Strategy

Abrams Engineering Change Proposal (ECP) 1A: Research & Development Contract - Sole Source, Cost Plus Incentive Fee (CPIF); ECP 1B - Research & Development Contract - Sole Source, Cost Plus Incentive Fee (CPIF)

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
2040 / 7				PE 0203735A / Combat Vehicle Improvement Programs					330 / Abrams Tank Improve Prog						
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
Abrams Engineering Change Proposal (ECP) 1A	SS/CPIF	General Dynamics Land Systems : Sterling Heights, MI	240.168	72.251	Mar 2015	16.943	Mar 2016	8.886	Mar 2017	-		8.886	0	338.248	0
ECP 1A Training Device Upgrades	MIPR	PEO, STRI : Orlando, FL	0.000	-		0.300	Mar 2016	-		-		-	0	0.300	0
Abrams (ECP) 1B	SS/CPIF	General Dynamics Land Systems : Sterling Heights, MI	0.000	-		23.402	Jun 2016	22.523	Nov 2016	-		22.523	0	45.925	0
Survivability Enhancements	SS/CPIF	General Dynamics Land Systems : Sterling Heights, MI	0.000	-		-		15.300	Jan 2017	-		15.300	0	15.300	0
Subtotal			240.168	72.251		40.645		46.709		-		46.709	0.000	399.773	0.000
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Office (PMO)Support	MIPR	PMO Support Offices : Various	51.566	5.155	Jan 2015	10.579	Jan 2016	11.179	Jan 2017	-		11.179	Continuing	Continuing	Continuing
Subtotal			51.566	5.155		10.579		11.179		-		11.179	-	-	-
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
Government Testing	MIPR	Aberdeen Proving Ground; Yuma Proving Ground; White Sands Missile Range, : Various	12.324	2.516	Jan 2015	15.253	Jan 2016	11.423	Jan 2017	-		11.423	Continuing	Continuing	Continuing
Contractor Testing	Various	Various : Various	0.000	18.674	Mar 2015	11.126	Mar 2016	9.141	Mar 2017	-		9.141	0	38.941	0
Subtotal			12.324	21.190		26.379		20.564		-		20.564	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 330 / <i>Abrams Tank Improve Prog</i>
--	--	---

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	304.058	98.596	77.603	78.452	-	78.452	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 330 / <i>Abrams Tank Improve Prog</i>
--	--	---

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
ECP 1A Component Qualification Testing																												
ECP 1A Contractor Prototype Proveout																												
ECP 1A Production Prove-Out Testing																												
(1) ECP 1A Production Contract Award																												
ECP 1A Live Fire Test & Evaluation (LFT&E)																												
ECP 1A Production Qualification Testing (PQT)																												
ECP 1A Logistics Demo																												
ECP 1A Follow-on Test and Evaluation (FOT&E)																												
(2) ECP 1A Fielding Start Date (First Unit Equipped)																												
(3) ECP 1B Development Contract Award																												
(4) ECP 1B System Functional Review (SFR)																												
(5) ECP 1B Preliminary Design Review (PDR)																												
(6) ECP 1B Critical Design Review (CDR)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 330 / <i>Abrams Tank Improve Prog</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ECP 1A Component Qualification Testing	4	2014	1	2016
ECP 1A Contractor Prototype Proveout	3	2015	1	2016
ECP 1A Production Prove-Out Testing	1	2016	1	2018
ECP 1A Production Contract Award	2	2016	2	2016
ECP 1A Live Fire Test & Evaluation (LFT&E)	1	2018	4	2018
ECP 1A Production Qualification Testing (PQT)	4	2018	2	2020
ECP 1A Logistics Demo	1	2019	1	2019
ECP 1A Follow-on Test and Evaluation (FOT&E)	3	2019	1	2020
ECP 1A Fielding Start Date (First Unit Equipped)	3	2020	3	2020
ECP 1B Development Contract Award	3	2016	3	2016
ECP 1B System Functional Review (SFR)	1	2017	1	2017
ECP 1B Preliminary Design Review (PDR)	4	2017	4	2017
ECP 1B Critical Design Review (CDR)	4	2019	4	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>				Project (Number/Name) 371 / <i>Bradley Improve Prog</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
371: <i>Bradley Improve Prog</i>	-	73.294	73.775	101.882	-	101.882	73.514	89.118	118.893	67.738	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The M2/M3A3 Bradley Fighting Vehicle is at or exceeds Space, Weight, and Power-Cooling (SWAP-C) limitations. To restore lost platform capability and to host other Army Existing Programs of Record, the Bradley Fighting Vehicle program shall execute a series of Engineering Change Proposals (ECPs). ECP 1 improves vehicle's track and suspension while ECP 2 improves the power train and electrical system to enable the A3 fleet to host inbound technologies from Army Program of Records, including continued SINGARS integration and Handheld Manpack Small (HMS) Radios and Joint Battle Command – Platform (JBC-P). The ECPs are not intended to exceed the operational capability outlined in current system requirement documents, but rather to ensure that the existing system performance is not further degraded and that Army mission equipment packages can be integrated on the Bradley platform. ECP 2 development effort will lead to a production start in FY 2017. The Bradley M2A4 Vehicle is the combination of the M2A3 Base Vehicle with ECP 1 and ECP 2 components installed and integrated. A separate integration effort begins in FY 2017 for an underbelly armor kit for improved survivability against blast threats. Additionally, a follow on Engineering change proposal to ECP2, ECP 2B integrates Third Generation Forward Looking Infrared (3G FLIR) to replace the current FLIR for increased lethality through improved target acquisition capability along with other technology upgrades and insertions (i.e. laser pointing, color camera, laser range finder, vehicle generated smoke, Vehicular Integration for Command, Control, Communication, Computers, Intelligence, Surveillance and, Reconnaissance/Electronic Warfare (C4ISR/EW) Interoperability (VICTORY) architecture compliance, Environmental Control System, etc). Product Manager Bradley will initiate a Non Development Initiative (NDI) to develop force protection and survivability improvements to counter evolving threats to include, but not limited to Active Protection System. Begins ECP3 analysis to build a program plan that acquires full buy back of all IFV approved requirements using common technologies with other Army investments.

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

	FY 2015	FY 2016	FY 2017
Title: Bradley Engineering Change Proposal (ECP) Program	55.571	31.675	41.726
Description: The Bradley Fighting Vehicle System (BFVS) improvements implemented through the Engineering Change Proposal (ECP) Program will focus on restoring lost platform capability to support Army inbound technologies and to facilitate integration of technologies currently in development under other existing Programs of Record.			
FY 2015 Accomplishments: Built ECP 2 prototypes and began contractor component & qualification testing, Combat Simulation Integration Lab (CSIL), Vehicle Test Integration Lab (VTIL) test efforts and vehicle level system integration testing. Began Production Qualification Test (PQT) planning, new equipment training and obtaining equipment for government test.			
FY 2016 Plans: Contractor developmental testing continues throughout FY 2016 in various locations. Government developmental testing begins in 2Q FY 2016 at Yuma Proving Ground (YPG) and Aberdeen Proving Ground (APG) test sites. Software Qualification Testing			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 371 / <i>Bradley Improve Prog</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>(SQT) takes place in 2Q FY 2016. Suitability evaluations will incorporate analysis of Manpower and Personnel Integration (MANPRINT) domains and Logistics Development as part of Integrated Product Support (IPS) elements will be driven by the Live Fire (LF) Analysis that occurs throughout FY 2016. Engineering will complete root cause and corrective action work as test incident reports arise.</p> <p>FY 2017 Plans: Continue system level testing at Government test sites and Contractor facilities. Complete final technical data package for delivery to the Government in preparation for production contract award in mid FY 2017. Continue delivery of logistics support documentation and execute Logistics Demonstration at the contractor's facility.</p>			
<p>Title: Bradley Improvements</p> <p>Description: Continues Third Generation Forward Looking Infrared (3G FLIR) and other necessary technology integration efforts. The Bradley Family of Vehicles (BFV) will integrate underbelly armor for improved survivability against underbelly blast events.</p> <p>FY 2015 Accomplishments: Contract development efforts and program planning for ECP 2B (lethality improvements).</p> <p>FY 2016 Plans: Contract development efforts will continue on ECP 2B (lethality improvements). Contract award is expected in late FY 2016. Continue synchronization with Product Managers (PDMs) Main Battle Tank Systems (MBTS), and Ground Sensors. Trade studies/analysis will be performed to evaluate 3G FLIR integration and other potential improvements, i.e. laser pointing, color camera, laser range finder, vehicle generated smoke, Vehicular Integration for Command, Control, Communication, Computers, Intelligence, Surveillance and, Reconnaissance/Electronic Warfare (C4ISR/EW) Interoperability (VICTORY) architecture compliance, Environmental Control System, etc. Requirements decomposition and traceability efforts will be started in FY 2016.</p> <p>FY 2017 Plans: Continue developmental engineering effort for all of the technologies that are a part of ECP 2B to include the 3G FLIR integration into the Bradley Commander's Independant Viewer (CIV) and Improved Bradley Acquisition System (IBAS), laser pointing, laser range finder, vehicle generated smoke, environmental control system, commander's independent weapon station, rear view sensor system, laser warning receiver, and laser protection. Complete System Functionality Review and continue working toward Preliminary Design Review (PDR). Coordinate commonality and synchronization with PDM Main Battle Tank Systems, PM Ground Sensors, PM Close Combat Weapon Systems, and the ECP 2B Prime Contractor. Underbelly Interim Solution (UBIS) effort begins in FY 2017 with Design and Development contract award which will work with an industry partner to develop an underbelly contingency kit designed to enhance the BFV force protection and vehicle survivability. Major development activities include systems requirements and functional review approval and the start of Concept Design which is to undergo Modeling and Simulation analysis and evaluation to support a PDR in early FY 2018. Also, Logistics Support for UBIS will begin the</p>	1.363	13.773	15.129

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 371 / <i>Bradley Improve Prog</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
development of the Maintenance Allocation Chart (MAC) and provisioning plan. Begin ECP3 analysis to build a program plan that acquires full buy back of all IFV approved requirements using common technologies with other Army investments.				
<p>Title: Survivability Enhancements</p> <p>Description: Initiate a Non Development Initiative (NDI) in order to develop force protection and survivability improvements to counter evolving threats to include, but not limited to Active Protection System in FY 2017.</p> <p>FY 2017 Plans: Initiate a Non Development Initiative (NDI) in order to develop force protection and survivability improvements to counter evolving threats to include, but not limited to Active Protection System in FY 2017.</p>		-	-	15.300
<p>Title: Program Management Office (PMO) Support</p> <p>Description: Program Management Office Support includes Systems Engineering, Government and Contractor salaries, travel, training and other support costs required to effectively manage the program.</p> <p>FY 2015 Accomplishments: Continued Government Systems Engineering and Program Management Office Support in FY 2015. This included labor, travel, training, supplies, equipment and facilities to effectively manage the program.</p> <p>FY 2016 Plans: Continue Government Systems Engineering and Program Management Office Support in FY 2016. This will include labor, travel, training, supplies, equipment and facilities to effectively manage the program.</p> <p>FY 2017 Plans: Government Program Management and System Engineering support costs. These funds cover the costs of Government and direct support Contractor salaries, travel, training, supplies, equipment and facilities to manage the issues resulting from ECP 2 testing and develop ECP 2 logistics products, execution of the initial award and engineering phases of ECP 2b, execute UBIS development activities and support ECP3 analysis.</p>		11.766	9.787	10.137
<p>Title: Test & Evaluation</p> <p>Description: ECP 2 Test & Evaluation efforts support system sub-system test events and planning and development of test documentation.</p> <p>FY 2015 Accomplishments: ECP 2 Test & Evaluation efforts supported system sub-system test events and planning and development of test documentation. Continued component qualification testing. Begin contractor vehicle testing and Government evaluation of contractor testing.</p>		4.594	18.540	19.590

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 371 / <i>Bradley Improve Prog</i>

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

	FY 2015	FY 2016	FY 2017
Began contractor component & qualification testing, Combat Simulation Integration Lab (CSIL), Vehicle Test Integration Lab (VTIL) test efforts and vehicle level system integration testing. Began Production Qualification Test (PQT) planning, new equipment training and obtaining equipment for government test.			
<i>FY 2016 Plans:</i> ECP2 Test and Evaluation to support vehicle level test events and planning and development of test documentation. Contractor developmental testing continues throughout FY 2016 in various contractor locations. Government developmental testing begins in 3Q FY 2016. Automotive/Reliability, Availability and Maintainability (RAM) testing will begin as well as automotive performance testing to ensure ECP 2 components do not degrade the current Bradley performance. These test and evaluation events will occur at various test sites (Aberdeen Proving Ground, Yuma Proving Ground, and White Sands Missile Range). Software Qualification Testing (SQT) takes place in 2Q FY 2016.			
<i>FY 2017 Plans:</i> Continue execution of ECP 2 testing in accordance with the OSD approved Bradley ECP Test and Evaluation Master Plan (TEMP). This includes performance and RAM testing of 5 vehicles at Yuma Test Center, 4 vehicles at Aberdeen Test Center, and 1 vehicle performing electromagnetic effects testing and nuclear testing at White Sands Missile Range (WSMR). The TEMP also requires Cybersecurity testing on two of these prototype ECP 2 vehicles, and Live Fire testing on one vehicle at Aberdeen Test Center through FY 2018. Also planned is testing at Cold Regions Test Center in Alaska that will begin in 4th quarter FY 2017 and finish in FY 2018. Conduct Log Demo. Final Live Fire testing on production vehicles will be completed in FY 2019.			
Accomplishments/Planned Programs Subtotals	73.294	73.775	101.882

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>
• GZ2400: <i>Bradley Program (MOD)</i>	136.006	210.042	276.433	-	276.433	496.556	482.020	427.534	495.780	5,030.314	7,554.685

Remarks

D. Acquisition Strategy

Product Manager Bradley will execute a series of Engineering Change Proposals (ECP) reestablishing Space, Weight, Power and Cooling (SWAP-C) to facilitate integration of technologies being developed under existing Programs of Record (POR). The proposed ECPs will restore lost capability, without exceeding operational envelopes outlined in current approved requirement documents. ECP 1 production contract awarded in FY 2014, and began fielding in FY 2015. ECP 2 is scheduled to begin fielding in FY 2019 to address powerpack and electrical power upgrades, which will enable the vehicle to host Army directed inbound technologies with no further performance degradation to the vehicle. ECP 2 development has been executed on a sole source cost plus incentive fee contract to the current platform Original Equipment Manufacturer. Initiate studies and analysis in order to integrate Third Generation Forward Looking Infrared (3G FLIR) sights begins in FY 2016. The 3G FLIR

UNCLASSIFIED

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

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 7	PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	371 / <i>Bradley Improve Prog</i>

(ECP 2B) system will be developed by Project Manager, Terrestrial Sensors (PM TS) and be provided to Product Manager Bradley as a Horizontal Technology Insertion effort. ECP2B will be a Sole Source to OEM awarded in FY 2016. Initiate development contract for Underbelly Armor Kit development will be awarded in FY 2017. Product Manager Bradley will initiate a Non Development Initiative (NDI) in order to develop force protection and survivability improvements to counter evolving threats to include, but not limited to Active Protection System in FY 2017. ECP3 planning will include building a program plan to address the full IFV approval requirements set in FY 2017.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0203735A / Combat Vehicle Improvement Programs				Project (Number/Name) 371 / Bradley Improve Prog							
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
Bradley Modernization Program	SS/CPIF	PMO : Warren	79.009	-		-		-		-		-	0	79.009	0
Non Recurring Engineering-ECP2	SS/FFP	L3COM : Muskegon, MI	13.630	1.030	Apr 2015	1.030	Apr 2016	1.276	Apr 2017	-		1.276	Continuing	Continuing	Continuing
Non Recurring Engineering-ECP2	SS/CPIF	BAE : Sterling Heights, MI	113.395	54.541	Apr 2015	30.645	Jan 2016	40.450	Nov 2016	-		40.450	Continuing	Continuing	Continuing
Bradley Improvement Integration - ECP2B	SS/CPIF	BAE : Sterling Heights, MI	0.000	1.363	Jun 2015	13.591	Jun 2016	13.055	Nov 2016	-		13.055	Continuing	Continuing	Continuing
Bradley Improvement Integration - Underbelly Armor	SS/CPIF	TBD : TBD	0.000	-		0.182	Jan 2016	1.048	Jun 2017	-		1.048	Continuing	Continuing	Continuing
Bradley Improvement Integration - ECP 3	SS/CPIF	PMO Warren/ TARDEC/OGA's : TBD	0.000	-		-		1.026	Jan 2017	-		1.026	Continuing	Continuing	Continuing
Survivability Enhancements	SS/CPIF	TBD : TBD	0.000	-		-		15.300	Jan 2017	-		15.300	Continuing	Continuing	Continuing
Subtotal			206.034	56.934		45.448		72.155		-		72.155	-	-	-
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
PMO/PEO Support/OGA	MIPR	PMO/PEO : Bradley ECP Program	14.501	6.340	Dec 2014	3.564	Dec 2015	3.455	Dec 2016	-		3.455	Continuing	Continuing	Continuing
Government Engineering Support	MIPR	Various : Bradley ECP Program	27.259	5.426	Dec 2014	6.223	Dec 2015	6.682	Dec 2016	-		6.682	Continuing	Continuing	Continuing
Subtotal			41.760	11.766		9.787		10.137		-		10.137	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 371 / <i>Bradley Improve Prog</i>
--	--	---

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Testing	MIPR	Various : Test Sites	4.572	1.244	May 2015	15.089	May 2016	17.569	Jan 2017	-		17.569	Continuing	Continuing	Continuing
Contractor Testing	SS/CPIF	BAE : Various	2.455	3.350	Apr 2015	3.451	Jan 2016	2.021	Nov 2016	-		2.021	Continuing	Continuing	Continuing
Subtotal			7.027	4.594		18.540		19.590		-		19.590	-	-	-
Project Cost Totals			Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			254.821	73.294		73.775		101.882		-		101.882	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 371 / <i>Bradley Improve Prog</i>
--	--	---

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
Bradley M2A4 Engineering Change Proposal (ECP) 2 Program																												
Component Qualification Testing - ECP2																												
Contractor Vehicle Testing - ECP2																												
Production Qualification Test (PQT) - ECP2																												
(1) Production Contract Award - ECP2																												
(2) 1st Vehicle Delivery - ECP2																												
Operational Test and Evaluation - ECP2																												
(3) First Unit Equipped (FUE) - ECP2																												
Bradley M2A4 Engineering Change Proposal (ECP) 2B Program																												
(4) System Requirements Review - ECP2B																												
(5) Preliminary Design Review - ECP2B																												
(6) Critical Design Review - ECP2B																												
Component Qualification Testing - ECP2B																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 371 / <i>Bradley Improve Prog</i>
--	--	---

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
Contractor Vehicle Testing - ECP2B																												
Production Qualification Test (PQT) - ECP2B																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) 371 / <i>Bradley Improve Prog</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Bradley M2A4 Engineering Change Proposal (ECP) 2 Program	1	2012	4	2019
Component Qualification Testing - ECP2	3	2014	3	2015
Contractor Vehicle Testing - ECP2	3	2015	3	2016
Production Qualification Test (PQT) - ECP2	2	2016	2	2018
Production Contract Award - ECP2	2	2017	2	2017
1st Vehicle Delivery - ECP2	2	2019	2	2019
Operational Test and Evaluation - ECP2	4	2019	1	2020
First Unit Equipped (FUE) - ECP2	3	2020	3	2020
Bradley M2A4 Engineering Change Proposal (ECP) 2B Program	3	2016	3	2025
System Requirements Review - ECP2B	2	2017	2	2017
Preliminary Design Review - ECP2B	4	2017	4	2017
Critical Design Review - ECP2B	4	2019	4	2019
Component Qualification Testing - ECP2B	3	2020	4	2020
Contractor Vehicle Testing - ECP2B	1	2021	4	2021
Production Qualification Test (PQT) - ECP2B	1	2021	2	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>				Project (Number/Name) EE2 / <i>Stryker Improvement</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
EE2: <i>Stryker Improvement</i>	-	125.533	203.289	136.523	-	136.523	80.271	61.671	59.102	38.571	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

PE Number 0203735A/Project EE2 funds the Stryker Engineering Change Proposal (ECP) 1, Stryker Operational Needs Statement Lethality (ONS), Stryker Survivability Enhancements, and Stryker Engineering Change Proposal (ECP) 2 efforts.

A. Mission Description and Budget Item Justification

Funding supports the development of Lethality, Survivability, Mobility, and Communication, Command and Control (C3) improvements within the Stryker Family of Vehicles (FoV). Principal development efforts include upgrades associated with the ECP 1, Operational Needs Statement Lethality (ONS), Stryker Survivability Enhancements and ECP 2 efforts. ECP 1 power generation, suspension, and network upgrades will both restore Stryker Double-V Hull (DVH) Space, Weight, and Power-Cooling (SWaP-C) lost as a result of incorporating vehicle changes to counter threats encountered during deployment operations while allowing the future network to be hosted without further degradation in vehicle protection and mobility. The Stryker ONS Lethality effort will address an Urgent Operational Need to increase the firepower of Stryker Infantry Carrier Vehicles (ICV) within the US Army European Command (USAREUR). The ONS Lethality effort will integrate a 30mm-equipped weapon station that will provide USAREUR with precision direct firepower to overwhelm the enemy in encounter actions and suppressive fire to preserve mounted and dismounted freedom of movement. The Stryker Survivability Enhancement will address evolving threats by assessing survivability improvements to include passive and active protection systems. The ECP 2 effort will focus on the integration of lethality upgrades (i.e. medium caliber weapon and under armor Javelin), obsolescence, optics improvements and network lethality enhancements.

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

	FY 2015	FY 2016	FY 2017
Title: Stryker ECP 1 Development (Engineering/Prototypes)	68.367	65.276	14.913
Description: Funding is provided for the following effort			
FY 2015 Accomplishments: Development engineering for the Stryker ECP 1 upgrades, to include Technical Data Package (TDP) change development and processing, creation of manufacturing Bill of Materials (BOM), procurement of prototype material, and initiation of prototype builds.			
FY 2016 Plans: Continuing ECP 1 development engineering efforts, to include prototype build completion, development and validation of Stryker Operator and Maintenance Manuals, and provisioning of ECP 1 unique parts.			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continuing ECP 1 engineering efforts, to include finalization of In-Vehicle Network (IVN) design, development and validation of revisions to Stryker Operator and Maintenance Manuals, provisioning of ECP 1 unique parts, and incorporating ECP 1 design changes resulting from deficiencies identified during prototype build and developmental testing.				
<p>Title: Stryker ECP 1 Training Device Updates</p> <p>Description: Funding is provided for the following effort</p> <p>FY 2017 Plans: Development of updates to Stryker training devices resulting from ECP 1 engine, alternator, suspension, and network design changes.</p>		-	-	5.980
<p>Title: Stryker ECP 1 Testing</p> <p>Description: Funding is provided for the following effort</p> <p>FY 2015 Accomplishments: Safety, automotive performance, Communication, Command and Control (C3), and environmental testing of prototypes.</p> <p>FY 2016 Plans: Test execution activities for the Stryker ECP 1 upgrade technologies, including tests for safety and human factors, automotive performance, Communications, Command, and Control (C3), environmental, and Live Fire testing. These tests include full-up system level live fire, reliability and maintainability, environmental performance, automotive performance and electronics testing. These events will be conducted at various test sites throughout the US including Aberdeen Proving Ground (APG), Yuma Proving Ground (YPG), Cold Regions Test Center (CRTC), Tropic Regions Test Center (TRTC), Electronic Proving Ground (EPG) and White Sands Missile Range (WSMR).</p> <p>FY 2017 Plans: Continue test execution activities for the Stryker ECP 1 upgrade technologies, including tests for Communications, Command, and Control (C3), reliability and maintainability, electronics and information assurance testing. These events will be conducted at various test sites throughout the US including Aberdeen Proving Ground (APG), Yuma Proving Ground (YPG), Electronic Proving Ground (EPG) and White Sands Missile Range (WSMR).</p>		2.227	24.963	11.048
<p>Title: Stryker ECP 1 Contractor Support to Test</p> <p>Description: Funding is provided for the following effort</p> <p>FY 2015 Accomplishments:</p>		11.563	10.534	3.255

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Contractor technical support (system troubleshooting, maintenance and repair of prototypes during execution of tests) to ECP 1 developmental test. FY 2016 Plans: Continue Contractor technical support (system troubleshooting, maintenance and repair of prototypes during execution of tests) to ECP 1 developmental test. FY 2017 Plans: Continue Contractor technical support (system troubleshooting, maintenance and repair of prototypes during execution of tests) to ECP 1 developmental test.				
Title: Stryker Operational Needs Statement Lethality Development (Engineering/Prototypes) Description: Funding is provided for the following effort FY 2017 Plans: Development engineering of the Stryker Operational Needs Statement Lethality upgrade, to include conduct of system design reviews, Bill of Material (BOM) finalization, assembly and delivery of prototypes, development and validation of the Operator's Manual and provisioning of Operational Needs Statement Lethality unique parts.		-	-	17.967
Title: Stryker Operational Needs Statement Lethality Testing Description: Funding is provided for the following effort FY 2017 Plans: Developmental test execution activities for the Stryker Operational Needs Statement Lethality upgrade, to include safety and performance, full-up system live fire, reliability and maintainability and electronics and information assurance testing.		-	-	18.665
Title: Stryker Operational Needs Statement Lethality Contractor Support to Test Description: Funding is provided for the following effort FY 2017 Plans: Contractor support to Operational Needs Statement Lethality upgrade testing, to include system troubleshooting, maintenance, repair of prototypes during execution of tests, and Failure Analysis and Corrective Action Reporting (FACAR).		-	-	11.547
Title: Survivability Enhancements Description: Funding is provided for the following effort FY 2017 Plans:		-	-	14.400

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Assessment of force protection and survivability improvements, to include passive and active protection systems.			
Title: Stryker Engineering Change Proposal (ECP) 2 Development Description: Funding is provided for the following effort	-	-	19.088
FY 2017 Plans: Developmental engineering of the Engineering Change Proposal (ECP) 2 upgrade to include lethality upgrades (i.e. medium caliber weapon and under armor Javelin), obsolescence, optics improvements and network lethality enhancements.			
Title: Government Engineering and Project Management Description: Funding is provided for the following effort	4.576	5.016	19.660
FY 2015 Accomplishments: Continued Government Systems Engineering and Program Management support (labor, travel, training, supplies, and equipment) to support ECP1 development.			
FY 2016 Plans: Continuing Government Systems Engineering and Program Management support (labor, travel, training, supplies, and equipment) to support ECP1 development.			
FY 2017 Plans: Continuing Government Systems Engineering and Program Management support (labor, travel, training, supplies, and equipment) to support ECP 1, ONS Lethality, Survivability Enhancements, and ECP 2 development efforts. Includes execution of ECP 2 trade study, cost-benefit analysis, and Source Selection Evaluation Board (SSEB).			
Accomplishments/Planned Programs Subtotals	86.733	105.789	136.523

	FY 2015	FY 2016
Congressional Add: Stryker ECP 1 Development (Engineering/Prototypes) Congressional Add	21.755	-
FY 2015 Accomplishments: Build of 3 additional prototypes necessary to accelerate ECP 1 development to support the integration of ECP 1 upgrades into the production of the 4th Double V Hull (DVH) equipped Stryker brigade.		
Congressional Add: Stryker ECP 1 Testing Congressional Add	3.918	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016	
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>	
		FY 2015	FY 2016
FY 2015 Accomplishments: Safety, automotive performance, Communication, Command and Control (C3) and environmental testing of 3 additional prototypes purchased to accelerate ECP 1 development to support the integration of ECP 1 upgrades into the production of the 4th Double V Hull (DVH)-equipped Stryker brigade.			
Congressional Add: Stryker ECP 1 Contractor Support to Test Congressional Add		3.327	-
FY 2015 Accomplishments: Contractor technical support (system troubleshooting, maintenance and repair of prototypes during execution of tests) to support developmental test of 3 additional prototypes purchased to accelerate ECP 1 development to support the integration of ECP 1 upgrades into the production of the 4th Double V Hull (DVH)-equipped Stryker brigade.			
Congressional Add: Stryker Operational Needs Statement Lethality Development (Engineering/Prototypes) Congressional Add		9.217	60.587
FY 2015 Accomplishments: Initiation of the development engineering for the Stryker Operational Needs Statement Lethality upgrade, to include the conduct of sub-system design reviews, selection of the turret and weapon system and purchase of prototype hardware.			
FY 2016 Plans: Development engineering of the Stryker Operational Needs Statement Lethality upgrade, to include conduct of system design reviews, completion of purchase of prototype material, initial preparation of the source vehicles and initiation of Operator Manual development.			
Congressional Add: Stryker Operational Needs Statement Lethality Testing Congressional Add		0.238	14.150
FY 2015 Accomplishments: Developmental test planning activities for the Stryker Operational Needs Statement Lethality upgrade.			
FY 2016 Plans: Developmental test activities for the Stryker Operational Needs Statement Lethality upgrade, to include weapon and ammunition qualification and purchase of associated test consumables for the remainder of test.			
Congressional Add: Stryker Operational Needs Statement Lethality Contractor Support to Test Congressional Add		-	16.370
FY 2016 Plans: Contractor support of the weapon qualification tests and definition and build of the Contractor test support package for the Operational Needs Statement Lethality upgrade.			
Congressional Add: Stryker Operational Needs Statement Lethality Government Engineering and Project Management Congressional Add		0.345	6.393

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>
	FY 2015	FY 2016
FY 2015 Accomplishments: Government Systems Engineering and Program Management support (labor, travel, training, supplies, and equipment) to support Operational Needs Statement Lethality development.		
FY 2016 Plans: Continuing Government Systems Engineering and Program Management support (labor, travel, training, supplies, and equipment) to support Operational Needs Statement Lethality development.		
Congressional Adds Subtotals	38.800	97.500

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>
• Stryker Vehicle: <i>Stryker Vehicle (G85100)</i>	435.110	177.345	71.680	-	71.680	-	-	-	-	150.621	834.756
• Stryker Modification: <i>Stryker Modification (GM0100)</i>	39.683	388.385	74.348	-	74.348	93.924	458.523	549.852	614.553	4,754.240	6,973.508
• Stryker Upgrade: <i>Stryker Upgrade (G85200)</i>	-	412.043	444.561	-	444.561	475.443	84.629	25.065	-	0	1,441.741

Remarks

AAE approval for a 3rd DVH SBCT Bridgade of 337 Exchange Vehicles was given on July 26, 2013 (funded in G85100). Army System Acquisition Review Council (ASARC) production decision planned for 3rd quarter FY2016 will provide approval to begin 4th Brigade Double-V Hull (DVH) Engineering Change Proposal 1 production, which will be funded in Stryker Upgrade (G85200). Stryker MOD (GM0100) is for Stryker Fleet modifications to include Operational Needs Statement Lethality production and fielding in FY16-18 and Engineering Change Proposal 1 retrofits in FY19-21.

D. Acquisition Strategy

The Stryker Engineering Change Proposal (ECP) 1 effort will buy back the vehicle space, weight, and power margin lost due to the addition of numerous kits in response to eleven years of war (20-combat rotations & 37+ million total miles), in order to allow integration of the future network (as directed by VCSA in August 2011) without further degrading the performance of the platform. In May 2012, Stryker ECP 1 program (Phase I) was approved, permitting preliminary design and integration efforts on both the Flat Bottom (FB) and Double-V Hull (DVH) variants. In March 2013, Phase II approved upgrading the mechanical power, electrical power generation, chassis upgrades and the in-vehicle network for the DVH vehicles. Based on additional testing conducted in the summer of 2013, the decision was made to focus ECP efforts on the DVH and defer efforts on flat bottom Strykers. ECP 1 Phase II contract, awarded November 25, 2013, continues development engineering, prototype build test and evaluation. The Production decision (Phase III) will determine the production requirements of the technologies selected in Phase II.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>
<p>On 2 July 2015, ASARC authorization was granted to execute the Stryker Operational Needs Statement Lethality effort. Non-Recurring Engineering (NRE), to include prototype builds and technical support to USG testing will be awarded as a sole-source, Cost Plus Fixed-Fee (CPFF) contract, with the prime contractor executing a source selection for the 30mm weapon station solution. A Firm Fixed Price (FFP) production/retrofit contract is targeted for an award in 3rd quarter FY2016.</p> <p>The ECP 2 effort will focus on the integration of lethality upgrades such as a medium caliber weapon, under armor Javelin, and other capabilities that will improve suppressive fire and armored vehicle engagement capabilities across the Army's Stryker Brigade Combat Teams (SBCTs). In FY17, integration of an under armor Javelin capability will be initiated, along with a Trade Study and Cost-Benefit Analysis focused on medium caliber weapon system, and other lethality improvements (to support a 4th quarter FY2017 Engineering and Manufacturing Development (EMD) decision). A competitive EMD contract is targeted for award in 1st quarter FY2018 with USG developmental test initiated upon successful 4th quarter FY2018 Test Readiness Review. A production Knowledge Point decision is targeted for 3rd quarter FY2020.</p> <p><u>E. Performance Metrics</u> N/A</p>		

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>
--	--	--

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Stryker Operational Needs Statement Engineering and Project Management	MIPR	Sterling Heights, MI : Various	0.000	0.345	Oct 2014	6.393	Jan 2016	6.521	Oct 2016	-		6.521	0	13.259	0
Project Management Office (PMO)	RO	TACOM, MI : Various	0.000	4.576	Oct 2014	5.016	Oct 2015	13.139	Oct 2016	-		13.139	Continuing	Continuing	0
Subtotal			0.000	4.921		11.409		19.660		-		19.660	-	-	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			
Stryker ECP 1 Development	SS/CPFF	GDLS, MI : Various	0.000	90.122	Oct 2014	65.276	Oct 2015	14.913	Oct 2016	-		14.913	Continuing	Continuing	0
Stryker ECP 1 Training Device Updates	MIPR	PEO STRI, FL : Various	0.000	-		-		5.980	Mar 2017	-		5.980	Continuing	Continuing	0
Stryker ONS Lethality Development	SS/CPFF	GDLS, MI : Various	0.000	9.217	Sep 2015	60.587	Jan 2016	17.967	Oct 2016	-		17.967	0	87.771	0
Stryker ECP 2 Development	SS/CPFF	GDLS, MI : Various	0.000	-		-		19.088	Nov 2016	-		19.088	0	19.088	0
Survivability Enhancements	Various	GDLS : Sterling Heights, MI	0.000	-		-		14.400	Oct 2016	-		14.400	0	14.400	0
Subtotal			0.000	99.339		125.863		72.348		-		72.348	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Stryker ECP 1 Testing	Various	Various Test Centers, Multiple : Various	0.000	6.145	Dec 2014	24.963	Dec 2015	11.048	Dec 2016	-		11.048	0	42.156	0
Stryker ECP 1 Contractor Support to Test	SS/CPFF	GDLS, MI : Various	0.000	14.890	Oct 2014	10.534	Feb 2016	3.255	Oct 2016	-		3.255	0	28.679	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>
--	--	--

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Stryker ONS Lethality Test	SS/CPFF	Various : Test Centers	0.000	0.238	Oct 2015	14.150	Feb 2016	18.665	Oct 2016	-		18.665	0	33.053	0
Stryker ONS Lethality Contractor Support to Test	SS/CPFF	GDLS, MI : Various	0.000	-		16.370	Jan 2016	11.547	Oct 2016	-		11.547	0	27.917	0
Subtotal			0.000	21.273		66.017		44.515		-		44.515	0.000	131.805	0.000
Project Cost Totals			0.000	125.533		203.289		136.523		-		136.523	-	-	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>
--	--	--

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
Stryker Engineering Change Proposal (ECP) 1 (Phase II)	ECP 1 Design/Prototype/Logistics Products																											
(1) Stryker ECP 1 Critical Design Review (Phase II)	ECP 1 CDR																											
Stryker ECP 1 Tropic Region Test	ECP 1 Tropic Region Test																											
Stryker ECP 1 Cold Region Test	ECP 1 Cold Region Test																											
Stryker ECP 1 Safety/Performance/RAM Test	ECP 1 Safety/Performance/RAM Test																											
(2) Stryker ECP 1 Production Decision (Phase III)/Award	ECP 1 Production Decision																											
Stryker ECP 1 Production (Phase III)	ECP 1 Production																											
(3) Stryker ECP 1 Follow-on Operational Test & Evaluation.	ECP 1 FOT&E																											
Stryker ONS Lethality Effort	ONS Design/Prototype/Logistics Products																											
(4) Stryker ONS Lethality Preliminary Design Review	ONS PDR																											
(5) Stryker ONS Lethality Critical Design Review	ONS CDR																											
(6) Stryker ONS Lethality Test Readiness Review	ONS TRR																											
Stryker ONS Lethality Safety/Performance/RAM Test//Ammo qualificatio	ONS Safety/Performance/RAM Test																											

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>
--	--	--

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) Stryker ONS Lethality Early User Test & Evaluation																									▲ ONS EUTE															
(2) Stryker ONS Lethality Final Assembly Decision																									▲ ONS Final Assy Decision															
Stryker ONS Lethality Production																									■				■											
Stryker Survivability Enhancements																									■				■											
Stryker ECP 2 Trade Study/Cost-Benefit Analysis (CBA)																									■				■											
Stryker ECP 2 Javelin Integration																									■				■											
(3) Stryker ECP 2 Engineering & Manufacturing Development Decision																									▲ ECP 2 EMD Decision															
(4) Stryker ECP 2 Engineering & Manufacturing Development Decision A																									▲ ECP 2 EMD Contract Award															
Stryker ECP 2 Engineering and Manufacturing Development																									■				■				■				■			
Stryker ECP 2 Prototype Build																																	■				■			
(5) Stryker ECP 2 Lethality Preliminary Design Review													▲ ECP 2 PDR																											
(6) Stryker ECP 2 Critical Design Review																	▲ ECP 2 CDR																							
(7) Stryker ECP 2 Test Readiness Review																					▲ ECP 2 TRR																			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>
--	--	--

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
Stryker ECP 2 Prototype Testing	ECP 2 Prototype Testing																											
(1) Stryker ECP 2 Production Knowledge Point	ECP 2 Production KP																											
(2) Stryker ECP 2 Low Rate Initial Production Contract Award	ECP 2 LRIP Contract Award																											
Stryker ECP 2 Low Rate Initial Production	ECP 2 LRIP																											
Stryker ECP 2 Prototype Qualification Test	ECP 2 P																											
Stryker ECP 2 Technical Manual Verification	ECP 2 TM Verificatio																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Stryker Engineering Change Proposal (ECP) 1 (Phase II)	1	2014	2	2018
Stryker ECP 1 Critical Design Review (Phase II)	1	2015	1	2015
Stryker ECP 1 Tropic Region Test	3	2016	1	2017
Stryker ECP 1 Cold Region Test	1	2016	3	2016
Stryker ECP 1 Safety/Performance/RAM Test	4	2015	2	2018
Stryker ECP 1 Production Decision (Phase III)/Award	3	2016	4	2016
Stryker ECP 1 Production (Phase III)	3	2017	4	2020
Stryker ECP 1 Follow-on Operational Test & Evaluation.	3	2018	3	2018
Stryker ONS Lethality Effort	1	2016	3	2018
Stryker ONS Lethality Preliminary Design Review	2	2016	2	2016
Stryker ONS Lethality Critical Design Review	3	2016	3	2016
Stryker ONS Lethality Test Readiness Review	4	2016	4	2016
Stryker ONS Lethality Safety/Performance/RAM Test//Ammo qualification test	2	2016	4	2017
Stryker ONS Lethality Early User Test & Evaluation	4	2017	4	2017
Stryker ONS Lethality Final Assembly Decision	3	2017	3	2017
Stryker ONS Lethality Production	4	2017	3	2018
Stryker Survivability Enhancements	1	2017	4	2017
Stryker ECP 2 Trade Study/Cost-Benefit Analysis (CBA)	1	2017	4	2017
Stryker ECP 2 Javelin Integration	1	2017	4	2017
Stryker ECP 2 Engineering & Manufacturing Development Decision	4	2017	4	2017
Stryker ECP 2 Engineering & Manufacturing Development Decision Award	1	2018	1	2018
Stryker ECP 2 Engineering and Manufacturing Development	1	2018	3	2020

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	Project (Number/Name) EE2 / <i>Stryker Improvement</i>
--	--	--

Events	Start		End	
	Quarter	Year	Quarter	Year
Stryker ECP 2 Prototype Build	1	2019	4	2019
Stryker ECP 2 Lethality Preliminary Design Review	3	2018	3	2018
Stryker ECP 2 Critical Design Review	1	2019	1	2019
Stryker ECP 2 Test Readiness Review	4	2019	4	2019
Stryker ECP 2 Prototype Testing	3	2019	3	2021
Stryker ECP 2 Production Knowledge Point	3	2020	3	2020
Stryker ECP 2 Low Rate Initial Production Contract Award	3	2019	3	2020
Stryker ECP 2 Low Rate Initial Production	4	2020	3	2022
Stryker ECP 2 Prototype Qualification Test	4	2021	2	2022
Stryker ECP 2 Technical Manual Verification	1	2021	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0203740A / <i>Maneuver Control System</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	43.453	15.408	4.031	-	4.031	6.435	6.222	2.459	2.126	Continuing	Continuing
484: <i>Maneuver Control System</i>	-	43.453	15.408	4.031	-	4.031	6.435	6.222	2.459	2.126	Continuing	Continuing

A. Mission Description and Budget Item Justification

Tactical Mission Command (TMC) is a suite of products and services that provide commanders and their staff executive decision making capability in a collaborative environment. The suite of products currently in development consist of Command Web (CW), Tactical Applications (TacApps), and an Army Voice Communication System (WAVE). TMC satisfies requirements and capabilities identified in the MCS 6.4 Capability Production Document and the Battle Command Sustainment Support System (BCS3) Capability Production Document. The overarching capability includes a user-defined Common Operating Picture (COP) with integrated Command and Control (C2) and Situational Awareness (SA), map-centric collaboration, Army Mission Command Systems (and others) enabling system interoperability, data management, and enterprise services. TMC contributes to Mission Command (MC) Convergence/COE development for commanders and staff to effectively conduct collaborative mission planning and execution across a range of operations and spectrum of conflict. Legacy products supported by this Budget Item include Command Post of the Future (CPOF), Battle Command Common Services (BCCS), Logistics Widgets, and Common Tactical Vision (CTV).

FY 2017 funding will support core TMC missions.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	45.065	15.445	7.179	-	7.179
Current President's Budget	43.453	15.408	4.031	-	4.031
Total Adjustments	-1.612	-0.037	-3.148	-	-3.148
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.612	-0.037			
• Other Adjustments 1	-	-	-3.148	-	-3.148

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203740A / <i>Maneuver Control System</i>				Project (Number/Name) 484 / <i>Maneuver Control System</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
484: <i>Maneuver Control System</i>	-	43.453	15.408	4.031	-	4.031	6.435	6.222	2.459	2.126	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Tactical Mission Command (TMC) is a portfolio of products and services that enable commanders and their staff with collaborative environment, planning tools, and Common Operation Picture (COP) management and other maneuver and logistics functional tools. The overarching capability includes above platform level user-defined COP with integrated Command and Control (C2) and Situational Awareness (SA), map-centric collaboration, Army Mission Command System and other enabling system interoperability, data management and enterprise services. Products include:

Tactical Applications are the implementation of essential warfighting functions (e.g. maneuver, fires, engineering, logistics, common maps) that incorporate a common look and feel to application-based capabilities leveraging common services and infrastructure. Provides real time rich collaboration across echelons that can run on variety of end user devices and are compliant w/COE guidance

Command Web is a set of modular software widgets served up over the web providing engineering functionality. Improved supportability and ease-of-use in robust network environments (v2 timeline, compliant w/COE guidance)

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

	FY 2015	FY 2016	FY 2017
Title: Tactical Applications (TacApps)	26.277	9.481	2.064
Description: Implementation of essential warfighting functions that incorporate a common look and feel to application based capabilities leveraging common services and infrastructure which are COE/CPCE compliant. Provides real time rich collaboration across echelons that can run on both client and tablet			
FY 2015 Accomplishments: Developing detailed requirements, architecture and design in support of COE CPCE contributions			
FY 2016 Plans: COE CPCE compliant solution set encompassing the capabilities of CW, CTV, CPOF, & Logistic Widgets with in a seamless suite. Enhance ease of use and admin simplification			
FY 2017 Plans: COE CPCE compliant solution set encompassing the capabilities of CW, CTV, CPOF, & Logistic Widgets with in a seamless suite. Enhance ease of use and admin simplification			
Title: Tactical Public Key Infrastructure (PKI) development for TacApps	-	-	1.096

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203740A / <i>Maneuver Control System</i>	Project (Number/Name) 484 / <i>Maneuver Control System</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Using PKI certificates the smart client and web client SW will authenticate users and processes. The authentication of processes will be done via the SW and users would not be impacted while operating the system.</p> <p>FY 2017 Plans: Tactical PKI development for TacApps</p>				
<p>Title: Command Web Development</p> <p>Description: Command Web provides modular software widgets served up over the web providing engineering functionality. Improved supportability and ease-of-use in robust network environments (compliant w/COE guidance)</p> <p>FY 2016 Plans: Patches required to meet Net ready Key Performance Parameters (KPPs)</p> <p>FY 2017 Plans: Fixes that may be realized during Operational Test</p>		-	0.441	0.150
<p>Title: Program Management Office</p> <p>Description: Codification of program operational requirements into discrete technical packages for development, testing, deployment, and support over the systems lifecycle.</p> <p>FY 2016 Plans: Codification of program operational requirements into discrete technical packages for development, testing, deployment, and support over the systems lifecycle</p> <p>FY 2017 Plans: Codification of program operational requirements into discrete technical packages for development, testing, deployment, and support over the systems lifecycle</p>		-	2.334	0.400
<p>Title: Test and Evaluation</p> <p>Description: Encompasses formal test (operational assessment/test, joint certification, interoperability, and information assurance) and informal testing such as acceptance testing and risk reduction testing.</p> <p>FY 2016 Plans: Formal test (Joint certification, interoperability, and information assurance) and informal testing such as acceptance testing and risk reduction testing.</p> <p>FY 2017 Plans:</p>		-	3.152	0.321

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203740A / <i>Maneuver Control System</i>	Project (Number/Name) 484 / <i>Maneuver Control System</i>
--	--	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Formal test (Joint certification, interoperability, and information assurance) and informal testing such as acceptance testing and risk reduction testing.			
Title: Mission Command Convergence Description: Mission Command Convergence Development and Integration	8.440	-	-
FY 2015 Accomplishments: Mission Command Convergence - Software Development and Integration for BCS3 and Common Software (CS)			
Title: Battle Command Common Services Development Description: Battle Command Common Services Development	8.736	-	-
FY 2015 Accomplishments: Battle Command Common Services Development			
Accomplishments/Planned Programs Subtotals	43.453	15.408	4.031

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>
• Funding: <i>BA9320 Maneuver Control System (MCS)</i>	103.055	125.657	151.318	-	151.318	152.338	104.749	75.436	9.928	Continuing	Continuing
• SPARES: <i>BS9710 MCS Spares Procurement</i>	0.637	0.626	0.593	-	0.593	4.869	4.873	-	-	Continuing	Continuing

Remarks
Product Manager TMC also executes funding from the Common Software budget line (0604818A 334) and for CPCE specific activities TMC executes the CPCE budget line (0604818A EJ4).

D. Acquisition Strategy
In accordance with the Training and Doctrine Command (TRADOC) requirements document approved in 2008, Maneuver Control System Capabilities Production Document, software capability will be developed in 3-year increments in support of Common Operating Environment (COE) Guidance designed to deploy specified Mission Command Essential Capabilities to operating force commanders and their integrated battle staffs. This strategy accounts for subsequent Army directives and continued migration to the Army COE; designed to optimize opportunities for improved interoperability. The products developed under this funding line are an integral part of the Army Mission Command System of Systems.

UNCLASSIFIED

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

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 7	PE 0203740A / <i>Maneuver Control System</i>	484 / <i>Maneuver Control System</i>

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203740A / Maneuver Control System	Project (Number/Name) 484 / Maneuver Control System
--	---	---

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Office Mgmt	Various	PM Mission Command : Aberdeen Proving Grounds, MD	15.680	2.112	Jan 2015	2.334	Jan 2016	0.400	Jan 2017	-		0.400	Continuing	Continuing	Continuing
Subtotal			15.680	2.112		2.334		0.400		-		0.400	-	-	-

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			
Tactical Applications (TacApps)	IA	Software Development: WSEC : Picatinny Arsenal, NJ	0.000	9.898	Mar 2015	9.481	Mar 2016	2.064	Mar 2017	-		2.064	0	21.443	0
Tactical PKI development for TacApps	IA	Development: WSEC : Picatinny Arsenal, NJ	0.000	-		-		1.096	Jan 2017	-		1.096	0	1.096	0
Command Web Development	Various	CECOM SEC : APG, MD	1.009	-		0.441	Oct 2015	0.150	Oct 2016	-		0.150	0	1.600	0
Log Widget Development	TBD	Development: Government Agency : TBD	2.011	1.654	Apr 2015	-		-		-		-	Continuing	Continuing	0
Misc Contracts	Various	Various : Various	24.931	-		-		-		-		-	Continuing	Continuing	Continuing
ABCS SoS Contract (Joint Convergence Development)	Various	Lockheed Martin : Tinton Falls, NJ	6.404	-		-		-		-		-	Continuing	Continuing	Continuing
Technical Support	Various	PM Mission Command/SEC : Various	27.251	-		-		-		-		-	Continuing	Continuing	Continuing
CPOF Development	Various	General Dynamics : Scottsdale, AZ	137.255	-		-		-		-		-	Continuing	Continuing	Continuing
ABCS SoS Contract (Joint Convergence Development) Follow-on	Various	General Dynamics : Scottsdale, AZ	1.025	-		-		-		-		-	Continuing	Continuing	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203740A / Maneuver Control System	Project (Number/Name) 484 / Maneuver Control System
--	---	---

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			
Mission Command Convergence Development & Integration	Various	Various : Various	42.698	-		-		-		-		-	Continuing	Continuing	Continuing
Mission Command Convergence - CP CE Software Development & Integration (Common Software)	Various	software development Future Skies : APG, MD	3.462	7.593	Jan 2015	-		-		-		-	0	11.055	0
Mission Command Convergence Development & Integration (TAIS)	Various	software development SED : Redstone Arsenal, AL	2.103	-		-		-		-		-	0	2.103	0
Software Development & Technical Support for BCCS	Various	CECOM Software Engineering Center : APG, MD	60.976	7.930	Nov 2014	-		-		-		-	Continuing	Continuing	Continuing
PAL Integration	IA	SRI : AZ	11.000	-		-		-		-		-	Continuing	Continuing	0
Subtotal			320.125	27.075		9.922		3.310		-		3.310	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Misc Engineering Support	Various	PM Mission Command/SEC : Aberdeen Proving Ground, MD	9.190	1.150	Feb 2015	-		-		-		-	Continuing	Continuing	Continuing
Misc Contracts	Various	PM Mission Command : Aberdeen Proving Ground	5.743	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			14.933	1.150		-		-		-		-	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203740A / <i>Maneuver Control System</i>	Project (Number/Name) 484 / <i>Maneuver Control System</i>
--	--	--

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
	COE V2																											
COE v2 Arch, System Engineering, & Dev																												
(1) AWA 16.1					AWA 16.1																							
(2) Command Web Operational Test					Cmd Web OT																							
(3) NIE 16.2					NIE 16.2 (V2 Operational Assessment)																							
(4) AWA 17.1					AWA 7.1																							
(5) NIE 17.2									NIE 17.2																			
COE V3																												
COE v3 Arch, System Engineering, & Dev																												
(6) AWA 18.1									AWA 18.1																			
(7) NIE 18.2					NIE 18.2 (V3) Operational Assessment																							
(8) Tactical Applications Operational Test													Tac Apps OT															
(9) AWA 19.1													AWA 19.1															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203740A / <i>Maneuver Control System</i>	Project (Number/Name) 484 / <i>Maneuver Control System</i>
--	--	--

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) NIE 19.2 COE V4 Development and Test																	▲ NIE 19.2				COE V4 Development and Test							

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203740A / <i>Maneuver Control System</i>	Project (Number/Name) 484 / <i>Maneuver Control System</i>
--	--	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
COE V2	2	2012	2	2017
COE v2 Arch, System Engineering, & Dev	2	2012	2	2016
AWA 16.1	1	2016	1	2016
Command Web Operational Test	2	2016	2	2016
NIE 16.2	3	2016	3	2016
AWA 17.1	1	2017	1	2017
NIE 17.2	3	2017	3	2017
COE V3	4	2014	3	2019
COE v3 Arch, System Engineering, & Dev	4	2014	3	2018
AWA 18.1	1	2018	1	2018
NIE 18.2	3	2018	3	2018
Tactical Applications Operational Test	4	2018	4	2018
AWA 19.1	1	2019	1	2019
NIE 19.2	3	2019	3	2019
COE V4 Development and Test	2	2020	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/Product Improvement Programs
--	---

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	35.793	-	35.793	39.579	18.499	6.863	12.026	Continuing	Continuing
EB6: MQ-1C Gray Eagle MODS	-	0.000	0.000	35.793	-	35.793	39.579	18.499	6.863	12.026	Continuing	Continuing

Note

Fiscal Year

A. Mission Description and Budget Item Justification

Gray Eagle provides Reconnaissance, Surveillance, Target Acquisition (RSTA), Command and Control, Communications Relay, Signals Intelligence (SIGINT), Battle Damage Assessment, and Manned-Unmanned Teaming capability. Gray Eagle is a dedicated, assured, multi-mission Unmanned Aircraft System (UAS) fielded to all Army Divisions, Army Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities.

The MQ-1C Gray Eagle Modification/Product Improvement Program (PIP) funding is required for the implementation of the Alternate Munition Integration integration, Global Positioning System (GPS) Denied, an electronic warfare capability, Universal Ground Control Station (UGCS) improvements, and Ground Based Sense And Avoid (GBSAA) Block II.

The Fiscal Year (FY) 2017 Aircraft Modification/Product Improvement funding of \$35.793 million will support the development required to integrate JAGM, GPS Denied, UGCS Improvements into the MQ-1C Gray Eagle product. GBSAA Research, Development, Test, and Evaluation (RDTE) will provide development, integration and testing of Block 2. Block 2 decreases operational & sustainment costs, operator workload, hardware/software costs, increases system safety, and provides full material release for soldier operation.

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	35.793	-	35.793
Total Adjustments	0.000	0.000	35.793	-	35.793
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	35.793	-	35.793

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs					Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS		
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
EB6: MQ-1C Gray Eagle MODS	-	0.000	0.000	35.793	-	35.793	39.579	18.499	6.863	12.026	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Gray Eagle provides Reconnaissance, Surveillance, Target Acquisition (RSTA), Command and Control, Communications Relay, Signals Intelligence (SIGINT), Battle Damage Assessment, and Manned-Unmanned Teaming capability. Gray Eagle is a dedicated, assured, multi-mission Unmanned Aircraft System (UAS) fielded to all Army Divisions, Army Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities.

The MQ-1C Gray Eagle Modification/Product Improvement Program (PIP) funding is required for the implementation of the Alternate Munition integration, Global Positioning System (GPS) Denied, an electronic warfare capability, Universal Ground Control Station (UGCS) improvements, and Ground Based Sense And Avoid (GBSAA) Block II.

The Fiscal Year (FY) 2017 Aircraft Modification/Product Improvement funding of \$35.793 million will support the development required to integrate Alternate Munition, GPS Denied, UGCS Improvements into the MQ-1C Gray Eagle product. GBSAA Research, Development, Test, and Evaluation (RDTE) will provide development, integration and testing of Block 2. Block 2 decreases operational & sustainment costs, operator workload, hardware/software costs, increases system safety, and provides full material release for soldier operation.

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

	FY 2015	FY 2016	FY 2017
Title: Global Positioning System (GPS) Denied Description: GPS Denied FY 2017 Plans: Funding supports development of an electronic warfare capability and a capability to continue operations during periods of GPS outage as well as the ability to identify GPS jammer position will provide a significant combat multiplier to the Warfighter.	-	-	2.741
Title: Universal Ground Control Station (UGCS) Improvement Description: UGCS Improvement FY 2017 Plans: Development of UGCS Improvement - Funding supports development of Hardware, Software and documentation improvements based on Follow-On Test & Evaluation (FOTE) findings.	-	-	7.825
Title: Alternate Munition Integration	-	-	11.973

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs	Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Description: Alternate Munition Integration			
FY 2017 Plans: Development of Alternate Munition Integration - Funding supports implementation of software changes and documentation/training which provides the ability of Soldiers to operate and maintain the MQ-1C system with Alternate Munition and Hellfire missiles.			
Title: Ground Base Sense and Avoid (GBSAA) Block 2	-	-	12.851
Description: GBSAA Block 2			
FY 2017 Plans: Development and Integration for Block 2 to provide GBSAA display moved to Ground Control Station (GCS). Maneuver Recommendation to Aircraft Operator (AO), and Boundary Awareness/ Keep out zones.			
Title: Ground Base Sense and Avoid (GBSAA) Test Block 2	-	-	0.403
Description: Ground Base Sense and Avoid (GBSAA) Test Block 2			
FY 2017 Plans: Test Block 2. Additional capabilities for functionality and software bug fixes.			
Accomplishments/Planned Programs Subtotals	-	-	35.793

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
• MQ-1 UAV (A00005) - Base APA: MQ-1 UAV / APA A00005 - Base APA	-	-	55.388	-	55.388	10.806	-	-	-	0.000	66.194
• MQ-1 UAV (A00002) - Base APA: MQ-1 UAV (A00002) - Base APA	-	-	-	-	-	92.694	111.806	58.724	27.662	Continuing	Continuing

Remarks

D. Acquisition Strategy
An Extended Range Multi-Purpose (ERMP) Operational Requirement Document (ORD) was approved by the Joint Requirement Oversight Council (JROC) 6 Apr 2005. Milestone B occurred on 20 Apr 2005, and the System Development and Demonstration contract was awarded 8 Aug 2005, as a result of a competitive solicitation which

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs	Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS
--	---	---

included a vendor system capabilities demonstration. A Capabilities Production Document (CPD) was approved 14 Mar 2009. MQ-1C Gray Eagle completed FOTE 12 Jun 2015.

The RDTE funded elements for GPS Denied, UGCS Improvements and Alternate Munition Integration addressed in this submission are planned for award on the Gray Eagle Engineering Services contract as a Sub-Engineering Services Memorandum (SESM) task order, and as Military Interdepartmental Purchase Requisitions (MIPRs) to various other Government Agencies. The purpose of the SESMs is to mature the respective designs to a level that Engineering Change Requests (ECR) are submitted to the Government via the Configuration Control Board (CCB). Following successful completion of the SESM and CCB approval, a contract modification to retrofit and/or cut-in the respective engineering change will be awarded on the appropriate Performance Based Logistics (PBL) or Production contract. The RDTE funded element for GBSAA Block II addressed in this submission are planned for award on various contracts and MIPR actions to other government agencies.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs	Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS
--	---	---

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			
Global Positioning System (GPS) Denied	SS/CPFF	General Atomics/ ASI : San Diego, CA	0.000	-		-		2.577	Jan 2017	-		2.577	0	2.577	0
Universal Ground Control Station (UGCS) Improvements	SS/CPFF	General Atomics/ ASI : San Diego, CA	0.000	-		-		7.356	Jan 2017	-		7.356	0	7.356	0
Alternate Munition Integration	MIPR	Various : Various	0.000	-		-		11.214	Jan 2017	-		11.214	0	11.214	0
Ground Base Sense and Avoid Block 2	SS/CPFF	Various : Various	0.000	-		-		12.080	Oct 2017	-		12.080	0	12.080	0
Subtotal			0.000	-		-		33.227		-		33.227	0.000	33.227	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support - MQ-1	MIPR	Various : Various	0.000	-		-		1.392	Nov 2017	-		1.392	0	1.392	0
Engineering Support - GBSAA	MIPR	Various : Various	0.000	-		-		0.795	Nov 2017	-		0.795	0	0.795	0
Subtotal			0.000	-		-		2.187		-		2.187	0.000	2.187	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Testing and Software Testing Block 2 - GBSAA	MIPR	Various : Various	0.000	-		-		0.379	Apr 2017	-		0.379	0	0.379	0
Subtotal			0.000	-		-		0.379		-		0.379	0.000	0.379	0.000

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016					
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs				Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS					
	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		0.000		35.793		-		35.793	0.000	35.793	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs	Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS
--	---	---

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
Engineering and Manufacturing Development - GBSAA									EMD - GBSAA																			
Engineering and Software Development - MQ-1 Gray Eagle									ESD-GE																			
Engineering and Software Development - GBSAA									EMD - GBSAA																			
Training Development and Software/System Testing - MQ-1 Gray Eagle									DTST-GE																			
Training Development and Software/System Testing- GBSAA									DTST-GBSAA																			
(1) Critical Design Review - GBSAA																	CDR-GBSAA											
Global Positioning System Denied																	GPS											
Universal Ground Control Station Improvements																	UGCS Improvements											
Alternate Munition Integration																	Alternate Munition Integration											
(2) First Unit Equipped - GBSAA																					FUE - GBSAA							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs	Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering and Manufacturing Development - GBSAA	3	2017	4	2018
Engineering and Software Development - MQ-1 Gray Eagle	2	2017	4	2022
Engineering and Software Development - GBSAA	3	2017	4	2018
Training Development and Software/System Testing - MQ-1 Gray Eagle	3	2017	4	2019
Training Development and Software/System Testing- GBSAA	1	2018	1	2019
Critical Design Review - GBSAA	1	2017	1	2017
Global Positioning System Denied	2	2017	4	2021
Universal Ground Control Station Improvements	2	2017	4	2019
Alternate Munition Integration	2	2017	4	2018
First Unit Equipped - GBSAA	4	2019	4	2019

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program							
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	-	0.372	0.364	0.259	-	0.259	0.145	0.148	0.146	0.000	Continuing	Continuing
106: A/C Compon Improv Prog	-	0.372	0.364	0.259	-	0.259	0.145	0.148	0.146	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service-revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Critical Safety Item (CSI) program. Non-program specific Auxiliary Power Unit (APU) as well as Unmanned Aerial Vehicle (UAV) safety and readiness issues are also addressed under this Program Element.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.381	0.364	0.325	-	0.325
Current President's Budget	0.372	0.364	0.259	-	0.259
Total Adjustments	-0.009	0.000	-0.066	-	-0.066
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-0.009	-	-0.066	-	-0.066

Change Summary Explanation

Fiscal Year (FY) 2017 reductions realigned to higher priority Army efforts.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program	Project (Number/Name) 106 / A/C Compon Improv Prog
--	---	--

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
106: A/C Compon Improv Prog	-	0.372	0.364	0.259	-	0.259	0.145	0.148	0.146	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service-revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Critical Safety Item (CSI) program. Non-program specific Auxiliary Power Unit (APU) as well as Unmanned Aerial Vehicle (UAV) safety and readiness issues are also addressed under this Program Element (PE).

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

	FY 2015	FY 2016	FY 2017
<p>Title: T700 Engine</p> <p>Description: T700 funding is used to address flight safety and readiness problems that arise in the field. This includes programs to improving durability and reliability while reducing cost of ownership.</p> <p>FY 2016 Plans: Update engine drawings to add the latest CSI requirements.</p> <p>FY 2017 Plans: Will update engine drawings to add the latest CSI requirements.</p>	-	0.050	0.039
<p>Title: UAV Engine</p> <p>Description: UAV Shadow Engine Investigation at U.S. Army Research Laboratory (ARL) Cleveland: US Army Vehicle Technology Directorate (VTD) at ARL Cleveland. Provide research to support airworthiness, reliability and performance improvements of the UAV shadow engine. Investigate and research the technology challenges (i.e. engine performance, engine durability, engine life, and engine modifications) for reliable engine operation using JP-8 fuel and readily available MIL-spec lubricants.</p> <p>FY 2015 Accomplishments: Continued to research improvements to address service related deficiencies to improve safety and reduce O&S costs.</p> <p>FY 2016 Plans: Continue to research improvements to address service related deficiencies to improve safety and reduce O&S costs.</p> <p>FY 2017 Plans:</p>	0.250	0.216	0.130

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program	Project (Number/Name) 106 / A/C Compon Improv Prog

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Will continue to research improvements to address service related deficiencies to improve safety and reduce O&S costs.			
Title: In-House Support	0.122	0.098	0.090
Description: In-house support for the CIP engineers. Contracting support for CIP contracts.			
FY 2015 Accomplishments: Provided in-house support for the CIP engineers and contracting support for CIP contracts.			
FY 2016 Plans: Provide in-house support for the CIP engineers and contracting support for CIP contracts.			
FY 2017 Plans: Will continue to provide in-house support for the CIP engineers and contracting support for CIP contracts.			
Accomplishments/Planned Programs Subtotals	0.372	0.364	0.259

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

N/A

Remarks

D. Acquisition Strategy

Improved designs will be implemented via Engineering Change Proposal (ECP) and follow-on procurement or modification to a production contract to introduce the improved hardware.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0203752A / Aircraft Engine Component Improvement Program				106 / A/C Compon Improv Prog							
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
In-house Engineering	WR	AMRDEC : Redstone Arsenal, AL	2.583	0.122	Oct 2014	0.098	Oct 2015	0.090	Oct 2016	-		0.090	Continuing	Continuing	Continuing
Subtotal			2.583	0.122		0.098		0.090		-		0.090	-	-	-
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
T700 Engine	SS/IDIQ	GE-Air : Lynn, MA	61.642	-		0.050	Jan 2016	0.039	Jan 2017	-		0.039	Continuing	Continuing	Continuing
T55 Engine	SS/IDIQ	Honeywell : Phoenix, AZ	30.161	-		-		-		-		-	Continuing	Continuing	Continuing
T62 Auxiliary Power Unit (APU)	C/IDIQ	Redstone Technical Center Redstone Arsenal, AL : ATEC	0.050	-		-		-		-		-	0	0.050	0
APU's	SS/IDIQ	Air Force : Kelly AFB, TX	13.647	-		-		-		-		-	Continuing	Continuing	0
UAV Engine	Various	ARL-Vehicle Technology Directorate : TBD	0.357	0.250	Apr 2015	0.216	Apr 2016	0.130	Apr 2017	-		0.130	Continuing	Continuing	0
APU's	SS/IDIQ	Air Force : Hill AFB, UT	2.319	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			108.176	0.250		0.266		0.169		-		0.169	-	-	-
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
T-62T-2B Vibration Test	Various	Redstone Technical Text Center : Redstone Arsenal, AL	0.050	-		-		-		-		-	Continuing	Continuing	0
Subtotal			0.050	-		-		-		-		-	-	-	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program	Project (Number/Name) 106 / A/C Compon Improv Prog
--	---	--

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

Remarks
Not Applicable

	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	110.809	0.372	0.364	0.259	-	0.259	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program	Project (Number/Name) 106 / A/C Compon Improv Prog
--	---	--

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				
UAV Shadow Engine																																
T700 CSI Update																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203752A / Aircraft Engine Component Improvement Program	Project (Number/Name) 106 / A/C Compon Improv Prog

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
UAV Shadow Engine	2	2014	4	2017
T700 CSI Update	1	2017	4	2020

Note

.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0203758A / <i>Digitization</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	5.765	4.361	6.483	-	6.483	6.328	5.516	5.313	5.352	Continuing	Continuing
374: <i>HOR Battlefield Digitizn</i>	-	5.765	4.361	6.483	-	6.483	6.328	5.516	5.313	5.352	Continuing	Continuing

A. Mission Description and Budget Item Justification

Horizontal Battlefield Digitization is a strategy that allows warfighters, from the individual soldier and platform to echelons above corps, to share critical situation awareness (SA) and command and control (C2) information. It conducts analysis and evaluation of new information technologies, concepts, and applications of integrated management activities. Digital information technologies to acquire, exchange, and employ data throughout the operational environment, are used to provide an operational picture for leaders. This timely sharing of information significantly improves the ability to quickly make decisions, synchronize forces and fires, and increase the operational tempo. The major efforts included in the program element are: 1) Integration and synchronization of the Army's interoperability efforts; between joint and multi-national forces, combat material, and training efforts. 2) Systems engineering and integration of hardware and software from a System of Systems (SOS) perspective. 3) Develop Army Equipping Enterprise System (AE2S) integration of the Force Development Investment Information System (FDIIS), Army Flow Model (AFM), and Force Development Knowledge Center (FDKC) programs into a single integrated system.

Digitization efforts are in support of the Army Equipping Strategy, National Defense Authorization Act 804, and OSD reports to Congress.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	5.993	4.361	7.034	-	7.034
Current President's Budget	5.765	4.361	6.483	-	6.483
Total Adjustments	-0.228	0.000	-0.551	-	-0.551
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.228	-			
• Adjustments to Budget Years	-	-	-0.551	-	-0.551

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203758A / Digitization				Project (Number/Name) 374 / HOR Battlefield Digitizn			
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
374: HOR Battlefield Digitizn	-	5.765	4.361	6.483	-	6.483	6.328	5.516	5.313	5.352	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds the Army Equipping Enterprise System (AE2S) continued development and integration of the Force Development Investment Information System (FDIIS), Army Flow Model (AFM), and the Force Development Knowledge Center (FDKC) into an improved, single system. Continued development of the suite of the AE2S applications is necessary to create and improve workflow efficiencies amongst various organizations and data base systems, Active and Reserve Component equipment transparency reporting requirements, and Active and Reserve equipment fielding plans to the Solider according to the Army Force Generation (ARFORGEN). Additionally, this program element funds various Federally Funded Research and Development Center (FFRDC) projects that provide system engineering expertise to provide unbiased advice, formulate course of actions, analyze programs and make technical support and process recommendations to create efficiencies and improve systems. Specifically, these FFRDC projects support Army Mission Command and network architecture (operational and systems) development, technical and policy document review in support of planning and acquisition, network and joint integration and interoperability evaluations and assessments, program and database analysis, independent technical analysis, special studies, and acquisition process improvement. In accordance with the National Defense Authorization Act (NDAA) 804 and support of the Office of the Secretary of Defense's (OSD) report to Congress, the Army is poised to implement an incremental approach to software development and hardware/software capability integration. This process will improve effectiveness in the identification, assessment and acquisition of capability solutions for the Army

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

	FY 2015	FY 2016	FY 2017
<p>Title: Interoperability and Integration</p> <p>Description: Funds are to be used for the following efforts</p> <p>FY 2015 Accomplishments: FFRDC contractor shall conduct independent analyses of Army, joint, and multinational interfaces, adherence to standards, implementation profiles and interoperability baselines</p> <p>FY 2016 Plans: FFRDC contractor shall conduct independent analyses of Army, joint, and multinational interfaces, adherence to standards, implementation profiles and interoperability baselines</p> <p>FY 2017 Plans: FFRDC contractor shall conduct independent analyses of Army, joint, and multinational interfaces, adherence to standards, implementation profiles and interoperability baselines</p>	1.073	0.537	1.054
<p>Title: Operational Capability Analysis and Evaluation</p> <p>Description: Funds are to be used for the following efforts</p>	0.961	0.482	1.114

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203758A / Digitization	Project (Number/Name) 374 / HOR Battlefield Digitizn

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Integrate and synchronize interoperability across Situational Awareness (SA)/Command & Control (C2) programs in support of acquisition synchronization, testing, training, and fielding System of Systems capabilities to the Army Force. Continue application across current and future force.</p> <p><i>FY 2016 Plans:</i> FFRDC contractor shall conduct iterative capability analyses and assessments consistent with CJCSI 3170 (JCIDS) and 6212 (Net Readiness) to ensure Army and joint program technical and operational requirements are consistent. Efforts support army and joint initiatives.</p> <p><i>FY 2017 Plans:</i> FFRDC contractor shall conduct iterative capability analyses and assessments consistent with CJCSI 3170 (JCIDS) and 6212 (Net Readiness) to ensure Army and joint program technical and operational requirements are consistent. Efforts support army and joint initiatives.</p>			
<p><i>Title:</i> Systems Architecture Development</p> <p><i>Description:</i> Funds are to be used for the following efforts</p> <p><i>FY 2015 Accomplishments:</i> FFRDC contractor shall conduct broad concept studies with emphasis on interoperability and joint/coalition operations.</p> <p><i>FY 2016 Plans:</i> FFRDC contractor shall conduct broad concept studies with emphasis on interoperability and joint/coalition operations.</p> <p><i>FY 2017 Plans:</i> FFRDC contractor shall conduct broad concept studies with emphasis on interoperability and joint/coalition operations.</p>	0.875	0.592	0.910
<p><i>Title:</i> AE2S Software</p> <p><i>Description:</i> Procures AE2S software integration and enhancements for the single program language, single platform system that incorporates FDIIS, CEaVa, COP and AFM.</p> <p><i>FY 2015 Accomplishments:</i> Integrate existing code-base for FDIIS, AFM and FDKC to reduce overall cost and maintenance footprint and incorporate the development of new applications to satisfy Long-Range Investment Requirements Analysis (LIRA), Sustainment Program Evaluation Group (SS PEG), and Equipping PEG (EE PEG) Manpower.</p> <p><i>FY 2016 Plans:</i></p>	0.938	0.966	1.958

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203758A / Digitization	Project (Number/Name) 374 / HOR Battlefield Digitizn		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Integrate existing code-base for FDIIS, AFM and FDKC to reduce overall cost and maintenance footprint and incorporate the development of new applications to satisfy Long-Range Investment Requirements Analysis (LIRA), Sustainment Program Evaluation Group (SS PEG), and Equipping PEG (EE PEG) Manpower.</p> <p>FY 2017 Plans: Integrate existing code-base for FDIIS, AFM and FDKC to reduce overall cost and maintenance footprint and incorporate the development of new applications to satisfy Long-Range Investment Requirements Analysis (LIRA), Sustainment Program Evaluation Group (SS PEG), and Equipping PEG (EE PEG) Manpower.</p>				
<p>Title: Technical Reviews and Technical Performance Analysis</p> <p>Description: Funds are to be used for the following efforts</p> <p>FY 2015 Accomplishments: FFRDC contractor shall provide technology maturity assessments and prepare technical recommendations in support of Army Transformation and specific technologies of interest to G8. Test and evaluate network systems and infrastructure modeling and simulations.</p> <p>FY 2016 Plans: FFRDC contractor shall provide technology maturity assessments and prepare technical recommendations in support of Army Transformation and specific technologies of interest to G8. Test and evaluate network systems and infrastructure modeling and simulations.</p> <p>FY 2017 Plans: FFRDC contractor shall provide technology maturity assessments and prepare technical recommendations in support of Army Transformation and specific technologies of interest to G8. Test and evaluate network systems and infrastructure modeling and simulations.</p>		0.826	0.661	0.909
<p>Title: Academic Research</p> <p>Description: Apply university academic and research resources to the integration of Army complex modeling, simulation, and training in support of modernized forces.</p> <p>FY 2015 Accomplishments: Apply university academic and research resources to the integration of Army complex modeling, simulation, and training in support of modernized forces.</p> <p>FY 2016 Plans:</p>		0.522	0.538	0.538

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203758A / Digitization	Project (Number/Name) 374 / HOR Battlefield Digitizn
--	--	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Apply university academic and research resources to the integration of Army complex modeling, simulation, and training in support of modernized forces.</p> <p>FY 2017 Plans: Will apply university academic and research resources to the integration of Army complex modeling, simulation, and training in support of modernized forces.</p>			
<p>Title: Cross-platform development</p> <p>Description: Manage cross-platform software and hardware development, testing, training, and fielding to ensure the coordinated interoperability for each Army Force unit rotation.</p> <p>FY 2015 Accomplishments: Manage cross-platform software and hardware development, testing, training, and fielding to ensure the coordinated interoperability for each Army Force unit rotation.</p> <p>FY 2016 Plans: Manage cross-platform software and hardware development, testing, training, and fielding to ensure the coordinated interoperability for each Army Force unit rotation.</p>	0.570	0.585	-
Accomplishments/Planned Programs Subtotals	5.765	4.361	6.483

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

N/A

Remarks

D. Acquisition Strategy

The AE2S development will be done through either a competitive Cost Plus or Fixed Price Incentive contracts that will deliver capabilities in increments, recognizing up front the need for future improvements. The objective of the strategy is to develop and optimize system capabilities while reducing risk and streamlining business and engineering processes.

FFRDC requirements will be accomplished by competitive contract.

Other efforts will be accomplished by various contract methods and types.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203758A / Digitization	Project (Number/Name) 374 / HOR Battlefld Digitizn
--	--	--

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			
Digitization Technical Integration	Various	Various : Various	4.089	0.875		0.592		-		-		-	0	5.556	0
Joint & Coalition Interoperability	Various	Various : Various	3.604	0.826		0.661		-		-		-	0	5.091	0
Subtotal			7.693	1.701		1.253		-		-		-	0.000	10.647	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			
Army Equipping Enterprise SYstem (AE2S) Software	C/CPFF	TBD : TBD	3.077	0.938		0.966		1.958		-		1.958	Continuing	Continuing	Continuing
Cross-Platform Development	Various	TBD : TBD	2.573	0.570		0.585		-		-		-	0	3.728	0
Subtotal			5.650	1.508		1.551		1.958		-		1.958	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Interoperability and Integration	Various	Various : Various	3.551	1.073		0.537		1.054		-		1.054	0	6.215	0
Operational Capability Analysis and Evaluation	Various	VAR : VAR	4.333	-		-		1.114		-		1.114	0	5.447	0
Academic Research	Various	Various : Various	1.932	0.522		0.538		0.538		-		0.538	0	3.530	0
Operational Capability Analysis and Evaluation	Various	Various : Various	4.165	0.961		0.482		-		-		-	0	5.608	0
Systems Architecture Development	Various	VAR : VAR	4.257	-		-		0.910		-		0.910	0	5.167	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203758A / <i>Digitization</i>	Project (Number/Name) 374 / <i>HOR Battlefield Digitizn</i>
--	---	---

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
	Interoperability and Integration	[Blue bar spanning all quarters from FY 2015 to FY 2021]																										
Operational Capability Analysis and Evaluation	[Blue bar spanning all quarters from FY 2015 to FY 2021]																											
Systems Architecture Development 1.0	[Blue bar]																											
Systems Architecture Development 2.0					[Blue bar]																							
Systems Architecture Development 3.0									[Blue bar]																			
Systems Architecture Development 4.0													[Blue bar]															
Systems Architecture Development 5.0																	[Blue bar]											
Army Equipping Enterprise System (AE2S) Software SW 1.0	[Blue bar]																											
Army Equipping Enterprise System (AE2S) Software SW 2.0					[Blue bar]																							
Army Equipping Enterprise System (AE2S) Software SW 3.0									[Blue bar]																			
Army Equipping Enterprise System (AE2S) Software SW 4.0													[Blue bar]															
Army Equipping Enterprise System (AE2S) Software SW 5.0																	[Blue bar]											
Technical Reviews and Technical Performance Analysis	[Blue bar spanning all quarters from FY 2015 to FY 2021]																											

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203758A / <i>Digitization</i>	Project (Number/Name) 374 / <i>HOR Battlefld Digitizn</i>
--	---	---

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
Academic Research	[Redacted]																											

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203758A / Digitization	Project (Number/Name) 374 / HOR Battlefield Digitizn
--	--	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Interoperability and Integration	1	2016	4	2021
Operational Capability Analysis and Evaluation	1	2016	4	2021
Systems Architecture Development 1.0	2	2015	2	2016
Systems Architecture Development 2.0	3	2016	3	2017
Systems Architecture Development 3.0	4	2017	4	2018
Systems Architecture Development 4.0	1	2019	1	2020
Systems Architecture Development 5.0	2	2020	4	2021
Army Equipping Enterprise System (AE2S) Software SW 1.0	2	2015	2	2016
Army Equipping Enterprise System (AE2S) Software SW 2.0	3	2016	3	2017
Army Equipping Enterprise System (AE2S) Software SW 3.0	4	2017	4	2018
Army Equipping Enterprise System (AE2S) Software SW 4.0	1	2019	1	2020
Army Equipping Enterprise System (AE2S) Software SW 5.0	2	2020	4	2021
Technical Reviews and Technical Performance Analysis	1	2015	4	2021
Academic Research	3	2015	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0203801A / Missile/Air Defense Product Improvement Program
--	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	4.917	3.154	5.122	-	5.122	2.209	1.351	0.828	0.826	Continuing	Continuing
038: Avenger PIP	-	4.917	3.154	5.122	-	5.122	2.209	1.351	0.828	0.826	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Avenger Air Defense System is a lightweight, highly mobile surface-to-air missile and gun weapon system mounted on a High Mobility Multi-purpose Wheeled Vehicle (HMMWV). The system employs a canopied turret consisting of a gunner position, two gyro-stabilized missile launcher pods containing four STINGER missiles each, a Forward Looking Infrared Receiver (FLIR), a Laser Range Finder (LRF), an Identification Friend or Foe (IFF) system, and a very high rate of fire .50 caliber machine gun. The gun system is used against ground targets and to cover the Stinger missile dead-zone. Avenger is capable of day, night and adverse weather operations; can be transported by UH-60L Blackhawk helicopter or C-130 aircraft; is air-droppable and can shoot on the move. The Avenger system is operated by a two-man crew to counter Unmanned Aerial Systems (UASs), cruise missiles, attack helicopters, and high performance fixed wing/rotary wing aircraft. The system can also be operated by remote control from a protected position up to 50 meters away from the fire unit. The system fills the line-of-sight rear component of the Forward Area Air Defense (FAAD) system.

These funds are provided to modify the Avenger to ensure viability and sustainability through the end of the useful life. Avenger is planned to remain in the force through the Fiscal Year (FY) 31. Avenger fills a capability gap which will be permanently filled by the Indirect Fire Protection Capability Increment 2 Intercept (IFPC Inc 2-I) which will be fully fielded in FY31. The Avenger Fire Control Computer (AFCC) will undergo software and hardware upgrades that will enable the system to handle increased targeting capability realized with the latest version of the Forward Area Air Defense (FAAD) early warning system and ensures the system meets the latest Information Assurance (IA) requirements, upgraded analog to digital vehicle internal communication (VIC) system and Mode 5 cooperative target identification functions.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	5.112	3.154	3.945	-	3.945
Current President's Budget	4.917	3.154	5.122	-	5.122
Total Adjustments	-0.195	0.000	1.177	-	1.177
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.195	-			
• Adjustments to Budget Years	-	-	1.177	-	1.177

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>				Project (Number/Name) 038 / <i>Avenger PIP</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
038: <i>Avenger PIP</i>	-	4.917	3.154	5.122	-	5.122	2.209	1.351	0.828	0.826	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Avenger Air Defense System is a lightweight, highly mobile surface-to-air missile and gun weapon system mounted on a High Mobility Multi-purpose Wheeled Vehicle (HMMWV). The system employs a canopied turret consisting of a gunner position, two gyro-stabilized missile launcher pods containing four STINGER missiles each, a Forward Looking Infrared Receiver (FLIR), a Laser Range Finder (LRF), an Identification Friend or Foe (IFF) system, and a very high rate of fire .50 caliber machine gun. The gun system is used against ground targets and to cover the Stinger missile dead-zone. Avenger is capable of day, night and adverse weather operations; can be transported by UH-60L Blackhawk helicopter or C-130 aircraft; is air-droppable and can shoot on the move. The system can also be operated by remote control from a protected position up to 50 meters away from the fire unit.

The Avenger system is operated by a two-man crew to counter Unmanned Aerial Systems (UASs), cruise missiles, attack helicopters, and high performance fixed wing/ rotary wing aircraft. The system fills the line-of-sight rear component of the Forward Area Air Defense (FAAD) system.

These funds are provided for the Avenger PIP to modify and ensure that Avenger is viable and sustainable through the end of program life. Avenger will remain in the force through the Fiscal Year (FY) 31 timeframe according to the Long Range Investments Requirements Analysis. Avenger fills a capability gap which will be permanently filled by the Indirect Fire Protection Capability Increment 2-Intercept (IFPC Inc 2-I) which will be fully fielded in FY31. The Avenger Fire Control Computer (AFCC) will undergo software and hardware upgrades that will enable the system to handle increased targeting capability realized with the latest version of the Forward Area Air Defense (FAAD) early warning system and ensures the system meets the latest Information Assurance (IA) requirements, upgraded analog to digital vehicle internal communication (VIC) system and Mode 5 cooperative target identification functions.

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

	FY 2015	FY 2016	FY 2017
Title: Avenger Modification	4.917	3.154	5.122
Description: This funds the effort to upgrade the Avenger Fire Control Computer (AFCC) software and adds new cooperative friendly identification function.			
FY 2015 Accomplishments: Established allocated and product baselines, and performed engineering design and development activities for platform integration, software upgrades, and capability enhancements. Planned test requirements and conducted limited contractor and government testing. Performed technical assessments, concept studies, cost reduction, risk reduction and development documentation.			
FY 2016 Plans: Continue to perform engineering design and development activities for platform integration, software upgrades, and capability enhancements. Develop and execute test requirements and conduct limited contractor and government testing on developing			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>	Project (Number/Name) 038 / <i>Avenger PIP</i>
--	--	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
modernization parts. Perform technical assessments, concept studies, cost reduction, risk reduction and development documentation.			
FY 2017 Plans: Finish development activities for platform integration, software upgrades, and capability enhancements. Develop and execute test requirements and conduct limited contractor and government testing on developing modernization parts. Perform technical assessments, concept studies, cost reduction, risk reduction and development documentation. Increase testing activities on integration studies to ensure compatibility.			
Accomplishments/Planned Programs Subtotals	4.917	3.154	5.122

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	Cost To Complete	Total Cost
• PE 0605456: <i>PE 0605456A, Proj PA3, PAC-3/MSE Missiles</i>	33.709	2.272	-	-	-	-	-	-	-	0	35.981
• PE 0604319A: <i>PE 0604319A, Proj DU3, IFPC2 (FY12 PE0603305A IFPC II - Intercept)</i>	92.475	155.361	-	-	-	-	-	-	-	0	247.836
• PE 0605457A: <i>PE 0605457A, Proj S40, Army Integrated Air and Missile Defense (AIAMD)</i>	147.250	222.075	252.811	-	252.811	169.070	152.942	32.914	34.447	Continuing	Continuing
• PE 0604820A: <i>PE 0604820A, Proj E10, Sentinel</i>	5.022	12.309	15.983	-	15.983	20.844	20.612	30.106	41.402	Continuing	Continuing
• PE 0604741A: <i>PE 0604741A, Proj 126, 146, 149; Air Defense C2I Eng Dev</i>	15.294	34.569	36.256	-	36.256	20.141	19.658	17.738	11.651	Continuing	Continuing
• PE 0605052: <i>PE 0605052A, Proj EY7, IFPC2 (Realigned from 0604319A, DU3)</i>	-	-	83.995	-	83.995	63.370	43.204	109.323	133.326	Continuing	Continuing

Remarks
This program is an integral part of the Army Air and Missile Defense Modernization strategy.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>	Project (Number/Name) 038 / <i>Avenger PIP</i>

D. Acquisition Strategy

The Avenger Product Improvement Program modifies Avenger and ensures that it is viable and sustainable through the end of its program life. Avenger will remain in the force through the fiscal year (FY) 2031 timeframe according to the Long Range Investments Requirements Analysis (LIRA), filling a capability gap to counter Unmanned Aerial Systems (UASs), cruise missiles, attack helicopters, and high performance fixed wing rotary wing aircraft. This capability will be permanently filled by the Indirect Fire Protection Capability Increment 2 Intercept (IFPC Inc 2-I) which will be fully fielded in FY31. The Avenger Fire Control Computer (AFCC) will undergo software and hardware upgrades that will enable the system to handle increased targeting capability realized with the latest version of the Forward Area Air Defense (FAAD) early warning system and ensures the system meets the latest Information Assurance (IA) requirements, upgraded analog to digital vehicle internal communication (VIC) system, and Mode 5 cooperative target identification functions.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203801A / Missile/Air Defense Product Improvement Program	Project (Number/Name) 038 / Avenger PIP
--	---	---

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			
Avenger Modification	Various	Cruise Missile Defense Systems Project Office : Redstone Arsenal, AL	0.000	0.509		0.254	Mar 2016	0.449	Mar 2017	-		0.449	Continuing	Continuing	0
Subtotal			0.000	0.509		0.254		0.449		-		0.449	-	-	0.000

Remarks
This program supports the Army Integrated Air and Missile Defense (AIAMD) architecture.

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			
Avenger Modification	Various	The Boeing Company and Various Others : Huntsville, AL	0.000	3.038		2.167	Jan 2016	2.558	Jan 2017	-		2.558	Continuing	Continuing	0
Subtotal			0.000	3.038		2.167		2.558		-		2.558	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Avenger Modification Test Support	Various	The Boeing Company, Aviation and Missile Research Development Engineering Center (AMRDEC) : Huntsville, AL; Redstone Arsenal, AL	0.000	1.370		0.733	Feb 2016	2.115	Jan 2017	-		2.115	Continuing	Continuing	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>	Project (Number/Name) 038 / <i>Avenger PIP</i>
--	--	--

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
Targeting Console (TC) Development and Testing	TC Dev/Test																											
Mode 5/Identification Friend or Foe (IFF) Development					Mode5 Dev																							
Voice Internal Communication (VIC) Development					VIC Dev																							
Avenger Fire Control Computer-Revision (AFCC-R) Development					AFCC-R Dev																							
Mode 5/VIC Production Representative Articles (PRA)					PRA																							
Mode 5/IFF & VIC Integration and testing					Mode5/IFF & VIC I&T																							
Mode 5/IFF & VIC Log/Maintenance Demo					Mode5/IFF & VIC3 Demo																							
AFCC-R-IFF-VIC System Level Testing									System Level Testing																			
AFCC-R, Mode 5, VIC/ IETM Conversion M-Demo/Log Demo													System Log Demo															
Future Modification to Address Evolving Threat																					Evolving Threat Mods							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>	Project (Number/Name) 038 / <i>Avenger PIP</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Targeting Console (TC) Development and Testing	2	2015	2	2016
Mode 5/Identification Friend or Foe (IFF) Development	3	2015	3	2016
Voice Internal Communication (VIC) Development	4	2015	2	2016
Avenger Fire Control Computer-Revision (AFCC-R) Development	3	2015	4	2016
Mode 5/VIC Production Representative Articles (PRA)	4	2015	3	2016
Mode 5/IFF & VIC Integration and testing	2	2016	2	2016
Mode 5/IFF & VIC Log/Maintenance Demo	2	2016	2	2016
AFCC/R-IFF-VIC System Level Testing	1	2017	4	2017
AFCC-R, Mode 5, VIC/ IETM Conversion M-Demo/Log Demo	4	2017	1	2019
Future Modification to Address Evolving Threat	1	2019	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0203802A / Other Missile Product Improvement Programs
--	--

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	-	40.468	35.951	7.491	-	7.491	0.000	0.000	0.000	0.000	Continuing	Continuing
DZ9: ATACMS Mods	-	40.468	35.951	7.491	-	7.491	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Army Tactical Missile Systems (ATACMS) is the United States (U.S.) Army's primary 24/7, all-weather, and surface-to-surface artillery precision missile used by current and future Combatant Commanders to shape the battlefield with long-range fires against hard and soft stationary targets in open, complex, and urban environments. This effort will not build any new missiles or add to the overall inventory. Block (Blk) 1 missiles currently have warheads (WHs) that are non-compliant with the 2008 Department of Defense (DoD) policy on cluster munitions (CM). Starting with a Blk 1 missile, this modification effort will integrate, test, and qualify an ATACMS configuration to include a policy compliant WH, obsolescence refresh, and re-grained rocket motors. A characterization effort will also be performed to include qualification and flight testing to assess ATACMS performance with inclusion of a proximity sensor. Additional efforts include launcher updates to enable firing of the new ATACMS configuration.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	38.323	35.951	7.592	-	7.592
Current President's Budget	40.468	35.951	7.491	-	7.491
Total Adjustments	2.145	0.000	-0.101	-	-0.101
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	3.603	-			
• SBIR/STTR Transfer	-1.458	-			
• Adjustments to Budget Years	-	-	-0.101	-	-0.101

Change Summary Explanation

FY2015 funding includes Omnibus reprogramming in the amount of \$3.603 million OCO to Project 045 - Hellfire Product Improvement Program in support of Operational Need Statement (ONS #15-20273) to modify the AGM-114L Longbow Hellfire missile.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203802A / Other Missile Product Improvement Programs	Project (Number/Name) DZ9 / ATACMS Mods
--	--	---

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
DZ9: ATACMS Mods	-	40.468	35.951	7.491	-	7.491	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Army Tactical Missile Systems (ATACMS) is the United States (U.S.) Army's primary 24/7, all-weather, and surface-to-surface artillery precision missile used by current and future Combatant Commanders to shape the battlefield with long-range fires against hard and soft stationary targets in open, complex, and urban environments. This effort will not build any new missiles or add to the overall inventory. Block (Blk) 1 missiles currently have warheads (WHs) that are non-compliant with the 2008 Department of Defense (DoD) policy on cluster munitions (CM). Starting with a Blk 1 missile, this modification effort will integrate, test, and qualify an ATACMS configuration to include a policy compliant WH, obsolescence refresh, and re-grained rocket motors. A characterization effort will also be performed to include qualification and flight testing to assess ATACMS performance with inclusion of a proximity sensor. Additional efforts include launcher updates to enable firing of the new ATACMS configuration.

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

	FY 2015	FY 2016	FY 2017
Title: Conduct Development Engineering, Design Component Testing, and Performance Analysis.	40.468	35.951	7.491
Description: Funding is provided for the following effort			
FY 2015 Accomplishments: Conducted Development Engineering to address obsolescence and proximity sensor integration, Design Component Testing, and Performance Analysis.			
FY 2016 Plans: Completion of component hardware build up and integration into completed missiles. Performance Analysis to include ground and flight testing.			
FY 2017 Plans: Completion of the ground and flight testing			
Accomplishments/Planned Programs Subtotals	40.468	35.951	7.491

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
• ATACMS MODS: ATACMS MODS (CA6700)	-	20.119	150.043	-	150.043	62.668	16.217	-	-	0.000	249.047

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203802A / <i>Other Missile Product Improvement Programs</i>	Project (Number/Name) DZ9 / <i>ATACMS Mods</i>

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

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

Remarks

D. Acquisition Strategy

The ATACMS MOD program will qualify a new configuration needed to support follow-on production in order to maintain critical inventory levels. ATACMS MOD will be integrated and tested under a Cost Plus Fixed Fee (CPFF) contract to Lockheed Martin Missile and Fire Control System (LMMFCS).

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203802A / Other Missile Product Improvement Programs	Project (Number/Name) DZ9 / ATACMS Mods
--	--	---

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			
Government Program Management	TBD	PFRMS Project Office, : RSA	4.380	3.944	Oct 2014	4.203	Oct 2015	1.243	Oct 2016	-		1.243	0	13.770	0
Subtotal			4.380	3.944		4.203		1.243		-		1.243	0.000	13.770	0.000

Remarks
PFRMS-Precision Fires Rocket and Missile Systems; RSA-Redstone Arsenal; TBD-To Be Determined

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			
ATACMS Mods Contracts	SS/CPFF	LMMFCS : (Dallas, TX)	37.757	19.610	Aug 2015	20.645	Jan 2016	4.154	Jan 2017	-		4.154	0	82.166	0
Other Government Agencies	TBD	AMCOM/AMRDEC, : RSA	4.475	1.253	Dec 2014	1.708	Dec 2015	0.093	Dec 2016	-		0.093	0	7.529	0
Subtotal			42.232	20.863		22.353		4.247		-		4.247	0.000	89.695	0.000

Remarks
ATACMS-Army Tactical Missile System; Mods-Modifications; CPFF-Cost Plus Fixed Fee; LMMFCS-Lockheed Martin Missile and Fire Control; TX-Texas; TBD-To Be Determined; AMCOM-Army Materiel Command; AMRDEC-U.S. Army Research, Development and Engineering Command; RSA-Redstone Arsenal, Alabama

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support Contract	C/CPFF	Various : Various	0.839	0.922	Dec 2014	1.223	Dec 2015	0.549	Dec 2016	-		0.549	0	3.533	0
Subtotal			0.839	0.922		1.223		0.549		-		0.549	0.000	3.533	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203802A / Other Missile Product Improvement Programs	Project (Number/Name) DZ9 / ATACMS Mods
--	--	---

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support	TBD	WSMR, NM; : RTC, AL	12.554	14.739	Dec 2014	8.172	Dec 2015	1.452	Dec 2016	-		1.452	0	36.917	0
Subtotal			12.554	14.739		8.172		1.452		-		1.452	0.000	36.917	0.000

Remarks
WSMR, NM-White Sands Missile Range, New Mexico; RTC, AL-Redstone Test Center, Alabama; TBD-To Be Determined

	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	60.005	40.468	35.951	7.491	-	7.491	0.000	143.915	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203802A / Other Missile Product Improvement Programs	Project (Number/Name) DZ9 / ATACMS Mods
--	--	---

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
Development Engineering																												
(1) Integration and Testing Contract Award																												
Conduct Arena Warhead Tests																												
Procure Flight Termination Systems																												
Proximity Sensor Characterization																												
Obsolescence																												
Component Build Up and Performance Analysis																												
Sub Component Hardware Build Up																												
Missiles Integration, Assembly, and Deliveries																												
Ground/Flight Tests																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203802A / <i>Other Missile Product Improvement Programs</i>	Project (Number/Name) DZ9 / <i>ATACMS Mods</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Development Engineering	3	2014	4	2017
Integration and Testing Contract Award	1	2015	1	2015
Conduct Arena Warhead Tests	4	2014	2	2015
Procure Flight Termination Systems	3	2014	2	2016
Proximity Sensor Characterization	4	2014	4	2017
Obsolescence	3	2014	4	2016
Component Build Up and Performance Analysis	1	2015	3	2017
Sub Component Hardware Build Up	1	2015	3	2016
Missiles Integration, Assembly, and Deliveries	3	2016	1	2017
Ground/Flight Tests	3	2016	3	2017

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0203808A / <i>TRACTOR CARD</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	19.347	34.686	20.333	-	20.333	37.659	33.849	21.721	18.857	Continuing	Continuing
DS1: <i>TRACTOR BARN</i>	-	0.000	0.000	0.000	-	0.000	12.000	13.000	0.000	0.000	Continuing	Continuing
DS2: <i>Tractor Puma</i>	-	7.624	18.138	4.335	-	4.335	10.532	5.432	3.000	0.000	Continuing	Continuing
E11: <i>DELL</i>	-	11.723	16.548	15.998	-	15.998	15.127	15.417	18.721	18.857	Continuing	Continuing

A. Mission Description and Budget Item Justification

The details for 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	22.691	34.686	27.586	-	27.586
Current President's Budget	19.347	34.686	20.333	-	20.333
Total Adjustments	-3.344	0.000	-7.253	-	-7.253
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.344	-			
• Adjustments to Budget Years	-	-	-7.253	-	-7.253

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203808A / TRACTOR CARD			Project (Number/Name) DS1 / TRACTOR BARN				
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
DS1: TRACTOR BARN	-	0.000	0.000	0.000	-	0.000	12.000	13.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203808A / TRACTOR CARD				Project (Number/Name) DS2 / Tractor Puma			
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
DS2: Tractor Puma	-	7.624	18.138	4.335	-	4.335	10.532	5.432	3.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203808A / <i>TRACTOR CARD</i>				Project (Number/Name) E11 / <i>DELL</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
E11: <i>DELL</i>	-	11.723	16.548	15.998	-	15.998	15.127	15.417	18.721	18.857	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205402A / <i>Integrated Base Defense - Operational System Dev</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	4.196	10.750	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.946
EF2: <i>Integrated Base Defense</i>	-	4.196	10.750	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.946

Note

No FY 2017 funding request. Beginning in FY 2017 Ground-Based Operational Surveillance System (Expeditionary) (G-BOSS(E)) funding is now under PE0605033A Project EQ3. Beginning in FY 2017 Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) funding is now under PE0605029A Project EQ2.

A. Mission Description and Budget Item Justification

G-BOSS(E): Ground-Based Operational Surveillance System (Expeditionary) (G-BOSS(E)) will replace the interim Persistent Surveillance System-Ground (PSS-G) Increment 1 towers with improved persistent surveillance capabilities and will provide network integration and better mobility utilizing modular configurations. G-BOSS(E) will replace obsolete, quick reaction capability (QRC) surveillance and force protections systems utilizing modular configurations: Light (man-transportable) for extra small base camps or small outpost/company, Medium (mid sensor height) for small to medium size base, and Heavy (high level sensor height) for large contingency base camps. G-BOSS(E) will operate in a stand-alone mode or as part of an integrated network utilizing government owned software, be easily operated and maintained, and be rugged enough to support employment in expeditionary operations worldwide.

IGSSR-C: The Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) is an Automated Information System (AIS) program. IGSSR-C has a requirement to provide a layered approach to integrate sensors, sensor systems and unmanned systems with automated fusion capabilities. The system will provide a Force Protection (FP) Common Operational Picture (COP) capability for CONUS fixed, OCONUS semi-fixed or expeditionary elements in all Operating Environments (OE). This capability will enable rapid decision analysis, speed the response process as well as increase information dissemination horizontally and vertically along the chain of command and with outside supporting organizations. IGSSR-C is a software centric fusion engine that connects legacy and emerging FP systems, legacy Chemical, Biological, Radiological, and Nuclear (CBRN), unmanned systems, biometric identification and forensic data systems. The desired end state is to achieve interoperability and COP with current and emerging FP systems used by Joint Forces, Department of Defense (DoD) agencies and multi-national forces.

Integrated Base Defense (IBD): The purpose of IBD Kitting is to harvest and refurbish physical security and Force Protection (FP) Non-Standard Equipment (NS-E) and package them into integrated and interoperable IBD Capabilities. IBD provides integration of software and analytical capability to support the integration of systems in the field. IBD employs an enterprise approach to enable IBD capabilities across the operational spectrum by leveraging interoperability efforts in support of the Integrated Unit, Base and Installation Protection (IUBIP) framework.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205402A / <i>Integrated Base Defense - Operational System Dev</i>
---	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.362	10.750	11.108	-	11.108
Current President's Budget	4.196	10.750	0.000	-	0.000
Total Adjustments	-0.166	0.000	-11.108	-	-11.108
• Congressional General Reductions	-0.166	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-11.108	-	-11.108

Change Summary Explanation

Decrease in FY 2017 funding is due to a realignment of funds to PE0605033A Project EQ3 for Ground-Based Operational Surveillance System (Expeditionary) (G-BOSS(E)) and PE0605029A Project EQ2 for Integrated Ground Security, Surveillance and Response Capability (IGSSR-C).

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0205402A / <i>Integrated Base Defense - Operational System Dev</i>				Project (Number/Name) EF2 / <i>Integrated Base Defense</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
EF2: <i>Integrated Base Defense</i>	-	4.196	10.750	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.946
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

No FY 2017 funding request. Beginning in FY 2017 Ground-Based Operational Surveillance System (Expeditionary) (G-BOSS(E) funding is now under PE0605033A Project EQ3. Beginning in FY 2017 Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) funding is now under PE0605029A Project EQ2.

A. Mission Description and Budget Item Justification

G-BOSS(E): Ground-Based Operational Surveillance System (Expeditionary) (G-BOSS(E)) will replace the interim Persistent Surveillance System-Ground (PSS-G) Increment 1 towers with improved persistent surveillance capabilities and will provide network integration and better mobility utilizing modular configurations. G-BOSS(E) will replace obsolete, quick reaction capability (QRC) surveillance and force protections systems utilizing modular configurations: Light (man-transportable) for extra small base camps or small outpost/company, Medium (mid sensor height) for small to medium size base, and Heavy (high level sensor height) for large contingency base camps. G-BOSS(E) will operate in a stand-alone mode or as part of an integrated network utilizing government owned software, be easily operated and maintained, and be rugged enough to support employment in expeditionary operations worldwide.

IGSSR-C: The Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) is an Automated Information System (AIS) program. IGSSR-C has a requirement to provide a layered approach to integrate sensors, sensor systems and unmanned systems with automated fusion capabilities. The system will provide a Force Protection (FP) Common Operational Picture (COP) capability for CONUS fixed, OCONUS semi-fixed or expeditionary elements in all Operating Environments (OE). This capability will enable rapid decision analysis, speed the response process as well as increase information dissemination horizontally and vertically along the chain of command and with outside supporting organizations. IGSSR-C is a software centric fusion engine that connects legacy and emerging FP systems, legacy Chemical, Biological, Radiological, and Nuclear (CBRN), unmanned systems, biometric identification and forensic data systems. The desired end state is to achieve interoperability and COP with current and emerging FP systems used by Joint Forces, Department of Defense (DoD) agencies and multi-national forces.

Integrated Base Defense (IBD): The purpose of IBD Kitting is to harvest and refurbish physical security and FP Non-Standard Equipment and package them into integrated and interoperable IBD Capabilities. IBD provides integration of software and analytical capability to support the integration of systems in the field. IBD employs an enterprise approach to enable IBD capabilities across the operational spectrum by leveraging interoperability efforts in support of the Integrated Unit, Base and Installation Protection framework.

No FY 2017 funding request.

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

	FY 2015	FY 2016	FY 2017
Title: IBD Test and Evaluation	0.403	0.749	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205402A / <i>Integrated Base Defense - Operational System Dev</i>	Project (Number/Name) EF2 / <i>Integrated Base Defense</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Test and Evaluation of Integrated Base Defense Software Development Efforts in support if Integrated Base Defense Kitting.</p> <p>FY 2015 Accomplishments: Test and Evaluation of Integrated Base Defense Software Development Efforts in support if Integrated Base Defense Kitting.</p> <p>FY 2016 Plans: Test and Evaluation of Integrated Base Defense Software Development Efforts in support if Integrated Base Defense Kitting.</p>				
<p>Title: IBD Architecture and Software Development</p> <p>Description: Integrated Base Defense Architecture and Software Development</p> <p>FY 2015 Accomplishments: Integrated Base Defense Architecture and Software Development in support of Integrated Base Defense Kitting.</p> <p>FY 2016 Plans: Integrated Base Defense Architecture and Software Development in support of Integrated Base Defense Kitting.</p>		3.395	0.614	-
<p>Title: IBD Engineering and Management Services</p> <p>Description: Engineering and Managment Services in support of Integrated Base Defense Software Development Efforts for Integrated Base Defense Kitting.</p> <p>FY 2015 Accomplishments: Engineering and Managment Services in support of Integrated Base Defense Software Development Efforts for Integrated Base Defense Kitting.</p> <p>FY 2016 Plans: Engineering and Management Services in Support of Integrated Base Defense Software Development and Initial Packaging Efforts for Integrated Base Defense Kitting.</p>		0.398	0.137	-
<p>Title: G-BOSS(E) Design and Build</p> <p>Description: G-BOSS(E) design and builds prototype tower systems.</p> <p>FY 2016 Plans: ompletes initial design and begins development of tower prototypes to support developmental testing activities</p>		-	5.750	-
<p>Title: IGSSR-C Design and Development</p>		-	3.500	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205402A / <i>Integrated Base Defense - Operational System Dev</i>	Project (Number/Name) EF2 / <i>Integrated Base Defense</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Description: IGSSR-C design efforts and integration activities.			
FY 2016 Plans: Completes the initial Design and Development of the IGSSR-C Architecture, Software Framework and Core Capabilities and initiates IGSSR-C integration efforts.			
Accomplishments/Planned Programs Subtotals	4.196	10.750	-

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
• G-BOSS(E) (M90212): <i>G-BOSS(E) (M90212)</i>	-	-	-	-	-	6.276	19.770	20.435	17.188	Continuing	Continuing
• IGSSR-C (M90106): <i>IGSSR-C (M90106)</i>	-	-	-	-	-	1.766	3.566	8.990	7.084	Continuing	Continuing
• GOSS(E) (0605033A): <i>GOSS(E) (0605033A)</i>	-	-	5.032	-	5.032	1.720	1.484	-	-	0	8.236
• IGSSR-C (0605029A): <i>IGSSR-C (0605029A)</i>	-	-	4.980	-	4.980	2.100	1.774	-	-	0	8.854

Remarks

D. Acquisition Strategy

Ground-Based Operational Surveillance System (Expeditionary) (G-BOSS(E)) will replace the interim Persistent Surveillance System – Ground (PSS-G) Increment 1 towers with improved persistent surveillance capabilities along with network integration and better mobility utilizing modular configurations. The G-BOSS(E) Capability Design Document (CDD) was approved May 2014. In FY 2014, the Department of Defense (DoD) Physical Security Enterprise and Analysis Group (PSEAG) provided funds to conduct pre-milestone B activities. G-BOSS(E) received an approved Materiel Development Decision (MDD) from the Milestone Decision Authority (MDA) on 4 December 2015. Pending successful Milestone B decision in FY 2016, the existing United States Marine Corps (USMC) tower's design (Ground Based Operational Surveillance System) (GBOSS) will be leveraged and modified to meet the Army's G-BOSS(E) program requirements. The acquisition strategy for FY 2017 is pending approval from the Milestone Decision Authority (MDA), with plans to leverage the Naval Surface Warfare Center (NSWC) at Crane, Indiana and the Night Vision and Electronic Sensors Directorate (NVESD), Fort Belvoir, Virginia to provide system design, development, and integration support, as well as a Technical Data Package (TDP) to support future procurements. Milestone C is planned for FY 2019 to align G-BOSS(E), IGSSR-C, and Tactical Security System (TSS) in order to gain programmatic efficiencies.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205402A / <i>Integrated Base Defense - Operational System Dev</i>	Project (Number/Name) EF2 / <i>Integrated Base Defense</i>
<p>The Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) provides a layered approach to integrate sensors, sensor systems and unmanned systems. The IGSSR-C Capability Design Document (CDD) was approved September 2013. IGSSR-C is made up of a suite of software that achieves integration, fusion and interoperability in support of the Army Acquisition Executive's Common Operating Environment (COE) Command Post Compute Environment (CPCE) and Sensor CE efforts. In FY 2014, the Department of Defense (DoD) Physical Security Enterprise and Analysis Group (PSEAG) provided funds to conduct pre-milestone B activities. IGSSR-C received an approved Materiel Development Decision (MDD) from the Milestone Decision Authority (MDA) on 4 December 2015. The acquisition strategy for FY 2017 is pending approval from the MDA, with plans to leverage the Night Vision and Electronic Sensors Directorate (NVESD), Fort Belvoir, Virginia to develop, integrate and test the Initial Capability (IC). No production activities are planned for FY 2017. Milestone C is planned for FY 2019 to align Ground-Based Operational Surveillance System (Expeditionary) (G-BOSS(E)), Tactical Security System (TSS) and Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) in order to gain programmatic efficiencies.</p> <p>The IBD acquisition strategy is to leverage existing IBD-related government organizations and to competitively award multiple contracts in support of IBD objectives for the development of holistic IBD architectures and products to support interoperability of fielded and emerging IBD-related systems.</p> <p><u>E. Performance Metrics</u> N/A</p>		

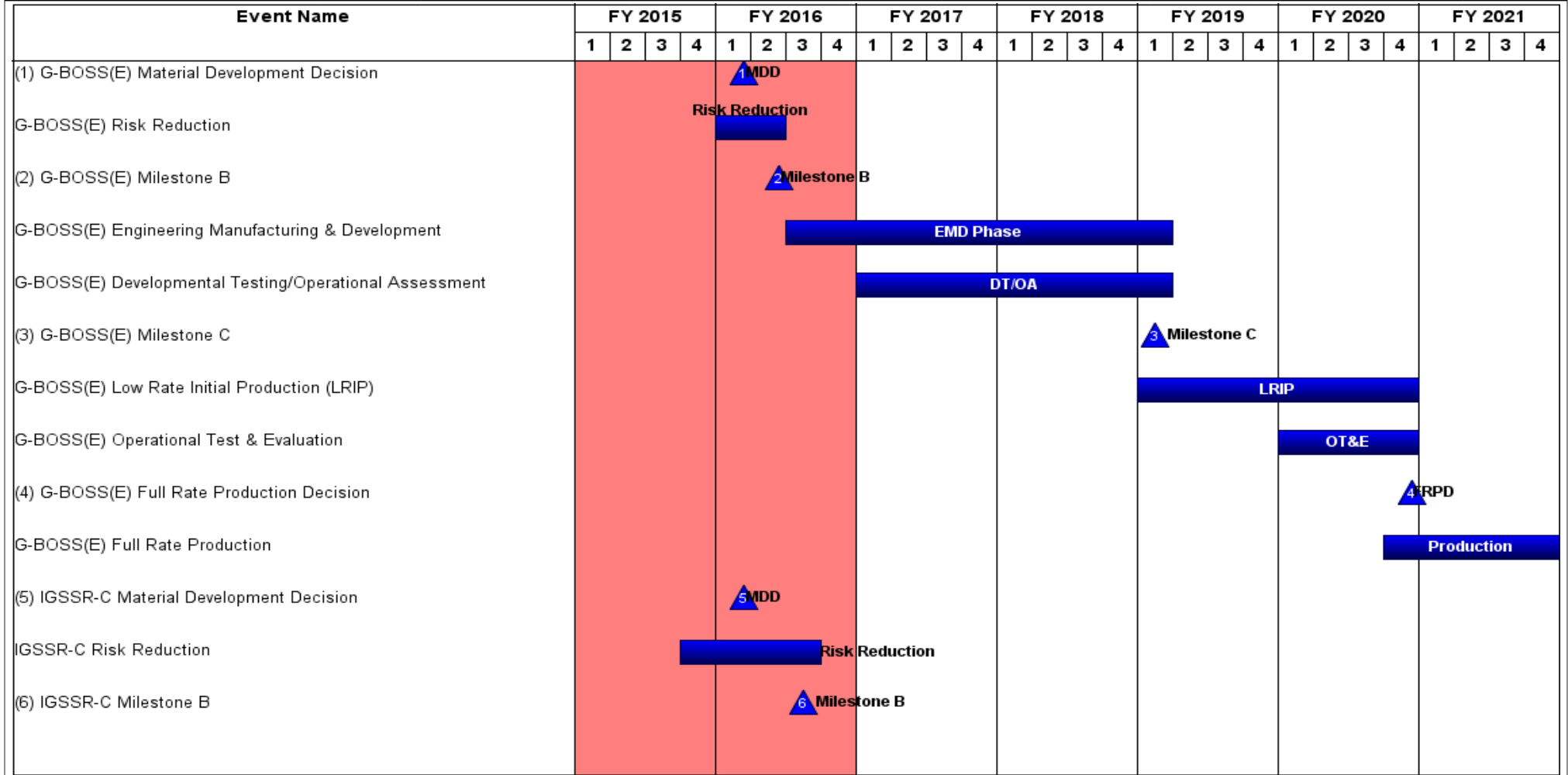
UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0205402A / Integrated Base Defense - Operational System Dev				EF2 / Integrated Base Defense							
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
G-BOSS(E) Project Management	MIPR	PM EOIR : Fort Belvoir, VA	0.000	-		0.288	Jan 2016	-		-		-	Continuing	Continuing	Continuing
IGSSR-C Project Management	MIPR	PM EOIR : Fort Belvoir, VA	0.000	-		0.175	Jan 2016	-		-		-	Continuing	Continuing	Continuing
IBD Engineering and Management Services	Allot	Joint Project Manager Guardian Joint Product Manager Force Protection Services : Fort Belvoir, VA	0.000	0.398	Mar 2015	0.137		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.000	0.398		0.600		-		-		-	-	-	-
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
G-BOSS(E) Design	MIPR	NSWC Crane : Crane, IN	0.000	-		2.228	Mar 2016	-		-		-	Continuing	Continuing	Continuing
G-BOSS(E) Prototypes	MIPR	RDECOM CERDEC : Fort Belvoir, VA	0.000	-		2.733	Mar 2016	-		-		-	Continuing	Continuing	Continuing
IGSSR-C Design	C/CPFF	TBD : TBD	0.000	-		2.777	Mar 2016	-		-		-	Continuing	Continuing	Continuing
IBD Architecture and Software Development	C/CR	AMRDEC : Huntsville, AL	0.000	3.395		0.614		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.000	3.395		8.352		-		-		-	-	-	-
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
G-BOSS(E) Design Support	MIPR	RDECOM CERDEC : Fort Belvoir, VA	0.000	-		0.502	Jan 2016	-		-		-	Continuing	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205402A / <i>Integrated Base Defense - Operational System Dev</i>	Project (Number/Name) EF2 / <i>Integrated Base Defense</i>
--	---	--



UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205402A / <i>Integrated Base Defense - Operational System Dev</i>	Project (Number/Name) EF2 / <i>Integrated Base Defense</i>
--	---	--

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								
IGSSR-C Development/Test/Integration	Dev/Test/Int																																			
(1) IGSSR-C Milestone C																	▲ Milestone C																			
IGSSR-C Limited Deployment (LD)																	Limited Deployment																			
(2) IGSSR-C Full Deployment Decision																									▲ FDD											
IGSSR-C Full Deployment																									Full Deployment											
IBD CONOPS & Architecture																	CONOPS																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205402A / <i>Integrated Base Defense - Operational System Dev</i>	Project (Number/Name) EF2 / <i>Integrated Base Defense</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
G-BOSS(E) Material Development Decision	1	2016	1	2016
G-BOSS(E) Risk Reduction	1	2016	2	2016
G-BOSS(E) Milestone B	2	2016	2	2016
G-BOSS(E) Engineering Manufacturing & Development	3	2016	1	2019
G-BOSS(E) Developmental Testing/Operational Assessment	1	2017	1	2019
G-BOSS(E) Milestone C	1	2019	1	2019
G-BOSS(E) Low Rate Initial Production (LRIP)	1	2019	4	2020
G-BOSS(E) Operational Test & Evaluation	1	2020	4	2020
G-BOSS(E) Full Rate Production Decision	4	2020	4	2020
G-BOSS(E) Full Rate Production	4	2020	4	2022
IGSSR-C Material Development Decision	1	2016	1	2016
IGSSR-C Risk Reduction	4	2015	3	2016
IGSSR-C Milestone B	3	2016	3	2016
IGSSR-C Development/Test/Integration	3	2016	1	2019
IGSSR-C Milestone C	1	2019	1	2019
IGSSR-C Limited Deployment (LD)	1	2019	4	2020
IGSSR-C Full Deployment Decision	1	2021	1	2021
IGSSR-C Full Deployment	1	2021	4	2022
IBD CONOPS & Architecture	2	2016	1	2017

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0205410A / Materials Handling Equipment
--	--

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	-	0.802	0.402	0.124	-	0.124	1.405	1.314	0.586	0.604	0.000	5.237
EE9: Material Handling Equipment - Advance Development	-	0.802	0.402	0.124	-	0.124	1.405	1.314	0.586	0.604	0.000	5.237

Note

The FY 2017 funding request was reduced by \$0.180 million to account for the availability of prior year execution balances.0

A. Mission Description and Budget Item Justification

This program element supports component development and Material Handling Equipment (MHE) prototyping and stays abreast of emerging and available technologies to be integrated into military MHE to address identified capability gaps and warfighter objectives. This project enables the development of selected technologies and transition to system integration and development or production of MHE products. MHE includes Rough Terrain Forklifts, Rough Terrain Container Handlers (RTCH) and Cranes, as well as ancillary MHE equipment, to support distribution of critical supplies in the theater of operations.

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	0.834	0.402	0.304	-	0.304
Current President's Budget	0.802	0.402	0.124	-	0.124
Total Adjustments	-0.032	0.000	-0.180	-	-0.180
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.032	-			
• Other Adjustments 1	-	-	-0.180	-	-0.180

Change Summary Explanation

Funding realigned from 603804A Project G14

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0205410A / <i>Materials Handling Equipment</i>				Project (Number/Name) EE9 / <i>Material Handling Equipment - Advance Development</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
EE9: <i>Material Handling Equipment - Advance Development</i>	-	0.802	0.402	0.124	-	0.124	1.405	1.314	0.586	0.604	0.000	5.237
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The FY 2017 funding request was reduced by \$0.180 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

This project supports component development and Material Handling Equipment (MHE) prototyping and stays abreast of emerging and available technologies to be integrated into military MHE to address identified capability gaps and warfighter objectives. This project enables the development of selected technologies and transition to system integration and development or production of MHE products. MHE includes Rough Terrain Forklifts, Rough Terrain Container Handlers (RTCH) and Cranes, as well as ancillary MHE equipment, to support distribution of critical supplies in the theater of operations.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Baseline Fuel Efficiency of Material Handling Equipment (MHE)	-	0.060	-	-	-
Description: Develop standard duty cycles for fielded system, investigate training/technology for improving efficiency and validate performance of proposed changes.					
FY 2016 Plans: Continue baseline and evaluate new solutions for fluid and controls.					
Title: Upgrade RTCH control systems and on-board diagnostics	0.293	-	-	-	-
Description: Perform analysis of current control systems and technology which can be used to improve performance and reliability. Investigate integration of on-board diagnostics to aid in operation and maintenance.					
FY 2015 Accomplishments: Investigate current RTCH control systems and conduct Market Research					
Title: Investigate Robotic Assist on Material Handling Equipment (MHE)	0.121	-	-	-	-
Description: Research and demonstrate technologies which would enhance operation such as the inclusion of cameras, collision sensors and lifting aids.					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205410A / <i>Materials Handling Equipment</i>	Project (Number/Name) EE9 / <i>Material Handling Equipment - Advance Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<i>FY 2015 Accomplishments:</i> Conduct research into appliqué which will enhance operation					
<i>Title:</i> Operational Energy Technologies <i>Description:</i> Evaluate emerging technologies that can improve machine productivity and efficiency. Baseline fuel efficiency, engine management, efficient lubricants and hydraulic technologies.	0.143	0.240	-	-	-
<i>FY 2015 Accomplishments:</i> Investigate commercially available technology which can be integrated onto the RTCH to enhance the operational capability of the operator. These improvements should allow the operator to complete normal operations in a more expedient manner and/or reduce the number of personnel to complete the mission.					
<i>FY 2016 Plans:</i> Instrument up to three vehicle types (Light Capacity Rough Terrain Forklift, Rough Terrain Container Handler and All Terrain Lifting Army System) and monitor fuel consumption during operations. Build duty cycle profiles for the classes of equipment and identify areas of inefficiency and language to include in future procurements.					
<i>Title:</i> Machine Diagnostic <i>Description:</i> Evaluate machine diagnostic and condition based maintenance technologies to enhance operational availability and reduce overall maintenance burden.	-	0.102	-	-	-
<i>FY 2016 Plans:</i> Investigate the commercially available technology for integration on the RTCH which would allow onboard diagnostic and fault production capability.					
<i>Title:</i> System Engineering/Program Management <i>Description:</i> Funding provided for Material Handling Equipment System Engineering and Program Management	0.075	-	0.124	-	0.124
<i>FY 2015 Accomplishments:</i> Funding provided for Material Handling Equipment System Engineering and Program Management					
<i>FY 2017 Base Plans:</i> Funding provided for Material Handling Equipment System Engineering and Program Management					
<i>Title:</i> Material Handling Equipment (MHE) System Improvement	0.170	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205410A / <i>Materials Handling Equipment</i>	Project (Number/Name) EE9 / <i>Material Handling Equipment - Advance Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Investigate lightweight Armor for MHE equipment					
FY 2015 Accomplishments: Investigate lightweight Armor for ATLAS II					
Accomplishments/Planned Programs Subtotals	0.802	0.402	0.124	-	0.124

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 5K Light Capacity Rough Terrain: <i>5K Light Capacity Rough Terrain (LCRT) Forklift G41002</i>	14.392	27.982	2.307	0.846	3.153	17.999	18.391	17.759	20.240	Continuing	Continuing
• All Terrain Cranes R06701: <i>All Terrain Cranes R06701</i>	-	-	65.285	-	65.285	8.935	17.632	31.477	38.163	Continuing	Continuing

Remarks

D. Acquisition Strategy

Procure prototype component items for engineering tests and demonstrations with subject matter experts. Conduct trades between cost and improved maintainability and environmental risk reduction. Process engineering change proposals, update technical manuals and training materials, and prepare supporting acquisition documents and data to procure new training aids.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0205410A / Materials Handling Equipment				EE9 / Material Handling Equipment - Advance Development							
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
Upgrade RTCH control systems and on-board diagnostics	MIPR	Various : Various	0.000	0.293	Jul 2015	-		-		-		-	0	0.293	0
Robotic Assist on Material Handling Equipment	TBD	TBD : TBD	0.000	0.121	May 2016	-		-		-		-	0	0.121	0
Operational Energy Technologies	MIPR	Various : Various	0.000	0.143	Jan 2016	0.240	Jan 2017	-		-		-	0	0.383	0
Machine Diagnostic	Various	Various : Various	0.000	-		0.102	May 2016	-		-		-	0	0.102	0
Subtotal			0.000	0.557		0.342		-		-		-	0.000	0.899	0.000
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering/ Program Management	MIPR	TARDEC : Warren, MI	0.000	0.075	Dec 2014	-		0.124	Dec 2016	-		0.124	0	0.199	0
Subtotal			0.000	0.075		-		0.124		-		0.124	0.000	0.199	0.000
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Lightweight Armor for ATLAS II	Various	Various : Various	0.000	0.170	Sep 2015	-		-		-		-	0	0.170	0
Baseline Fuel Efficiency of Material Handling Equipment (MHE)	Various	Various : Various	0.000	-		0.060	Jul 2016	-		-		-	0	0.060	0
Subtotal			0.000	0.170		0.060		-		-		-	0.000	0.230	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205410A / <i>Materials Handling Equipment</i>	Project (Number/Name) EE9 / <i>Material Handling Equipment - Advance Development</i>
--	---	--

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
Baseline fuel efficiency of equipment																												
Investigate robotic assist on Material Handling Equipment																												
Operational Energy Technologies																												
Machine Diagnostic																												
Driver Assist																												
System Engineering/Program Management																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205410A / <i>Materials Handling Equipment</i>	Project (Number/Name) EE9 / <i>Material Handling Equipment - Advance Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Baseline fuel efficiency of equipment	1	2015	4	2016
Investigate robotic assist on Material Handling Equipment	3	2015	3	2019
Operational Energy Technologies	2	2016	2	2018
Machine Diagnostic	4	2016	2	2017
Driver Assist	2	2018	4	2021
System Engineering/Program Management	1	2015	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205412A / <i>Environmental Quality Technology - Operational System Dev</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.270	0.000	0.000	-	0.000	0.000	0.308	0.000	0.000	0.000	0.578
EE6: <i>Environmental Information Tech Modernization</i>	-	0.270	0.000	0.000	-	0.000	0.000	0.308	0.000	0.000	0.000	0.578

A. Mission Description and Budget Item Justification

This project funds the modernization of the Environmental Information Technology Management (EITM) program which includes support for Knowledge Based Corporate Reporting system (KBCRS) and Defense Environmental Network Information Exchange (DENIX).

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.280	0.000	0.000	-	0.000
Current President's Budget	0.270	0.000	0.000	-	0.000
Total Adjustments	-0.010	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-0.010	-		-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0205412A / <i>Environmental Quality Technology - Operational System Dev</i>				Project (Number/Name) EE6 / <i>Environmental Information Tech Modernization</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
EE6: <i>Environmental Information Tech Modernization</i>	-	0.270	0.000	0.000	-	0.000	0.000	0.308	0.000	0.000	0.000	0.578
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Environmental Information Technology Management (EITM) program includes support for Knowledge Based Corporate Reporting system (KBCRS) and Defense Environmental Network Information Exchange (DENIX). This request for research, development, test and evaluation (RDTE) is to enhance DENIX and KBCRS systems to a net-centric all services transactional system of record and reporting tool set. This also includes upgrades to incorporate new security and other information technology requirements.

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

	FY 2015	FY 2016	FY 2017
Title: Environmental Information Tech Modernization	0.270	-	-
Description: Conducts system enhancements as required to meet data management requirements for the Knowledge Based Corporate Reporting System and the Defense Environmental Network Information Exchange.			
FY 2015 Accomplishments: Provide system upgrades to support users with reporting requirements, for example the Annual Report to Congress and Chemical Management Enterprise Information Integration.			
Accomplishments/Planned Programs Subtotals	0.270	-	-

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
• 0603779A: <i>Environmental Restoration Tech Validation (04E)</i>	-	-	-	-	-	0.308	-	-	-	0.000	0.308

Remarks

D. Acquisition Strategy

The Environmental Information Technology Management (EITM) Program is an Office of the Secretary of Defense sponsored program that was assigned to the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health as the Department of Defense (DoD) Executive Agent by the Under Secretary of Defense for Acquisition, Technology and Logistics in 2001. The DoD Directive 4715.1E defined EITM mission is to ensure efficient use of enterprise environment, safety and occupational health (ESOH) corporate information management processes by providing and sustaining requirement-driven ESOH corporate data management,

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205412A / <i>Environmental Quality Technology - Operational System Dev</i>	Project (Number/Name) EE6 / <i>Environmental Information Tech Modernization</i>
<p>Congressional-reporting and public outreach tools to the DoD, and other DoD stakeholders. Funding provided for this program will allow EITM to develop a Deputy Under Secretary of Defense for Installations and Environment directed Chemical Management Enterprise Information Integration capability that will allow Army net-centric hazardous material and ESOH 2.0 NetCentric data management capabilities per the Secretary of the Army Directive 2009-03 "Army Data Management" and DoD Directive 8320.2 "Data Sharing in a Net-Centric Department of Defense." Prior to funding being committed, Army and DoD environmental information technology stakeholders meet to determine which high priority EITM interface requirements need upgrades to incorporate new security and other information technology requirements.</p> <p><u>E. Performance Metrics</u> N/A</p>		

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205412A / <i>Environmental Quality Technology - Operational System Dev</i>	Project (Number/Name) EE6 / <i>Environmental Information Tech Modernization</i>
--	--	---

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
System enhancements for KBCRS and DENIX systems (FY 2015)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205412A / <i>Environmental Quality Technology - Operational System Dev</i>	Project (Number/Name) EE6 / <i>Environmental Information Tech Modernization</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System enhancements for KBCRS and DENIX systems (FY 2015)	4	2015	4	2016

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205456A / <i>Lower Tier Air and Missile Defense (AMD) System</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	78.720	64.159	69.417	-	69.417	79.562	80.962	96.042	113.641	Continuing	Continuing
EF9: <i>System Integration and Test</i>	-	78.720	64.159	69.417	-	69.417	79.562	80.962	96.042	113.641	Continuing	Continuing

Note

Funds in this program were a realignment of funds from PE 0605456A PA3.

A. Mission Description and Budget Item Justification

The PATRIOT system includes a family of hardware, software, interceptors (GEM, PAC-2, PAC-3/MSE) and Ground Support Equipment. As software and hardware improvements are developed, there is a continuing need for system level modeling, simulation, integration and testing. Modeling and Simulation allow for performance assessment against all threats that would not be possible in flight tests due to cost, target and range constraints. Flight testing is periodically required for validation of the Modeling and Simulation as well as satisfying Army Test and Evaluation Command/Director, Operational Test and Evaluation (ATEC/DOTE) requirements of segment improvements.

PATRIOT is an integral part of the overall Air and Missile Defense (AMD) Architecture and enables the incremental fielding of the system capability for Army Air and Missile Defense Battalions.

FY2017 base dollars in the amount of \$69.417 million continues program development with the integration of missile and ground system software and hardware to complete Post Deployment Build-8 (PDB-8) and continue with PDB-8.05 activities. Continues the testing program to support the Test and Evaluation Master Plan (TEMP) and system testing/analysis for PDB-8/8.05 Development Test and Evaluation (DTE) and Initial Operational Test & Evaluation (IOT&E).

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	78.720	64.159	60.214	-	60.214
Current President's Budget	78.720	64.159	69.417	-	69.417
Total Adjustments	0.000	0.000	9.203	-	9.203
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	9.203	-	9.203

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205456A / <i>Lower Tier Air and Missile Defense (AMD) System</i>
---	--

Change Summary Explanation

Adjustment to Budget Years was to fully fund PDB-8 testing, which supports a Full Rate Production decision.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0205456A / Lower Tier Air and Missile Defense (AMD) System				Project (Number/Name) EF9 / System Integration and Test			
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
EF9: System Integration and Test	-	78.720	64.159	69.417	-	69.417	79.562	80.962	96.042	113.641	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Continues efforts funded in PAC-3/MSE Missile 0605456A prior to FY15..

A. Mission Description and Budget Item Justification

The PATRIOT system includes a family of hardware, software, interceptors (GEM, PAC-2,PAC-3/MSE) and Ground Support Equipment. As software and hardware improvements are developed, there is a continuing need for system level modeling, simulation, integration and testing. Modeling and Simulation allows for performance assessment against all threats that would not be possible in flight tests due to cost, target and range constraints. Flight testing is periodically required for validation of Modeling and Simulation as well as satisfying ATEC/DOTE requirements of segment improvements.

PATRIOT is an integral part of the overall Air and Missile Defense (AMD) Architecture and enables the incremental fielding of the system capability for Army Air and Missile Defense Battalions.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Program Development, Integration, and Support	13.158	25.428	31.794	-	31.794
Description: Funding is provided for the following effort:					
FY 2015 Accomplishments:					
-Program development.					
-Integration of missile and ground system hardware and software in support of Post Deployment Build-8 (PDB-8).					
FY 2016 Plans:					
-Continuing program development.					
-Continuing integration of missile and ground system hardware and software in support of PDB-8 activities.					
-Begins PDB-8.05 program development activities.					
FY 2017 Base Plans:					
-Continues program development which includes PATRIOT program modeling and simulation (M&S) laboratory infrastructure maintenance as well as the conduct of M&S for hardware/software capability improvements.					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205456A / Lower Tier Air and Missile Defense (AMD) System	Project (Number/Name) EF9 / System Integration and Test

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Continues integration of missile and ground system hardware and software to complete PDB-8 activities. -Continues with PDB-8.0.5 activities which include Advanced Electronic Protection (EP) improvements and Mission Tailoring Threat Data Base maintenance.					
Title: Testing, Targets, Modeling and Simulation Description: Funding is provided for the following effort: FY 2015 Accomplishments: -Continued testing program to include utilization of targets/threat simulators and modeling efforts. -Continued test activities to support the Test and Evaluation Master Plan (TEMP). -Completed system testing/analysis for Post Production Build-8 (PDB-8) Development Test & Evaluation (DTE). FY 2016 Plans: -Continues testing program to include utilization of targets/threat simulators and modeling efforts. -Continues test activities to support the TEMP. -Continues system testing/analysis for PDB-8 DTE and Initial Operational Test & Evaluation (IOT&E). FY 2017 Base Plans: -Continues the testing program to include utilization of targets/threat simulators, flight simulator and modeling efforts. -Continues test activities to support the TEMP. -Continues system testing/analysis for PDB-8/8.05 DTE and IOT&E.	65.562	38.731	37.623	-	37.623
Accomplishments/Planned Programs Subtotals	78.720	64.159	69.417	-	69.417

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
• PE 0605456A, Project	33.709	2.272	-	-	-	-	-	-	-	0.000	35.981
PA3: PE 0605456A, Project											
PA3 PAC-3/MSE Missile											
• SSN C53101: SSN C53101 MSE Missile	532.605	514.946	423.201	-	423.201	459.040	497.009	529.839	520.513	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205456A / Lower Tier Air and Missile Defense (AMD) System	Project (Number/Name) EF9 / System Integration and Test
--	---	---

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>
• SSN C50016: SSN C50016, Lower-Tier Air and Missile Defense (AMD)	110.300	115.075	126.470	-	126.470	112.888	122.768	150.444	120.542	Continuing	Continuing
• PE 0604319A, Project DU3, IFPC2: PE 0604319A, Project DU3, IFPC2 (FY12 PE 0603305A IFPC II - Intercept)	92.475	155.361	-	-	-	40.003	80.004	120.004	120.006	Continuing	Continuing
• SSN C62002: SSN C62002, IFPC Inc 2-I Block 1 System	-	-	19.319	-	19.319	47.289	138.547	174.760	287.325	Continuing	Continuing
• SSN C62001: SSN C62001, IFPC Inc 2-I Block 1 Missile	-	-	-	-	-	73.552	123.106	186.840	146.300	Continuing	Continuing
• PE0604820A, Project E10: PE0604820A, Project E10 SENTINEL	5.022	12.309	15.983	-	15.983	20.844	20.612	30.106	41.402	Continuing	Continuing
• PE 0605457A, Project S40: PE 0605457A, Project S40, Army Integrated Air and Missile Defense (AIAMD)	147.250	222.075	252.811	-	252.811	169.070	152.942	32.914	34.447	Continuing	Continuing
• SSN BZ5075: SSN BZ5075, IAMD Battle Command System (IBCS)	-	20.917	204.969	-	204.969	287.220	372.916	440.567	439.780	Continuing	Continuing
• PE0604741A, Project 126, 146, 149: PE0604741A, Project 126, 146, 149; Air Defense C21 Eng Dev	15.898	24.569	15.965	-	15.965	16.106	16.288	14.466	8.500	Continuing	Continuing
• SSN AD50700: SSN AD50700 Air & Missile Defense Planning & Control Sys	27.374	28.176	54.376	69.958	124.334	17.005	17.960	6.366	6.951	Continuing	Continuing
• PE 0202429A: PE 0202429A Proj EP8, JLENS COCOM EXERCISE	43.248	10.565	45.482	-	45.482	6.746	-	-	-	0	106.041

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

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205456A / Lower Tier Air and Missile Defense (AMD) System	Project (Number/Name) EF9 / System Integration and Test

D. Acquisition Strategy

The design objective of the PATRIOT system is to provide an element of an integrated Air and Missile Defense system capable of being modified to cope with the evolving threat. This strategy minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems. PAC-3 system development efforts further improve system capabilities against emerging and reactive threats. The PAC-3 Missile Program focuses on developing, fabricating and testing the high velocity, hit to kill, surface to air missile and associated ground support equipment to provide essential increases in battle space, accuracy, lethality and firepower to counter and destroy evolving air defense threats. The missile performance is demonstrated through a series of flight tests and modeling and simulation activities. The PAC-3 MSE program evolves the PAC-3 system providing extended ranges, insensitive munitions enhancements, and greater logistical flexibility. The PAC-3 MSE will be fielded to U.S. PATRIOT units.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205456A / Lower Tier Air and Missile Defense (AMD) System	Project (Number/Name) EF9 / System Integration and Test
--	---	---

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			
Government Program Management	RO	Various : Huntsville, Alabama	0.000	1.150	Dec 2014	1.158	Dec 2015	0.964	Dec 2016	-		0.964	Continuing	Continuing	0
PAC-3 Product Office	RO	Project Office : Huntsville, AL	0.000	0.165	Dec 2014	1.100	Dec 2015	1.051	Dec 2016	-		1.051	Continuing	Continuing	0
Subtotal			0.000	1.315		2.258		2.015		-		2.015	-	-	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			
Program Integration MSE LMMFC	Various	Lockheed Martin Missiles and Fire Control (LMMFC) : Dallas, Texas	0.000	-		12.300	Dec 2015	16.641	Dec 2016	-		16.641	Continuing	Continuing	0
MSE/PAC-3 Raytheon	Various	Raytheon : Waltham, Massachusetts	0.000	4.450	Jan 2015	3.800	Jan 2016	4.569	Jan 2017	-		4.569	Continuing	Continuing	0
SETA Contracts	Various	Multiple : Multiple	0.000	3.083	Feb 2015	1.850	Feb 2016	0.889	Feb 2017	-		0.889	Continuing	Continuing	0
U.S. Other Government Agencies (OGAs)	MIPR	Various : Huntsville, Alabama	0.000	4.310	Dec 2014	5.220	Dec 2015	7.680	Dec 2016	-		7.680	Continuing	Continuing	0
Subtotal			0.000	11.843		23.170		29.779		-		29.779	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Targets/Threats Simulators	MIPR	Various : Huntsville, Alabama	0.000	25.345	Dec 2014	22.188	Dec 2015	26.345	Dec 2016	-		26.345	Continuing	Continuing	0
Modeling and Simulation	MIPR	Various : Huntsville, Alabama	0.000	3.724	Dec 2014	3.000	Dec 2015	3.065	Dec 2016	-		3.065	Continuing	Continuing	0
Contractor T&E	Various	Multiple : Multiple	0.000	8.425	Dec 2014	7.458	Dec 2015	1.625	Dec 2016	-		1.625	Continuing	Continuing	0
Other T&E funding	MIPR	Various : WSMR, NM	0.000	3.550	Dec 2014	2.585	Dec 2015	2.822	Dec 2016	-		2.822	Continuing	Continuing	0

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205456A / <i>Lower Tier Air and Missile Defense (AMD) System</i>	Project (Number/Name) EF9 / <i>System Integration and Test</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
PATRIOT System Testing, Integration and Evaluation	1	2015	4	2021
Program Development, Integration, and Support	1	2015	4	2021
Testing, Targets, Modeling and Simulation	1	2015	4	2021
PDB-8.0.5 Agile Build	1	2017	4	2021
PDB-8 Fielding	1	2018	4	2021
PDB-8 IOC	1	2018	2	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0205778A / Guided Multiple-Launch Rocket System (GMLRS)
--	--

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	-	43.791	36.727	22.044	-	22.044	30.177	29.726	27.959	27.015	Continuing	Continuing
EG2: GMLRS Alternative Warheads	-	32.754	0.319	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	33.073
EG3: Guided MLRS	-	11.037	36.408	22.044	-	22.044	30.177	29.726	27.959	27.015	Continuing	Continuing

Note
Beginning in FY2015, Guided Multiple Launch Rocket System (GMLRS) has its own separate Program Element, 0205778A, to include Projects EG2 (GMLRS Alternative Warhead) and EG3 (Guided MLRS), previously under Program Element 0603778A Project Codes 78G and 784, respectively.

A. Mission Description and Budget Item Justification

Projects EG2/EG3. GMLRS rockets are surface-to-surface artillery rockets fired from the Multiple Launch Rocket System (MLRS) and High Mobility Artillery Rocket System (HIMARS) launchers. GMLRS rockets provide 24/7, all-weather precision fires to engage both area and point targets at short, medium, and long ranges.

The GMLRS Program consists of three separate increments: GMLRS Dual Purpose Improved Conventional Munition (DPICM) cluster munition to engage area or imprecisely located targets; GMLRS Unitary utilizes a 200 lbs. high explosive warhead to engage point targets with limited collateral damage; and GMLRS Alternative Warhead (AW) which has been developed as a non-cluster munition to replace GMLRS DPICM. GMLRS DPICM Production was terminated in response to the June 2008 Department of Defense (DoD) Cluster Munitions Policy. GMLRS Unitary is currently in full rate production. GMLRS AW completed Engineering and Manufacturing Development (EMD) and entered full rate production in FY2015. The GMLRS AW rocket is 90% common with the Unitary variant.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	45.353	17.527	27.829	-	27.829
Current President's Budget	43.791	36.727	22.044	-	22.044
Total Adjustments	-1.562	19.200	-5.785	-	-5.785
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	19.200			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.562	-			
• Adjustments to Budget Years	-	-	-5.785	-	-5.785

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>	
<u>Change Summary Explanation</u> The FY 2017 funding request was reduced by \$1.200 million (Project EG3) to account for the availability of prior year execution balances.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>				Project (Number/Name) EG2 / <i>GMLRS Alternative Warheads</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
EG2: <i>GMLRS Alternative Warheads</i>	-	32.754	0.319	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	33.073
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in FY2015, Guided Multiple Launch Rocket System (GMLRS) has its own separate Program Element, 0205778A, to include Projects EG2 (GMLRS Alternative Warhead) and EG3 (Guided MLRS), previously under Program Element 0603778A Project Codes 78G and 784, respectively.

A. Mission Description and Budget Item Justification

The United States (U.S.) Army funded the development of the Guided Multiple Launch Rocket System (GMLRS) Alternative Warhead (AW) increment under the EG2-GMLRS AW project code. GMLRS AW has been developed as a non-cluster munition to replace GMLRS Dual Purpose Improved Conventional Munitions (DPICM) and service the same area and imprecisely-located targets. GMLRS DPICM Production was terminated in response to the June 2008 Department of Defense (DoD) Cluster Munitions Policy.

GMLRS AW successfully completed the combined Milestone C (MS C) and Full Rate Production (FRP) decision review on 8 April 2015. Initial Operational Capability (IOC) is planned for December 2016. The acquisition strategy is to procure AW as part of the annual GMLRS FRP contract.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Conduct Development Engineering, Design Component Testing, and Performance Analysis.	14.628	0.319	-	-	-
Description: Funding is provided for the following effort					
FY 2015 Accomplishments: Assessed warhead capability and effectiveness in multiple employment scenarios.					
FY 2016 Plans: Complete test reports.					
Title: Perform technical assessments and concept studies.	8.470	-	-	-	-
Description: Funding is provided for the following effort					
FY 2015 Accomplishments:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>	Project (Number/Name) EG2 / <i>GMLRS Alternative Warheads</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Evaluated production rate tooling assessments; conducted functional configuration audit; assessed readiness for operational testing.					
Title: Prepare Milestone Documentation, Risk Reduction, and Program Reviews. Description: Funding is provided for the following effort	1.491	-	-	-	-
FY 2015 Accomplishments: Finalized milestone documentation; preparation of all documentation and presentation requirements associated with completion and execution of MS C and Full Rate Production Decision (FRPDR).					
Title: Conduct System Test and Evaluation Activities. Description: Funding is provided for the following effort	8.165	-	-	-	-
FY 2015 Accomplishments: Initial Operational Test and Evaluation (IOT&E).					
Accomplishments/Planned Programs Subtotals	32.754	0.319	-	-	-

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
• GMLRS (C64400): <i>GMLRS (C64400)</i>	127.145	251.060	172.088	75.991	248.079	260.698	205.409	287.288	265.991	Continuing	Continuing
• Guided MLRS (EG3): <i>Guided MLRS (EG3)</i>	11.037	36.408	22.044	-	22.044	30.177	29.726	27.959	27.015	Continuing	Continuing

Remarks
GMLRS procurement funding includes C65404 and C65406.

D. Acquisition Strategy
The GMLRS AW rocket is a product improved version of the current GMLRS rocket. During EMD, GMLRS AW completed development, integration, and testing under a Firm Fixed Price (FFP) contract.

E. Performance Metrics
N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>	Project (Number/Name) EG2 / <i>GMLRS Alternative Warheads</i>
--	---	---

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Program Management	TBD	PFRMS Project Office, : RSA	0.000	4.642	Oct 2014	0.319		-		-		-	0.000	4.961	0.000
Subtotal			0.000	4.642		0.319		-		-		-	0.000	4.961	0.000

Remarks
TBD-To Be Determined; Cont.-Continuing; PFRMS-Precision Fires Rocket and Missile Systems; RSA-Redstone Arsenal

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			
AWP Contracts (Multiple)	Various	ATK (Plymouth, MN) LMMFCS (Dallas, TX) : Systems Integrator	0.000	9.955	Dec 2014	-		-		-		-	0	9.955	0
Other Government Agencies	TBD	AMCOM/ : AMRDEC, RSA	0.000	3.557	Dec 2014	-		-		-		-	0.000	3.557	0.000
Subtotal			0.000	13.512		-		-		-		-	0.000	13.512	0.000

Remarks
AWP-Alternative Warhead Program; Various-Competitive/Firm Fixed Price/Sole Source/Cost Plus Fixed Fee; TBD-To Be Determined; Cont.-Continuing; AMCOM-Army Materiel Command; AMRDEC-U.S. Army Research, Development and Engineering Command; RSA-Redstone Arsenal; ATK-Alliant Techsystems, Inc.; MN-Minnesota; LMMFCS-Lockheed Martin Missile and Fire Control System; TX-Texas

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support Contracts	C/CPFF	Various : Various	0.000	0.237	Dec 2014	-		-		-		-	0	0.237	0
Subtotal			0.000	0.237		-		-		-		-	0.000	0.237	0.000

Remarks
C/CPFF-Competitive/Cost Plus Fixed Fee; Cont.-Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>	Project (Number/Name) EG2 / <i>GMLRS Alternative Warheads</i>
--	---	---

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support	TBD	WSMR, : NM	0.000	14.363	Dec 2014	-		-		-		-	0	14.363	0
Subtotal			0.000	14.363		-		-		-		-	0.000	14.363	0.000

Remarks
TBD-To Be Determined; Cont.-Continuing; WSMR, NM-White Sands Missile Range, New Mexico

	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	32.754	0.319	-	-	-	0.000	33.073	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>	Project (Number/Name) EG2 / <i>GMLRS Alternative Warheads</i>
--	---	---

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
Initial Operational Test (IOT)																												
Perform Technical Assessments and Concept Studies																												
(1) MS C and FRP			▲																									
(2) IOC												▲																
Conduct Development Engineering/Design Component Testing/Performance																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>	Project (Number/Name) EG2 / <i>GMLRS Alternative Warheads</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Initial Operational Test (IOT)	1	2015	2	2015
Perform Technical Assessments and Concept Studies	1	2015	2	2015
MS C and FRP	3	2015	3	2015
IOC	1	2017	1	2017
Conduct Development Engineering/Design Component Testing/Performance Analysis	1	2015	2	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>				Project (Number/Name) EG3 / <i>Guided MLRS</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
EG3: <i>Guided MLRS</i>	-	11.037	36.408	22.044	-	22.044	30.177	29.726	27.959	27.015	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in FY2015, Guided Multiple Launch Rocket System (GMLRS) has its own separate Program Element, 0205778A, to include Projects EG2 (GMLRS Alternative Warhead) and EG3 (Guided MLRS), previously under Program Element 0603778A Project Codes 78G and 784, respectively.

A. Mission Description and Budget Item Justification

The United States (U.S.) Army continues to explore ways to enhance Guided Multiple Launch Rocket System (GMLRS) Unitary rockets and common components and to mitigate obsolescence issues under the Guided MLRS project code. The Army is requesting funding for the following GMLRS Research, Development, Test and Evaluation (RDT&E) activities: (1) evaluation of enhanced operational capabilities to provide more flexibility across the target set to include increased range, flight performance, and end game optimization; (2) investigation of potential life cycle cost savings through obsolescence initiatives; (3) development of enhancements to the Multiple Launch Rocket System (MLRS) common test equipment; (4) evaluation and development of technologies to enhance overall product performance and survivability and (5) Insensitive Munitions (IM) compliance.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Assess and improve GMLRS rockets.	1.606	2.409	3.192	-	3.192
Description: Funding is provided for the following effort					
FY 2015 Accomplishments: Continued to assess and evaluate improvements in rocket reliability, increased range, collateral damage, and effectiveness, executed spinless rail flights, and pod enhancement studies.					
FY 2016 Plans: Continue to assess and evaluate improvements in rocket reliability, increased range, collateral damage, effectiveness, and pod enhancement studies.					
FY 2017 Base Plans: Continue to assess and evaluate improvements in rocket reliability, increased range, collateral damage, effectiveness, and pod enhancements.					
Title: Conduct qualification and testing for Insensitive Munitions (IM) program.	5.989	28.836	13.827	-	13.827
Description: Funding is provided for the following effort					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>	Project (Number/Name) EG3 / <i>Guided MLRS</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Conducted System Functional Design Review (FDR) and System Integration Tests (SITs) and Stockpile to Target Sequence (STS) flights.</p> <p><i>FY 2016 Plans:</i> Continue SITs and STS efforts. Support the qualification of a second IM Propulsion System source (support both component/system System Requirements Reviews (SRRs), Preliminary Design Reviews (PDRs), Critical Design Reviews (CDRs), procure approximately 125 Ignition Safety Devices (ISDs) and 60-90 IM rocket motors, pay for the component assembly and component level qualification testing, support component/rocket integration, system level integration tests, and eventually flight tests).</p> <p><i>FY 2017 Base Plans:</i> Propulsion system ground/flight tests.</p>					
<p><i>Title:</i> Investigate obsolescence cost/cost reduction opportunities/second source suppliers.</p> <p><i>Description:</i> Funding is provided for the following effort</p> <p><i>FY 2015 Accomplishments:</i> Inserted Guidance Processor Unit (GPU) and Power Condition Unit (PCU) into GMLRS program.</p> <p><i>FY 2016 Plans:</i> Qualify NAVSTRIKE 3.7 obsolescence upgrade.</p> <p><i>FY 2017 Base Plans:</i> Continue qualification of NAVSTRIKE 3.7 obsolescence upgrade.</p>	1.033	1.549	2.505	-	2.505
<p><i>Title:</i> Conduct System Test and Evaluation activities.</p> <p><i>Description:</i> Funding is provided for the following effort</p> <p><i>FY 2015 Accomplishments:</i> Conducted configuration ground control testing for the GMLRS IM Rocket Motor (RM) and Ignition Safety Device (ISD).</p> <p><i>FY 2016 Plans:</i> Continue configuration ground control testing for the GMLRS IM RM and ISD.</p> <p><i>FY 2017 Base Plans:</i></p>	2.409	3.614	2.520	-	2.520

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>	Project (Number/Name) EG3 / <i>Guided MLRS</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue configuration ground control testing for the GMLRS IM RM and ISD.					
Accomplishments/Planned Programs Subtotals	11.037	36.408	22.044	-	22.044

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
• GMLRS (C64400): <i>GMLRS (C64400)</i>	127.145	251.060	172.088	75.991	248.079	260.698	205.409	287.288	265.991	Continuing	Continuing
• GMLRS Alternative Warheads (EG2): <i>GMLRS Alternative Warheads (EG2)</i>	32.754	0.319	-	-	-	-	-	-	-	0	33.073

Remarks
GMLRS Procurement funding includes C65404 and C65406.

D. Acquisition Strategy
Project EG3 is intended to support, investigate, and develop alternative material changes to improve the GMLRS family of munitions as they are identified by the material developer or combat developer. This project also supports IM activities to improve the overall posture of the system all the way down to component level. Future initiatives include a missile modernization program to extend the shelf life of the GMLRS rocket.

E. Performance Metrics
N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / Guided Multiple-Launch Rocket System (GMLRS)	Project (Number/Name) EG3 / Guided MLRS
--	--	---

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			
Government Program Management	TBD	PFRMS Project Office, : RSA	0.000	0.050	Oct 2014	2.104		2.721		-		2.721	Continuing	Continuing	Continuing
Subtotal			0.000	0.050		2.104		2.721		-		2.721	-	-	-

Remarks
TBD-To Be Determined; Cont.-Continuing; PFRMS-Precision Fires Rocket and Missile Systems; RSA-Redstone Arsenal, Alabama

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			
Unitary Contracts/Multiple	SS/CPFF	LMMFCS : Dallas, TX	0.000	8.998	Dec 2014	8.287		11.188	Dec 2016	-		11.188	Continuing	Continuing	Continuing
IM Qualification Contracts/ Multiple	SS/CPFF	TBD : TBD	0.000	-		17.200		5.615	Oct 2016	-		5.615	0	22.815	0
Subtotal			0.000	8.998		25.487		16.803		-		16.803	-	-	-

Remarks
SS/CPFF-Sole Source/Cost Plus Fixed Fee; Cont.-Continuing; LMMFCS - Lockheed Martin Missile and Fire Control System; TX - Texas; AMCOM-Aviation and Missile Command; TBD-To Be Determined; AMRDEC - U.S. Army Research, Development and Engineering Command; RSA - Redstone Arsenal, Alabama

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support	TBD	WSMR, : NM	0.000	1.989	Dec 2014	8.817		2.520	Dec 2016	-		2.520	Continuing	Continuing	Continuing
Subtotal			0.000	1.989		8.817		2.520		-		2.520	-	-	-

Remarks
TBD-To Be Determined; Cont.-Continuing; WSMR, NM-White Sands Missile Range, New Mexico

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016					
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>				Project (Number/Name) EG3 / <i>Guided MLRS</i>					
	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	11.037		36.408		22.044		-		22.044	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / Guided Multiple-Launch Rocket System (GMLRS)	Project (Number/Name) EG3 / Guided MLRS
--	--	---

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
Technical Assessment/Concept, Survivability																												
Obsolescence/Cost Reduction Opportunities and Second Source Supply																												
GPU/PCU Qualification Testing																												
(1) GPU/PCU Qualification Flights																												
IM/Enhanced Technology Improvements																												
Configuration System Qualification Ground/Flight Testing																												
(2) Engineering Change Proposal (ECP) Cut In Decision																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0205778A / <i>Guided Multiple-Launch Rocket System (GMLRS)</i>	Project (Number/Name) EG3 / <i>Guided MLRS</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Technical Assessment/Concept, Survivability	1	2015	4	2020
Obsolescence/Cost Reduction Opportunities and Second Source Suppliers	1	2015	4	2020
GPU/PCU Qualification Testing	1	2015	2	2016
GPU/PCU Qualification Flights	4	2016	4	2016
IM/Enhanced Technology Improvements	1	2015	4	2020
Configuration System Qualification Ground/Flight Testing	4	2015	3	2018
Engineering Change Proposal (ECP) Cut In Decision	4	2018	4	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0208053A / <i>Joint Tactical Ground System</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	10.209	20.515	12.649	-	12.649	10.130	11.515	10.772	11.055	Continuing	Continuing
635: <i>Joint Tact Grd Station-P3I(MIP)</i>	-	10.209	20.515	12.649	-	12.649	10.130	11.515	10.772	11.055	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Joint Tactical Ground Station (JTAGS) is a post-production, ACAT III program and is designated as a DoD Space Program. JTAGS provides missile warning message data for the Air and Missile Defense (AMD) architecture and improves performance for Integrated Air and Missile Defense Fire Control Systems/Composite Army Air and Missile Defense Brigades. The JTAGS Program Element (PE) supports development and test to meet JTAGS ORD thresholds using improved sensors and algorithms as Pre-Planned Product Improvements (P3I). Presently, JTAGS Block 1 is a transportable information processing system, receiving and processing in-theater, direct down-linked data from Defense Support Program (DSP) and other Infrared (IR) satellites. JTAGS then disseminates near real time warning, alerting, and cueing information on ballistic missile launches and other tactical events of interest throughout the theater using existing communication networks, providing critical support to Combatant Commanders in their Areas of Responsibility (AOR). Four OCONUS deployed JTAGS units constitute DoD's only in-theater system providing space-based missile warning. The fifth CONUS system is being used as an institutional trainer but is a deployable asset. JTAGS is designated as the in-theater element of the United States Strategic Command's Theater Event System (TES). JTAGS supports all Theater Missile Defense pillars and by being located in-theater, affords the shortest sensor to shooter connectivity. P3I Improvements will upgrade JTAGS to a new Block 2 configuration for operation with the next generation of Space Based Infrared System (SBIRS) satellites, and will improve warning tactical parameters and timeliness. JTAGS Block 2 P3I is on contract for a two-Phase development effort. Phase 1 deshelters five systems, adds SBIRS Geosynchronous (GEO) scanner capability (FY 2012-16) and updates hardware/software/communication systems. Phase 2 activities are broken into three spirals to expedite getting critical capabilities fielded sooner. Spiral 1 includes stereo SBIRS GEO starrer sensor and P/L 4 data, and Net Centric capabilities (FY 2015-17). Spiral 2 includes Cobra Brass and "Walkers" data (FY2017-18). Spiral 3 includes software tuning and testing to the Operational Requirements Document (ORD)(FY2018-19). JROC-Memos 197-12 and 113-13 directs fielding of JTAGS P3I Block 2 Phase 1 by FY15 and Phase 2 by FY 2017.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0208053A / <i>Joint Tactical Ground System</i>
---	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	10.209	20.515	15.560	-	15.560
Current President's Budget	10.209	20.515	12.649	-	12.649
Total Adjustments	0.000	0.000	-2.911	-	-2.911
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-2.911	-	-2.911

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0208053A / Joint Tactical Ground System				Project (Number/Name) 635 / Joint Tact Grd Station-P3I(MIP)			
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
635: Joint Tact Grd Station-P3I(MIP)	-	10.209	20.515	12.649	-	12.649	10.130	11.515	10.772	11.055	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Tactical Ground Station (JTAGS) is a post-production, ACAT III program and is designated as a DoD Space Program. JTAGS provides missile warning message data for the Air and Missile Defense (AMD) architecture and improves performance for Integrated Air and Missile Defense Fire Control Systems/Composite Army Air and Missile Defense Brigades. The JTAGS Program Element (PE) supports development and test to meet JTAGS ORD thresholds using improved sensors and algorithms as Pre-Planned Product Improvements (P3I). Presently, JTAGS Block 1 is a transportable information processing system, receiving and processing in-theater, direct down-linked data from Defense Support Program (DSP) and other Infrared (IR) satellites. JTAGS then disseminates near real time warning, alerting, and cueing information on ballistic missile launches and other tactical events of interest throughout the theater using existing communication networks, providing critical support to Combatant Commanders in their Areas of Responsibility (AOR). Four OCONUS deployed JTAGS units constitute DoD's only in-theater system providing space-based missile warning. The fifth CONUS system is being used as an institutional trainer but is a deployable asset. JTAGS is designated as the in-theater element of the United States Strategic Command's Theater Event System (TES). JTAGS supports all Theater Missile Defense pillars and by being located in-theater, affords the shortest sensor to shooter connectivity. P3I Improvements will upgrade JTAGS to a new Block 2 configuration for operation with the next generation of Space Based Infrared System (SBIRS) satellites, and will improve warning tactical parameters and timeliness. JTAGS Block 2 P3I is on contract for a two-Phase development effort. Phase 1 deshelters five systems, adds SBIRS Geosynchronous (GEO) scanner capability (FY 2012-16) and updates hardware/software/communication systems. Phase 2 activities are broken into three spirals to expedite getting critical capabilities fielded sooner. Spiral 1 includes stereo SBIRS GEO starrer sensor and P/L 4 data, and Net Centric capabilities (FY 2015-17). Spiral 2 includes Cobra Brass and "Walkers" data (FY2017-18). Spiral 3 includes software tuning and testing to the Operational Requirements Document (ORD)(FY2018-19). JROC-Memos 197-12 and 113-13 directs fielding of JTAGS P3I Block 2 Phase 1 by FY15 and Phase 2 by FY 2017.

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

	FY 2015	FY 2016	FY 2017
Title: JTAGS Test and Evaluation Support	1.743	1.413	1.778
Description: Funding is provided for the following effort			
FY 2015 Accomplishments: JTAGS Block 2 Phase 1 Testing			
FY 2016 Plans: JTAGS Block 2 Phase 1 Testing			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0208053A / <i>Joint Tactical Ground System</i>	Project (Number/Name) 635 / <i>Joint Tact Grd Station-P3I(MIP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
JTAGS Block 2 Phase 2 Testing			
Title: JTAGS P3I Block 2 Phase 1 Development	8.466	6.300	-
Description: Funding is provided for the completion of development in de-sheltering systems, upgrading hardware/software and meeting Information Assurance compliance requirements.			
FY 2015 Accomplishments: Continuation of P3I Phase 1 Development			
FY 2016 Plans: Completion of P3I Phase 1 Development			
Title: JTAGS P3I Block 2 Phase 2 Spiral Development	-	12.802	10.871
Description: Phase 2 activities include a three spiral approach which will provide stereo SBIRS GEO starrer sensor data and Net Centric capabilities, per JROC Memos 197-12 and 113-13.			
FY 2016 Plans: Begin Development of Phase 2 Spiral 1 (stereo SBIRS GEO starrer sensor data capabilities)			
FY 2017 Plans: Development of Phase 2 Spiral 1 (Stereo SBIRS GEO starrer)/Spiral 2 capabilities (Cobra Brass and Walkers)			
Accomplishments/Planned Programs Subtotals	10.209	20.515	12.649

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>	
• SSN BZ8401: <i>SSN BZ8401, Joint Tactical Ground Station (JTAGS)</i>	5.286	3.906	4.417	-	4.417	-	5.434	-	-	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

Under this program element, critical improvements will be developed making maximum use of Non-Developmental Items (NDI)/Commercial Off-The-Shelf (COTS) components. After design and integration, the system will be subject to thorough developmental and validation/verification testing to verify performance, operational effectiveness and suitability. P3I Improvements will upgrade JTAGS to a new Block 2 configuration for operation with the next generation of Space Based Infrared System (SBIRS) satellites, and will improve warning tactical parameters and timeliness. JTAGS Block 2 P3I is on contract for a two-Phase development effort. Phase

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0208053A / <i>Joint Tactical Ground System</i>	Project (Number/Name) 635 / <i>Joint Tact Grd Station-P3I(MIP)</i>
<p>1 deshelters five systems, adds SBIRS Geosynchronous (GEO) scanner capability (FY 2012-16) and updates hardware/software/communication systems. Phase 2 activities are broken into three spirals to expedite getting critical capabilities fielded sooner. Spiral 1 includes stereo SBIRS GEO starer sensor and P/L 4 data, and Net Centric capabilities (FY 2015-17). Spiral 2 includes Cobra Brass and "Walkers" data (FY2017-18). Spiral 3 includes software tuning and testing to the Operational Requirements Document (ORD)(FY2018-19). JROC-Memos 197-12 and 113-13 directs fielding of JTAGS P3I Block 2 Phase 1 by FY15 and Phase 2 by FY 2017.</p> <p>E. Performance Metrics N/A</p>		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0208053A / Joint Tactical Ground System				635 / Joint Tact Grd Station-P31(MIP)							
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
Government Program Management	Various	various : various	54.075	2.599		2.779		2.653		-		2.653	Continuing	Continuing	Continuing
Subtotal			54.075	2.599		2.779		2.653		-		2.653	-	-	-
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
JTAGS Block 1 Engineering Services Hardware/Software	SS/CPFF	Northrop Grumman : Colorado Springs, CO/Various	39.882	-		-		-		-		-	Continuing	Continuing	Continuing
P31 Phase 1 Development	SS/CPIF	Northrop Grumman : Colorado Springs, CO/Various	40.897	4.598		6.300		-		-		-	Continuing	Continuing	Continuing
P31 Phase 2 Development	SS/CPIF	Northrop Grumman : Colorado Springs, CO/Various	7.400	-		8.733		6.907	Jan 2017	-		6.907	Continuing	Continuing	Continuing
Government Furnished Equipment	TBD	Various : Various	1.510	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			89.689	4.598		15.033		6.907		-		6.907	-	-	-
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
Contractor Engineering Support	Various	various : various	29.766	1.269		1.290		1.311	Dec 2016	-		1.311	Continuing	Continuing	Continuing
Subtotal			29.766	1.269		1.290		1.311		-		1.311	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0208053A / Joint Tactical Ground System	Project (Number/Name) 635 / Joint Tact Grd Station-P3I(MIP)
--	--	---

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support (ATEC/JITC/ETC)	Various	various : various	7.960	1.743		1.413		1.778		-		1.778	Continuing	Continuing	Continuing
Subtotal			7.960	1.743		1.413		1.778		-		1.778	-	-	-

Remarks
N/A-Not Applicable

	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	181.490	10.209	20.515	12.649	-	12.649	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0208053A / <i>Joint Tactical Ground System</i>	Project (Number/Name) 635 / <i>Joint Tact Grd Station-P3I(MIP)</i>
--	---	--

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
P3I JTAGS Block 2	P3I JTAGS Block 2 Upgrade																											
P3I H/W & S/W Block 2 Phase 1 Deshelterization and Geosynchronous	P3I Phase 1 Hardware/Software																											
P3I GEO Starer and Net Centric Upgrade (P3I Block 2 Phase 2 Spirals)	P3I Phase 2 Spirals 1,2,3																											
Future Sensor Integration and Technology Refresh	Future Sensor Integration																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0208053A / <i>Joint Tactical Ground System</i>	Project (Number/Name) 635 / <i>Joint Tact Grd Station-P3I(MIP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
P3I JTAGS Block 2	3	2012	2	2019
P3I H/W & S/W Block 2 Phase 1 Deshelterization and Geosynchronous (GEO) Scanner	4	2012	1	2017
P3I GEO Starer and Net Centric Upgrade (P3I Block 2 Phase 2 Spirals)	4	2015	2	2019
Future Sensor Integration and Technology Refresh	3	2019	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					PE 0303028A / <i>Security and Intelligence Activities</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	12.518	6.998	11.619	-	11.619	11.915	12.090	12.343	12.590	Continuing	Continuing
H13: <i>Information Dominance Center (IDC) - Tiara</i>	-	12.518	6.998	11.619	-	11.619	11.915	12.090	12.343	12.590	Continuing	Continuing

A. Mission Description and Budget Item Justification

The U.S. Army Intelligence and Security Command's (INSCOM) RDTE program provides the Army with low-density, high-demand, extremely advanced offensive cyberspace technologies designed to degrade, deny, disrupt, or destroy adversary Command, Control, Communications, Computers and Intelligence (C4I) and shape the operational warfighting environment in order to create conditions favorable to the application of other elements of national power.

INSCOM conducts RDTE of offensive Cyberspace technologies in direct support of the full range of missions called for in the National Defense Strategy, Comprehensive National Cyber-Security Initiative, National Security Strategy, National Defense Guidance, National Security Presidential Directive (NSPD)-38, NSPD-54 and Homeland Security Presidential Directive (HSPD)-23.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	12.518	12.368	11.969	-	11.969
Current President's Budget	12.518	6.998	11.619	-	11.619
Total Adjustments	0.000	-5.370	-0.350	-	-0.350
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-5.370			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.350	-	-0.350

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303028A / Security and Intelligence Activities				Project (Number/Name) H13 / Information Dominance Center (IDC) - Tiara			
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
H13: Information Dominance Center (IDC) - Tiara	-	12.518	6.998	11.619	-	11.619	11.915	12.090	12.343	12.590	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

INSCOM's RDTE program provides the Army with low-density, high-demand, extremely advanced offensive cyberspace technologies designed to degrade, deny, disrupt, or destroy adversary C4I and shape the operational warfighting environment in order to create conditions favorable to the application of other elements of national power.

INSCOM conducts RDTE of offensive Cyberspace technologies in direct support of the full range of missions called for in the National Defense Strategy, Comprehensive National Cyber-Security Initiative, National Security Strategy, National Defense Guidance, NSPD-38, NSPD-54 and HSPD-23.

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

	FY 2015	FY 2016	FY 2017
Title: Cyberspace technologies	12.518	6.998	11.619
Description: INSCOM's RDTE program provides the Army with low-density, high-demand, extremely advanced offensive cyberspace technologies designed to degrade, deny, disrupt, or destroy adversary C4I and shape the operational warfighting environment in order to create conditions favorable to the application of other elements of national power.			
FY 2015 Accomplishments: Utilize support to cyberspace technologies designed to degrade, deny, disrupt, or destroy adversary C4I and shape the operational warfighting environment in order to create conditions favorable to the application of other elements of national power. Will support the conduct of offensive Cyberspace technologies in direct support of the full range of missions called for in the National Defense Strategy, Comprehensive National Cyber-Security Initiative, National Security Strategy, National Defense Guidance, NSPD-38, NSPD-54 and HSPD-23.			
FY 2016 Plans: Develop and support leading-edge Cyberspace technologies designed to exploit, degrade, deny, disrupt, or destroy threat command, control, communications, computers and intelligence (C4I) cyber systems to enable commanders in shaping the operational warfighting environment in order to create conditions favorable to the application of other elements of national power. Support the development of offensive Cyberspace technologies in direct support of the full range of missions called for in the National Defense Strategy, Comprehensive National Cyber-Security Initiative, National Security Strategy, National Defense			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303028A / <i>Security and Intelligence Activities</i>	Project (Number/Name) H13 / <i>Information Dominance Center (IDC) - Tiara</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Guidance, Defense Cyber Strategy, Presidential Policy Directive (PPD) 20, National Security Presidential Directive (NSPD) 54, Homeland Defense Presidential Directive (HSPD) 23, and The Army Operating Concept.			
<i>FY 2017 Plans:</i> Continue to develop and support leading-edge Cyberspace technologies designed to exploit, degrade, deny, disrupt, or destroy threat command, control, communications, computers and intelligence (C4I) cyber systems to enable commanders in shaping the operational warfighting environment in order to create conditions favorable to the application of other elements of national power. Support the development of offensive Cyberspace technologies in direct support of the full range of missions called for in the National Defense Strategy, Comprehensive National Cyber-Security Initiative, National Security Strategy, National Defense Guidance, Defense Cyber Strategy, Presidential Policy Directive (PPD) 20, National Security Presidential Directive (NSPD) 54, Homeland Defense Presidential Directive (HSPD) 23, and The Army Operating Concept.			
Accomplishments/Planned Programs Subtotals	12.518	6.998	11.619

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303028A / Security and Intelligence Activities	Project (Number/Name) H13 / Information Dominance Center (IDC) - Tiara
--	--	--

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
Cyber Weapons Rapid Prototyping (Close Access)	Cyber Weapons Rapid Prototyping (Close Access)				Cyber Weapons Rapid Prototyping (Close Access)																							
Cyber Weapons Rapid Prototyping (Remote Access)	Cyber Weapons Rapid Prototyping (Remote Access)				Cyber Weapons Rapid Prototyping (Remote Access)																							
Cyber Weapons Rapid Prototyping (Target Visualization)	Cyber Weapons Rapid Prototyping (Target Visualization)				Cyber Weapons Rapid Prototyping (Target Visualization)																							
Cyber Weapons Rapid Prototyping (Infrastructure)	Cyber Weapons Rapid Prototyping (Infrastructure)				Cyber Weapons Rapid Prototyping (Infrastructure)																							
Cyber Weapons Rapid Prototyping (Testing and Evaluation)	Cyber Weapons Rapid Prototyping (Testing and Evaluation)				Cyber Weapons Rapid Prototyping (Testing and Evaluation)																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303028A / <i>Security and Intelligence Activities</i>	Project (Number/Name) H13 / <i>Information Dominance Center (IDC) - Tiara</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Cyber Weapons Rapid Prototyping (Close Access)	1	2015	1	2017
Cyber Weapons Rapid Prototyping (Remote Access)	1	2015	1	2017
Cyber Weapons Rapid Prototyping (Target Visualization)	1	2015	1	2017
Cyber Weapons Rapid Prototyping (Infrastructure)	1	2015	1	2017
Cyber Weapons Rapid Prototyping (Testing and Evaluation)	1	2015	1	2017

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	13.627	31.154	38.280	-	38.280	70.554	36.106	32.807	33.653	Continuing	Continuing
491: <i>Information Assurance Development</i>	-	6.922	18.009	7.431	-	7.431	10.092	8.783	9.228	9.814	Continuing	Continuing
501: <i>Army Key Mgt System</i>	-	1.138	1.927	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.065
DV4: <i>Key Management Infrastructure (KMI)</i>	-	2.081	2.009	4.699	-	4.699	4.782	3.333	0.000	3.395	Continuing	Continuing
DV5: <i>Crypto Modernization (Crypto Mod)</i>	-	3.486	9.209	21.565	-	21.565	28.424	23.990	23.579	20.444	Continuing	Continuing
ET9: <i>Embedded Crypto Modernization (CRYPTO MOD)</i>	-	0.000	0.000	4.585	-	4.585	27.256	0.000	0.000	0.000	0.000	31.841

A. Mission Description and Budget Item Justification

Information Assurance Development supports the implementation of the National Security Agency (NSA) developed Communications Security (COMSEC) technologies into the Army by providing COMSEC system capabilities through encryption, trusted software or standard operating procedures, and integrating these mechanisms into specific systems in support of securing the National Network Enterprise in as transparent a manner as possible. This entails architecture studies, system integration and testing, developing installation kits, and certification and accreditation of Automation Information Systems. The program assesses, develops and integrates Information Assurance (IA)/COMSEC tools (hardware and software) which provide protection for fixed infrastructure post, camp and station networks as well as tactical networks. The cited work is consistent with Strategic Planning Guidance and the Army Modernization and Strategy Plan.

Information Assurance Development funding Implements and establishes functional and technical boundaries of cryptographic, key management and IA capabilities In Coordination with (ICW) the National Security Agency (NSA), the Defense Information Systems Agency (DISA), and Joint Services, to secure National Security Systems (NSS), and National Security Information (NSI). Technical evaluations assess the security, operational effectiveness and network interoperability of advanced concept technologies to develop policies, standards, and fundamental building blocks for Army COMSEC capabilities that reduce the risk of future materiel solutions that could underperform and disrupt classified operations. Develop and publish the Cryptographic Modernization strategy to identify, standardize, and govern the insertion of IA capabilities to bridge operational gaps and support the DoD and NSA mandated requirements to enhance network capacity while providing for secure information exchange of voice, video, and data IAW the Army Network Campaign Plan. This will be accomplished by interoperability evaluation, standards testing, and IA System of System Network Vulnerability Assessments (IA SoS NVA) of Army Capability Sets for IA/COMSEC capabilities that provide protections for fixed infrastructure post, camp, and station networks.

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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	
<p>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 accredited clusters 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 are a construct of active cyberspace defenses which provide synchronized, real-time capability to discover, detect, analyze, and mitigate threats to and vulnerability of DoD networks and systems.</p> <p>The Army Key Management System (AKMS) is the Army's implementation of the National Security Agency's (NSA) Electronic Key Management System (EKMS) program automating the functions of Communications Security (COMSEC) electronic key management, control, planning, and distribution. AKMS supports the Army's ability to communicate and distribute data on the Army's tactical and strategic networks by limiting adversarial access to, and reducing the vulnerability of, Army Command, Control, Communications, Computers, Intelligence (C4I) systems. The AKMS System of Systems (SoS) systems components are the Local COMSEC Management Software (LCMS), Automated Communications Engineering Software (ACES) and Simple Key Loader (SKL). The NSA EKMS program is being replaced by the NSA Key Management Infrastructure (KMI) Program. The transition of the legacy EKMS LCMS to the modern KMI Management Client Nodes (MGC)s began in FY12 and must be completed by the EKMS Tier 2 sunset date of December 2017. AKMS supports the transition to Army Key Management Infrastructure (AKMI).</p> <p>The Army Key Management Infrastructure (AKMI) is the Army's implementation of the National Security Agency's (NSA) Key Management Infrastructure (KMI) ACAT IAM program. AKMI supports Department of Defense (DoD) Global Information Grid (GIG) Net Centric and Crypto Modernization Initiatives and supports emerging requirements transitioned from the Army Key Management System (AKMS). AKMI automates the functions of Communications Security (COMSEC) electronic key management, control, planning, and distribution. AKMI supports the Army's ability to communicate and distribute data on the Army's tactical and strategic networks by limiting adversarial access to, and reducing the vulnerability of, Army Command, Control, Communications, Computers, Intelligence (C4I) systems. The AKMI Program includes the Management Clients (MGC), Automated Communications Engineering Software (ACES) and Next Generation Load Device (NGLD) Family of devices to include the NGLD Small, Medium and Large. AKMI provides an integrated, operational environment that brings essential key management functions in-band. Objective AKMI will leverage NSA KMI program to provide secure software provisioning, will support legacy and modern ECU's, simplifies all aspects of key provisioning and ECU management with traceability to individuals, expands operations to DoD unclassified networks, North Atlantic Treaty Organization (NATO) and Coalition users, automates manual business processes to increase Soldier efficiency, transforms key delivery from manual to an automate enterprise service and will provide an Over the Network Keying (OTNK) capability to support Cryptographic Modernization Initiatives (CMI).</p> <p>The Crypto Modernization program supports using NSA developed COMSEC technologies within the Army providing encryption, trusted software, or standard operating procedures, and integrating these mechanisms into specified systems in support of securing the National Network Enterprise in as transparent a manner as possible. This entails architecture studies, system integration and testing, developing installation kits, and certification and accreditation of Automation Information Systems. The program assesses, develops and integrates emerging Information Assurance (IA)/COMSEC tools (hardware and software) which provide protection for fixed infrastructure post, camp, and station networks as well as tactical networks. The cited work is consistent with Strategic Planning Guidance and the Army Modernization and Strategy Plan.</p>		

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>
---	---

Embedded Cryptographic Modernization Initiative (ECMI) is an upgrade activity that will ensure enduring Army radios remain secure by operating with modern crypto keys. Tactical radios using embedded cryptographic systems will no longer be able to communicate securely after Crypto Keys expire due to Cease Key dates documented in the Chairman of the Joint Chiefs Staff instruction (CJCSI) 6510. In order to ensure Warfighters continue to have secured communications (i.e., encrypted data and voice), Army tactical radios are required to modernize their cryptographic capabilities by implementing the modern algorithms. If cease key dates are not met, Army will be forced to communicate at risk.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	14.167	31.154	25.687	-	25.687
Current President's Budget	13.627	31.154	38.280	-	38.280
Total Adjustments	-0.540	0.000	12.593	-	12.593
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-0.320	-	-3.567	-	-3.567
• DV4&DV5	-0.220	-	11.575	-	11.575
• ET9	-	-	4.585	-	4.585

Change Summary Explanation

In FY17 the following net adjustments were made:

Information Assurance Development (491): Reduction of \$.275M

Army Key Management (501): Reduction of \$0.045M

Key Management Infrastructure (DV4): Increase of \$2.317M

Crypto Modernization (DV5): Increase of \$9.258M for government purpose rights software upgrades and development contracts.

Embedded Crypto Modernization (ET9): Funding line was added in the amount of \$4.585 million for embedded crypto modernization in Army radios.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>				Project (Number/Name) 491 / <i>Information Assurance Development</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
491: <i>Information Assurance Development</i>	-	6.922	18.009	7.431	-	7.431	10.092	8.783	9.228	9.814	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

PE 0303140A, project 491 includes funding for the Army CIO/G6, Project Lead (PL) Network Enablers (Net E), and Project Lead (PL) Enterprise Services (ES).

A. Mission Description and Budget Item Justification

This program supports the implementation of National Security Agency (NSA) developed Communications Security (COMSEC) technologies into the Army by providing COMSEC system capabilities through encryption, trusted software, or standard operating procedures; and integrating these mechanisms into specified systems in support of securing the National Network Enterprise in as transparent a manner as possible.

This entails architecture studies, system integration and testing, developing, installation kits, and certification and accreditation of Automation Information Systems. The program assesses, develops and integrates Information Assurance (IA)/COMSEC tools (hardware and software) which provide protection for fixed infrastructure post, camp and station networks as well as tactical networks. The cited work is consistent with Strategic Planning Guidance and the Army Modernization and Strategy Plan.

Implement and establish functional and technical boundaries of cryptographic, key management and IA capabilities In Coordination with (ICW) the National Security Agency (NSA), the Defense Information Systems Agency (DISA), and Joint Services, to secure National Security Systems (NSS), and National Security Information (NSI). Technical evaluations assess the security, operational effectiveness and network interoperability of advanced concept technologies to develop policies, standards, and fundamental building blocks for Army COMSEC capabilities that reduce the risk of future materiel solutions that could underperform and disrupt classified operations.

Develop and publish the Cryptographic Modernization strategy to identify, standardize, and govern the insertion of IA capabilities to bridge operational gaps and support the DoD and NSA mandated requirements to enhance network capacity while providing for secure information exchange of voice, video, and data IAW the Army Network Campaign Plan. This will be accomplished by interoperability evaluation, standards testing, and IA System of System Network Vulnerability Assessments (IA SoS NVA) of Army Capability Sets for IA/COMSEC capabilities that provide protections for fixed infrastructure post, camp, and station networks.

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 the cyberspace battlefield. It provides the computer network defense provider with a common analytic platform which informs and reduces risk associated with future materiel solutions and forms a blueprint for future Big Data Analytics. Big Data (analysis-of-all DoD Information Network sensor data) provides two optimized

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 491 / <i>Information Assurance Development</i>		
and accredited clusters 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 are a construct of active cyberspace defenses which provide synchronized, real-time capability to discover, detect, analyze, and mitigate threats to and vulnerability of DoD networks and systems.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Title: Assessing emerging COMSEC hardware and software systems and products (PL Net E)</p> <p>Description: Conduct research and analyses as well as basic testing for meeting specific focused goals that will enhance the functions and support of cryptographic systems improving the security and usability of the Army tactical and strategic networks. (PL Net E)</p> <p>FY 2015 Accomplishments: Conduct a six month study of current and emerging cryptographic algorithms and technologies to identify strategies that will increase the longevity of cryptographic solutions. (PL Net E)</p> <p>FY 2016 Plans: Conduct testing of candidate small tactical In-line Network Encryption (INE) solutions and emerging secure wireless solutions. (PL Net E)</p> <p>FY 2017 Plans: As the Army implements new network technology, In-line Network Encryption (INE) devices must be identified and tested for effectiveness and suitability. Key areas of investigation include cyber security, interoperability, and standards compliance. (PL Net E)</p>		0.107	1.074	1.170
<p>Title: The Defensive Cyberspace Operations (DCO) - Big Data Pilot (PL ES-CYBER)</p> <p>Description: Bridge Big Data efforts into the DCO program and deploy additional Big Data Analytics platforms to FY15 JRSS sites. Assess alternative solution architecture/design and Develop, Test, Accredite, and Implement Rapid Deployable Kit (RDK) 2.X. (PL ES-CYBER)</p> <p>FY 2016 Plans: Big Data Pilot cyber funding encompasses beta testing and a validation plan that will be incorporated with the pilot effort. Includes expanded DCO and Cyberspace Situational Awareness program requirements. Candidate deployment locations based on FY15 JRSS site activations. (PL ES-CYBER)</p>		-	9.725	-
<p>Title: Oversight and implementation guidance of emerging Cryptographic and IA capabilities to ensure interoperability to maintain compliance with DoD, NSA, and Army policies and regulations. (CIO/G6)</p> <p>Description: The program provides oversight and guidance for technical research and evaluation of Cryptographic and Key Management capabilities to ensure IA compliance and interoperability. This effort improves operational effectiveness,</p>		6.815	7.210	6.261

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 491 / <i>Information Assurance Development</i>

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

ensures efficient implementation, and enhances network performance by deploying standardized COMSEC capabilities that are interoperable and supportable in Army, coalition and Joint operating environments. This program enables the Army to collaborate and participate in Joint and Army Capability Technology Demonstrations to define, improve, develop and publish IA standards for new/modernized technology insertion to support the LWN 2025 and Beyond. This effort assesses and defines risk mitigation of IA network vulnerabilities in end-to-end Army network operations and Common Operating Environment. (CIO/G6)

FY 2015 Accomplishments:

This program researches new and emerging Cryptographic and IA technologies to bridge the operational gaps to enable secure communications between the tactical edge, the Army Enterprise Network and the DoD Joint Information Environment (JIE). Review operational needs, operation assessments, identify fundamental building blocks for IA solutions and risk reduction lab test commercial products for Army insertion. Participate in DOD pilot programs. Develop strategies and policies capitalizing on leveraging emerging cryptographic and key management technologies to enhance cyber security, prevent any undue risk and limitations and maximize performance to the Army networks. Effectively provide strategies, policies, and documentation to protect information, and knowledge sharing on the LandWarNet to secure the edge. Provide guidance for the adjustment of COMSEC programs and ensure COMSEC policies remains in synchronization with the latest COMSEC technologies. (CIO/G6)

FY 2016 Plans:

This COMSEC Modernization effort determines the maturity and viability of Cryptographic Key Management and IA technologies to ensure secure and interoperable National Security Systems and National Information. It provides increased operational availability, enhances Cyber posture, ensures performance based standards are consistent with COE and the DoD Joint Information Environment (JIE). Operational needs and assessments are reviewed and validated, identify fundamental building blocks for IA solutions and perform risk reduction testing of commercial products prior to insertion into Army for use. Exercise oversight to improve process and technical solutions before making investment strategy decisions so that duplications will be reduced or eliminated. Participate in operational assessment of NSA, DoD, Joint Staff and Service led Joint Capability Technology Demonstrations (JCTD) to align new technologies to documented Army and Service capability gaps for National Security Systems. Develop strategies and policies that leverage emerging cryptographic and key management tools and services. (CIO/G6)

FY 2017 Plans:

Oversight and Implementation guidance that provides a framework for Army Cryptographic Modernization and Key Management through the evaluation of performance, operational effectiveness, and operational suitability of advanced technologies to meet mission capability needs. The core functions of this program are to research and evaluate new emerging technology concepts for suitability and reliability participate in joint tests with NSA, DISA, and Services to establish functional and technical boundaries for Cryptographic Modernization, Key Management, and Cyber Security operations. The program resources Cybersecurity System of

FY 2015	FY 2016	FY 2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 491 / <i>Information Assurance Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Systems Network Vulnerability Assessments (CS SoS NVA) to assess vulnerabilities and determine the operational risks resulting from disruption, unauthorized access, modification or exploitation of the network, information and information systems.			
Accomplishments/Planned Programs Subtotals	6.922	18.009	7.431

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
• DV5: <i>Crypto Modernization</i>	3.486	9.209	21.565	-	21.565	28.424	23.990	23.579	20.444	Continuing	Continuing
• ET9: <i>Embedded Crypto Modernization</i>	-	-	4.585	-	4.585	27.256	-	-	-	0	31.841
• B96002: <i>Cryptographic Systems</i>	18.151	16.206	66.692	-	66.692	28.820	32.765	70.685	101.519	Continuing	Continuing
• B96006: <i>Embedded Cryptographic Modernization</i>	-	-	3.014	-	3.014	33.896	58.047	58.014	27.825	Continuing	Continuing
• BS9716: <i>NON PEO-SPARES</i>	1.721	2.530	2.545	-	2.545	2.635	3.170	4.917	4.961	Continuing	Continuing

Remarks

Line Item and Title:
 DV5 - Crypto Modernization - RDTE
 ET9 - Embedded Crypto Modernization - RDTE
 B96002 - Cryptographic Systems - OPA2
 B96006 - Embedded Cryptographic Modernization - OPA2
 BS9716 - NON PEO-SPARES - OPA4

D. Acquisition Strategy

The objective of the Cryptographic Systems program is to provide adaptive, flexible, and programmable cryptographic solutions using best practices, lessons learned and programmatic management to meet the challenge of modernizing the Army's aging cryptographic systems. Associated documents include CDD, approved by CIO/ G6, 15 Jul 10; ICD, approved by JROC, 25 Mar 11; AAO; approved by G3, 15 Dec 11 and increased, 19 Jun 15.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 491 / <i>Information Assurance Development</i>
--	---	--

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering (PL Net E)	SS/LH	CECOM RDEC : CECOM RDEC APG, MD	78.009	0.107		1.074		1.170		-		1.170	Continuing	Continuing	Continuing
Big Data Pilot (PL ES-CYBER)	TBD	TBD : FT BELVOIR, VA	0.000	-		9.725		-		-		-	0	9.725	0
Information Assurance System Engineering Support (PL Net E)	C/FFP	DSCI Consulting : APG, MD	7.106	-		-		-		-		-	0	7.106	0
Engineering Support (PL Net E)	C/CPFF	CACI : APG, MD	5.018	-		-		-		-		-	0	5.018	Continuing
Engineering Support (PL Net E)	C/CPFF	Booz Allen Hamilton : APG, MD	3.408	-		-		-		-		-	0	3.408	0
Engineering Support (PL Net E)	C/FP	CSC : APG, MD	16.448	-		-		-		-		-	0	16.448	0
Engineering Support (CIO/G6)	C/FP	CACI : APG, MD	2.732	1.147		1.245		1.595		-		1.595	Continuing	Continuing	Continuing
System Engineering (CIO/G6)	SS/LH	CECOM RDEC : APG, MD	0.000	1.698		2.073		1.086		-		1.086	Continuing	Continuing	Continuing
Engineering Support (CIO/G6)	C/CPFF	Booz Allen Hamilton : APG, MD	2.807	1.756		1.625		1.261		-		1.261	Continuing	Continuing	Continuing
Engineering Support (CIO/G6)	C/FFP	AASKI : Edgewood, MD	0.000	1.032		1.079		1.316		-		1.316	Continuing	Continuing	Continuing
Service (CIO/G6)	SS/LH	ARL/SLAD : White Sand Missile Range (WSMR)	2.164	1.182		1.188		1.003		-		1.003	Continuing	Continuing	Continuing
Subtotal			117.692	6.922		18.009		7.431		-		7.431	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support (PD Net E)	C/CPFF	TBD : TBD	1.598	-		-		-		-		-	0	1.598	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 491 / <i>Information Assurance Development</i>
--	---	--

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			1.598	-		-		-		-		-	0.000	1.598	0.000

Remarks
Not Applicable

	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	119.290	6.922	18.009	7.431	-	7.431	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 491 / <i>Information Assurance Development</i>
--	---	--

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
STUDY OF CURRENT AND EMERGING CRYPTO ALGORITHMS AND																												
TEST OF IINE AND WIRELESS SOLUTION (PD Net E)																												
CRYPTO STRATEGY (CIO/G6)																												
BIG DATA PILOT (PD ES-CYBER)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 491 / <i>Information Assurance Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
STUDY OF CURRENT AND EMERGING CRYPTO ALGORITHMS AND TECHNOLOGIES (PD Net E)	1	2015	2	2015
TEST OF INE AND WIRELESS SOLUTION (PD Net E)	1	2016	4	2018
CRYPTO STRATEGY (CIO/G6)	1	2014	4	2021
BIG DATA PILOT (PD ES-CYBER)	1	2016	4	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>				Project (Number/Name) 501 / <i>Army Key Mgt System</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
501: <i>Army Key Mgt System</i>	-	1.138	1.927	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.065
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Army Key Management System (AKMS) (501) realigned to Key Management Infrastructure (KMI)PE/Project (373140)(DV4) in FY17.

A. Mission Description and Budget Item Justification

The Army Key Management System (AKMS) is the Army's implementation of the National Security Agency's (NSA) Electronic Key Management System (EKMS) program automating the functions of Communications Security (COMSEC) electronic key management, control, planning, and distribution. AKMS supports the Army's ability to communicate and distribute data on the Army's tactical and strategic networks by limiting adversarial access to, and reducing the vulnerability of, Army Command, Control, Communications, Computers, Intelligence (C4I) systems. The AKMS System of Systems (SoS) components are the Local COMSEC Management Software (LCMS), Automated Communications Engineering Software (ACES) and Simple Key Loader (SKL).

The NSA EKMS program is being replaced by the NSA Key Management Infrastructure (KMI) Program. The transition of the legacy EKMS LCMS to the modern KMI Management Client Nodes (MGC)s began in FY12 and must be completed by the EKMS Tier 2 sunset date of December 2017.

AKMS supports the transition to Army Key Management Infrastructure (AKMI). Some components of the AKMS SoS will be replaced under AKMI while others will be modified or adapted to meet the new AKMI requirements. Two critical components required for the transition include the development of the Mission Planning Management Support System (MPMSS) and the ability to support Over the Network Keying (OTNK).

MP/MSS creates a secure, highly automated interface enabling secure transparent provisioning of KMI products. MP/MSS service is being developed by NSA but each Service is responsible for interface development and final integration into their infrastructure. ACES is the initial target for the interface to MPMSS. NSA will be providing additional capabilities and updates to the MP/MSS interface specification through technology insertions in the out years. The Army must then adjust to these changes delivered by NSA.

One of the major enhancement in the KMI architecture is the ability to leverage OTNK. The end state for the Army is to leverage AKMI capabilities (OTNK, Mission Plan/ Mission Support System (MP/MSS), Delivery Only Client (DOC), Client Host Only (CHO)) to increase automation, reduce soldier oversight, manage, and deliver key products to from the tactical edge up through strategic ECU's. Within AKMS this capability will be focused on ACES and SKL platform. ACES and SKL will act as an interim solution for all legacy ECUs to be recognized on the KMI network until they can be upgraded to be fully KMI aware. OTNK developments began in FY2015.

To support this transition, a new KMI compliant cryptographic engine must be developed for the SKL platform. The KOV-21 card used in current Army Tier 3 fill devices has hardware obsolescence issues and does not support the new capabilities being delivered by KMI. Redesigning and developmental efforts using modern and readily

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 501 / <i>Army Key Mgt System</i>		
available components for use in the Army's SKL devices have been initiated. The redesign of the current KOV-21 card is referred to as the KOV-21 Replacement and is an extension of the KOV-21 card as a technology insertion.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Title: Mission Planning Management Support System (MPMSS) Interface</p> <p>Description: The Mission Planning Management Support System (MPMSS) creates a secure, highly automated interface to enable transparent provisioning of Key Management Infrastructure (KMI) products. The MPMSS system is to be used by both the KMI system developer and MPMSS developers to have a standard interface to electronically exchange information, enabling Warfighter Operations, achieving integration between provisioning. NSA plans to deliver the MPMSS capabilities in 4 releases; Spirals 1-4, through FY17.</p> <p>FY 2015 Accomplishments: The first functional capability release of MPMSS will be completed in KMI Spiral 2 Spin 2 scheduled for delivery in July 2015. This release will include the 1) KMI product ordering, 2) distribution management and the Spin 1 backlog. This installment will make it easier for the KMI Operating Account Manager (KOAM) to locally generate key for incoming requests where the key is not already on-hand. Additionally, this release will virtualize all needed components for MPMSS. The development of the Army Mission Planner software that will interface with the KMI MPMSS API will begin FY15 and be carried out through FY18. The Army Mission Planner software will be integrated and tested with the KMI MPMSS API Spin 2 capabilities.</p> <p>FY 2016 Plans: The second functional capability release of MPMSS will be completed in KMI Spiral 2 Spin 3 scheduled for delivery in July 2016. This release will include the interface to support the initial certificate management services. The Army Mission Planner software will be integrated and tested with the KMI MPMSS API Spin 3 capabilities. These installments of the MPMSS effort are a continuing effort to the base capabilities developed in the Army Key Management System (AKMS) program and will ensure maximum use of KMI architecture by Army's legacy ECUs. This effort will commence after KMI MP/MSS software code is completed and delivered to the Army.</p>		1.138	1.021	-
<p>Title: Key Management Infrastructure (KMI) Awareness for Legacy Devices</p> <p>Description: KMI Awareness initiative creates a secure, highly automated interface in providing future Over the Network Keying (OTNK) capability to legacy End Crypto Units (ECUs). This initiative will allow KMI aware ECUs to receive, authenticate, and decrypt OTNK messages and increases WarFighter survivability by minimizing the need for Soldiers to travel to obtain keys. The current army inventory of ~1.5M ECUs are not currently KMI aware and cannot perform OTNK functionality.</p> <p>FY 2016 Plans: KMI Awareness initiative provides OTNK like capability to legacy ECUs through the fill device. Development of a Reprogrammable Single Chip Universal Encryptor (RESCUE) is necessary for the fill device to provide KMI aware services to the</p>		-	0.906	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 501 / <i>Army Key Mgt System</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
ECUs. Developing this capability in the SKL will allow the ~1.5M legacy ECUs to be recognized on the KMI network until they can be upgraded to be KMI aware.			
Accomplishments/Planned Programs Subtotals	1.138	1.927	-

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
• BA1201: TSEC - AKMS	10.382	10.373	-	-	-	-	-	-	-	0	20.755
• B96004: Key Management Infrastructure	41.113	45.678	63.578	-	63.578	58.981	92.898	94.813	96.399	Continuing	Continuing
• DV4: Key Management Infrastructure	2.081	2.009	4.699	-	4.699	4.782	3.333	-	3.395	Continuing	Continuing
• 432140: ISSP (TSEC-AKMS)	4.047	7.380	8.006	-	8.006	8.316	8.678	3.945	4.043	Continuing	Continuing

Remarks
 Line Item & Title:
 BA1201: TSEC-AKMS (OPA2)
 B96004: Key Management Infrastructure (OPA2)
 DV4: Key Management Infrastructure (RDTE)
 432140: ISSP (TSEC-AKMS) (OMA)

D. Acquisition Strategy
 Army Key Management System (AKMS) is an ACAT III Program of Record (POR) under PL Network Enablers (PL Net E). It is the Army's implementation of the National Security Agency (NSA)'s Electronic Key Management System (EKMS). The AKMS allows the Army to manage, control, plan, and distribute electronic key for the ~1.5 million End Cryptographic Units (ECU)s necessary to communicate and distribute data on the Army's tactical and strategic networks.

AKMS was initially approved for Milestone III in FY99. The AKMS System of Systems originally included Local COMSEC Management Software (LCMS), Automated Communications Engineering Software (ACES) and Data Transfer Device (DTD) (AN-CYZ-10). In 2QFY02, the PEO C3T Milestone Decision Authority approved the procurement of the Simple Key Loader (SKL) as the replacement for the DTD within the AKMS System of Systems (SoS) POR. AKMS is a fully fielded POR that undergoes modifications to meet emerging operational needs.

The NSA EKMS program is being replaced by the NSA Key Management Infrastructure (KMI) Program. As the DoD Key Management Lead, NSA is dictating the change from EKMS to KMI. The Army's implementation of the NSA KMI is the Army Key Management Infrastructure (AKMI) program. Some components of the AKMS SoS will be replaced under AKMI while others will be modified or adapted to meet the new AKMI requirements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 501 / <i>Army Key Mgt System</i>

The LCMS component of the AKMS SoS (AN/GYK-49) is fully fielded. The LCMS is assigned to the COMSEC Account Manager/COMSEC Custodian. LCMS most recent hardware refresh was completed in FY12. The current software baseline is 5.1.0.5 with certain select accounts upgrading to v5.2 based on operational needs. Further LCMS software releases are not anticipated. LCMS workstations will be replaced by KMI Management Client (MGC) Nodes before the NSA mandated EKMS Tier 2 sunset of December 2017. EKMS Common Tier 1 operations and Tier 1 operational support continues to be provided by CECOM. LCMS hardware is sustained by CSLA until fully replaced by the KMI MGC.

The ACES component of the AKMS SoS (AN/GYK-33) current hardware platform is a Dell E6500 non-ruggedized laptop fielded to S6, Spectrum Managers and some COMSEC Account Managers at Battalion level and above. ACES is undergoing a hardware technology refresh and will be replacing 1/5 quantity of laptops each year. The current version of ACES is 3.4. Software is released on an annual basis and coincides with the Capability Set delivery schedule. PL Net E currently holds the software development contract. As the Tier 2.5 component, ACES operates between the LCMS (Tier 2) and the SKL (Tier 3). It links the key data from the LCMS with mission planning data for a single load by the SKL into the ECUs. ACES will continue with modifications to support the AKMI System of Systems. In order to support AKMI, ACES must be modified to seamlessly operate within the KMI architecture.

The SKL is the primary Army fill device and is the Tier 3 component of the AKMS SoS (AN/PYQ-10). The SKL is fully fielded to the Army. Army holds the sole full rate production procurement contract for the SKL, which is heavily utilized by other DoD and civil services as well as FMS customers. The SKL repair capability is with the Original Equipment Manufacturer but TYAD is developing an organic depot repair support. The SKL and its cryptographic engine are facing hardware obsolescence issues. SKL v3.1 in combination with a new KMI compliant cryptographic engine resolves these issues and lays the foundation for the Army's Next Generation Load Device- Medium capability. The SKL v3.1 modifications will be made to the Army's existing fleet of the fill devices via a modification kit starting in FY15. The KMI cryptographic engine is reliant on the CERDEC-led RESCUE RDT&E effort that began in FY14.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 501 / <i>Army Key Mgt System</i>
--	---	--

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			
MPMSS	MIPR	NSA : Linthicum, MD	2.807	-		-		-		-		-	0	2.807	0
MPMSS Army Interface	MIPR	TBD : APG, MD	0.000	1.138		1.021		-		-		-	0	2.159	0
KMI Awareness for Legacy Devices	C/CPFF	CERDEC S&TCD : APG, MD	0.000	-		0.906		-		-		-	0	0.906	0
Subtotal			2.807	1.138		1.927		-		-		-	0.000	5.872	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MP/MSS	MIPR	NSA : Linthicum, MD	2.539	-		-		-		-		-	0	2.539	0
Subtotal			2.539	-		-		-		-		-	0.000	2.539	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MP/MSS	MIPR	NSA : Linthicum, MD	2.683	-		-		-		-		-	0	2.683	0
Subtotal			2.683	-		-		-		-		-	0.000	2.683	0.000

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract										
Project Cost Totals											8.029	1.138		1.927		-		-		-	0.000	11.094	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 501 / <i>Army Key Mgt System</i>
--	---	--

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
MPMSS Interface	[REDACTED]																											
KMI Aware Legacy Devices	[REDACTED]				[REDACTED]																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) 501 / <i>Army Key Mgt System</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MPMSS Interface	1	2013	4	2016
KMI Aware Legacy Devices	2	2015	4	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>				Project (Number/Name) DV4 / <i>Key Management Infrastructure (KMI)</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
DV4: <i>Key Management Infrastructure (KMI)</i>	-	2.081	2.009	4.699	-	4.699	4.782	3.333	0.000	3.395	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Key Management Infrastructure (KMI) (DV4) was realigned from project 491 in FY2014. Army Key Management System (AKMS) (501) realigned to Key Management Infrastructure (KMI) (DV4) in FY2017. AKMI supports infrastructure requirements in support of Key Management.

A. Mission Description and Budget Item Justification

The Army Key Management Infrastructure (AKMI) is the Army's implementation of the National Security Agency's (NSA) Key Management Infrastructure (KMI) ACAT IAM program. AKMI supports Department of Defense (DoD) Global Information Grid (GIG) Net Centric and Crypto Modernization Initiatives and supports emerging requirements transitioned from the Army Key Management System (AKMS). AKMI automates the functions of Communications Security (COMSEC) electronic key management, control, planning, and distribution. AKMI supports the Army's ability to communicate and distribute data on the Army's tactical and strategic networks by limiting adversarial access to, and reducing the vulnerability of, Army Command, Control, Communications, Computers, Intelligence (C4I) systems.

The AKMI Program includes the Management Clients (MGC), Automated Communications Engineering Software (ACES) and Next Generation Load Device (NGLD) Family of devices to include the NGLD Small, Medium and Large. AKMI provides an integrated, operational environment that brings essential key management functions in-band. Objective AKMI will leverage NSA KMI program to provide secure software provisioning, will support legacy and modern ECU's, simplifies all aspects of key provisioning and ECU management with traceability to individuals, expands operations to DoD unclassified networks, North Atlantic Treaty Organization (NATO) and Coalition users, automates manual business processes to increase Soldier efficiency, transforms key delivery from manual to an automate enterprise service and will provide an Over the Network Keying (OTNK) capability to support Cryptographic Modernization Initiatives (CMI).

One of the major enhancement in the AKMI architecture is the ability for to leverage the various capabilities and services from NSA KMI. The end state for the Army is to leverage AKMI capabilities (OTNK, Mission Plan/Mission Support System (MP/MSS), Delivery Only Client (DOC), Client Host Only (CHO)) to increase automation, reduce soldier oversight, manage, and deliver key products to from the tactical edge up through strategic ECU's. The objective AKMI capabilities will be found in all of the products across the AKMI product line to include MGC, ACES and NGLD family of fill devices. NGLD family will be an enduring solution to bridge the gap until legacy ECUs are fully modernized.

The NGLD Medium and Large are reliant on the Reprogrammable Single Chip Universal Encryptor (RESCUE), a new KMI compliant cryptographic engine that is currently being developed. The KOV-21 card currently used in Army Simple Key Loader (SKL) fill devices has hardware obsolescence issues and does not support OTNK. Redesign and developmental efforts using modern and readily available components for use in the Army's SKL devices have been initiated under the RESCUE program. The redesign of the current KOV-21 card is referred to as the KOV-21 Replacement and is an extension of the RESCUE program as a technology insertion.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV4 / <i>Key Management Infrastructure (KMI)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: Key Management Infrastructure (KMI) Awareness (RESCUE / KOV-21 Replacement Effort)</p> <p>Description: KMI Awareness initiative creates a secure, highly automated interface in providing future Over the Network Keying (OTNK) capability to legacy End Crypto Units (ECUs). This initiative will allow ECUs to receive, authenticate, and decrypt OTNK messages and increases WarFighter survivability by minimizing the need for Soldiers to travel to obtain keys. The KOV 21 card, previously in production through NSA for use in the Simple Key Loader (SKL) and the Secure DTD 2000 System (SDS), is nearing the end of life due to unavailability of parts. Redesigning and developmental efforts using modern and readily available components for use in the Army's SKL and Next Generation Load Devices (NGLDs) are currently underway. The redesign of the current KOV 21 card is referred to as the KOV 21 Replacement and is an extension of the KOV 21 card as a technology insertion. The KOV 21 Replacement will also address requirements codified in the NGLD CPD and the AKMI CPD that were technologically unachievable with the KOV 21 card.</p> <p>FY 2015 Accomplishments: The Reprogrammable Single Chip Universal Encryptor (RESCUE) technology development effort will be led by the Army Communications-Electronics Research Development and Engineering Center (CERDEC) Space and Terrestrial Communications Directorate (S&TCD) in coordination with the Army Program Executive Office for Command, Control, and Communications Tactical (PEO C3T) Product Director Network Enablers (PL Net E). The RESCUE effort is focused on the development, maturation, evaluation, and certification of the technology needed to meet the requirements of NSA and the Army. The RESCUE technology can be reused, scaled, and/or repackaged to satisfy the cryptographic requirements for other programs/platforms requiring or needing a KMI aware or Product Delivery Enclave (PDE) enabled solution. The KOV-21 replacement will be developed to be compatible with and installed in the SKL v3.1 to meet the Army's NGLD Medium requirement. The KOV-21 replacement will also be used in the future Army NGLD Large device.</p> <p>FY 2016 Plans: The RESCUE technology development will continue in FY2016. RESCUE development will provide the ability to upgrade legacy ECUs, enabling a KMI aware fully developed PDE-enabled ECU fleet. The KOV-21 Replacement effort lays the foundation for AKMI capabilities that can be inserted into the SKL to make it an NGLD Medium.</p> <p>FY 2017 Plans: The RESCUE technology development will complete in FY2017. RESCUE development will provide the ability to upgrade legacy ECUs, enabling a KMI aware fully developed PDE-enabled ECU fleet. The KOV-21 Replacement effort lays the foundation for AKMI capabilities that can be inserted into the SKL to make it an NGLD Medium.</p>	2.081	2.009	4.699
Accomplishments/Planned Programs Subtotals	2.081	2.009	4.699

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV4 / <i>Key Management Infrastructure (KMI)</i>

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• B96004: <i>Key Management Infrastructure</i>	41.113	45.678	63.578	-	63.578	58.981	92.989	94.813	96.399	Continuing	Continuing
• BA1201: <i>TSEC - Army Key Mgt Sys (AKMS)</i>	10.382	10.373	-	-	-	-	-	-	-	0	20.755
• 501: <i>Army Key Management System (AKMS)</i>	1.138	1.927	-	-	-	-	-	-	-	0	3.065
• 432140: <i>ISSP (TSEC-AKMS)</i>	4.047	7.385	8.006	-	8.006	8.316	8.678	3.945	4.043	Continuing	Continuing

Remarks

Line Item & Title:
 B96004: Key Management Infrastructure (OPA2)
 BA1201: TSEC-Army Key Mgt Sys (AKMS) (OPA2)
 501: Army Key Management System (AKMS) (RDTE)
 432140: ISSP (TSEC-AKMS) (OMA)

D. Acquisition Strategy

Army Key Management Infrastructure (AKMI) is a Non Program of Record (POR) under PD Network Enablers (PL Net E). AKMI is the Army's implementation of the National Security Agency (NSA) Key Management Infrastructure (KMI) ACAT IAM Program of Record. The AKMI will allow the Army to manage, control, plan, and distribute electronic key for the ~1.5 million End Cryptographic Units (ECU)s necessary to communicate and distribute data on the Army's tactical and strategic networks.

AKMI initial Army Acquisition Program Baseline (APB) was approved 2QFY12. The AKMI Program will include the Management Clients (MGC), Automated Communications Engineering Software (ACES) and Next Generation Load Device (NGLD) Family. Each component of the AKMI Program is in a different phase of the acquisition cycle.

The NSA KMI Program is replacing the NSA Electronic Key Management System (EKMS) program. As the DoD Key Management Lead, NSA is dictating the change from EKMS to KMI by a sunset date of December 2017. Components of the AKMI Program will be retained and adapted from the legacy AKMS program while others will be developed and fielded to meet AKMI requirements.

The NGLD family of devices will become the primary Army fill devices and Tier 3 component of the AKMI Program. The NGLD Capability Production Document (CPD) was signed 4QFY13. The NGLD CPD calls for a family of 3 devices (small, medium, and large) to meet the AKMI requirements. The AKMI program has partnered with RDECOM CERDEC to develop a KMI compliant cryptographic engine, the Reprogrammable Single Chip Universal Encryptor (RESCUE). The Army will gain the NGLD Medium capability through the SKL v3.1 in combination with a new KMI compliant cryptographic engine, the RESCUE, the first iteration of the RESCUE being the KOV-21 Replacement. The redesign of the current SKL cryptographic engine, the KOV-21 card, is required due to parts obsolescence and inability to be KMI

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV4 / <i>Key Management Infrastructure (KMI)</i>

Aware. The KOV-21 Replacement is an extension of the RESCUE program as a technology insertion into the SKL v3.1 which in turn meets the NGLD Medium CPD requirements. The NGLD Medium will be available in FY18. Additionally, the Army NGLD large strategy is highly reliant on the development of the RESCUE and will drive a final acquisition decision in FY18.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV4 / <i>Key Management Infrastructure (KMI)</i>
--	---	--

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
KMI Awareness	RESCUE / KOV-21 Replacement Effort																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV4 / <i>Key Management Infrastructure (KMI)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
KMI Awareness	2	2015	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>				Project (Number/Name) DV5 / <i>Crypto Modernization (Crypto Mod)</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
DV5: <i>Crypto Modernization (Crypto Mod)</i>	-	3.486	9.209	21.565	-	21.565	28.424	23.990	23.579	20.444	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

DV5 - The Crypto Modernization line was established in Sept 2012.

A. Mission Description and Budget Item Justification

This program supports using National Security Agency (NSA) developed Communications Security (COMSEC) technologies within the Army providing encryption, trusted software, or standard operating procedures, and integrating these mechanisms into specified systems in support of securing the National Network Enterprise in as transparent a manner as possible.

This entails architecture studies, system integration and testing, developing installation kits, and certification and accreditation of Automation Information Systems. The program assesses, develops and integrates emerging Information Assurance (IA)/COMSEC tools (hardware and software) which provide protection for fixed infrastructure post, camp, and station networks as well as tactical networks. The cited work is consistent with Strategic Planning Guidance and the Army Modernization and Strategy Plan.

The Embedded Cryptographic Modernization Initiative (ECMI) is designed to investigate Courses Of Action, conduct a Material Solution Analysis, and execute upgrade activities to ensure all enduring Army communications and data equipment that employs embedded cryptographic hardware will be able to accept and utilize modern cryptographic key.

Acquisition Strategy - The objective of this program is to integrate and validate hardware and software solutions to provide COMSEC superiority in order to protect against threats, increase battlefield survivability/lethality, and enable critical Mission Command activities. The objective of the Cryptographic Systems program is to provide adaptive, flexible, and programmable cryptographic systems using best practices, lessons learned and programmatic management to meet the challenge of modernizing the Army's aging cryptographic systems. The effort will support the network operations from end-to-end throughout the force and the Common Operating Environment (COE) thus mitigating Information Assurance (IA) networked vulnerabilities to National information security systems. CDD, approved 15 Jul 10; ICD, approved 25 Mar 11; AAO; approved 15 Dec 11 and increased, 19 Jun 15.

FY17 \$10.659M from the RDT&E line 0303140A-DV5 is required for a planned 4QFY17 solicitation of the ECMI development contracts, obligation of planned prior year funding expected 1QFY18 with contract awards.

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

	FY 2015	FY 2016	FY 2017
Title: VINSON/ANDVT (Advanced Narrowband Digital Voice Terminal) Cryptograph Modernization (VACM) program	0.500	0.500	0.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV5 / <i>Crypto Modernization (Crypto Mod)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
---	----------------	----------------	----------------

Description: This program researches, assesses, tests, plans and works to integrate VACM products for the Army. The VACM program is a NSA mandated program established to replace legacy external cryptographic devices such as the KY-57, KY-99A, KY-58, KY-100 and CV- 3591 /KYV-5. In order to ensure the confidentiality, integrity and availability of classified communications, the cryptographic modules must be tested for interoperability and form fit to ensure a successful fielding. Each software release will require testing to insure comparability and interoperability.

FY 2015 Accomplishments:
The program will test and evaluate Low Rate Initial Production (LRIP) of VACM devices to confirm capability and interoperability on Army networks and tactical systems as well as identifying risk areas for compliance with COMSEC regulations and procedures.

FY 2016 Plans:
The program will test and evaluate engineering changes to Low Rate Initial Production (LRIP) of VACM devices to confirm continued capability and interoperability on Army networks and tactical systems as well as identifying new risk areas for compliance with COMSEC regulations and procedures.

FY 2017 Plans:
The program will continue to test and evaluate engineering changes to Low Rate Initial Production (LRIP) of VACM devices to confirm continued capability and interoperability on Army networks and tactical systems as well as identifying new risk areas for compliance with COMSEC regulations and procedures.

Title: Cryptographic Systems Test and Evaluation	2.986	3.179	4.314
---	-------	-------	-------

Description: This program supports the Army Cryptographic Modernization Transformational Initiative. This is accomplished by providing test and evaluation capabilities to the COMSEC community in order to assess emerging technologies before being released and approved for Army use; testing can be performed on hardware, software, or network systems.

FY 2015 Accomplishments:
The program tests and evaluates COMSEC devices to confirm capability and interoperability on Army networks and tactical systems as well as identifying risk areas for compliance with COMSEC regulations and procedures. The program will test and evaluate Crypto Systems compliant devices, Suite B IPsec devices built on commercial standards, Cryptographic High Value Product (CHVP), Commercial Solutions for Classified (CSfC) Standards, and new software releases to HAPE 4.X devices in accordance with AR 700-142 Rapid Action Revision dated October 16, 2008. Tests interfaces and provides ways to insert Data At Rest (DAR) and Data In Transit (DIT) technology within the existing and future network infrastructure. Evaluates performance of

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV5 / <i>Crypto Modernization (Crypto Mod)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>technologies and provide direction on where technology will converge to insure the lowest impact on performance while providing the greatest protection from loss of sensitive data.</p> <p>FY 2016 Plans: The program continues testing and evaluation of COMSEC devices to confirm capability and interoperability on Army networks and tactical systems as well as identifying risk areas for compliance with COMSEC regulations and procedures. The program will test and evaluate Crypto Systems compliant devices, Suite B IPsec devices built on commercial standards, Cryptographic High Value Product (CHVP), Commercial Solutions for Classified (CSfC) Standards, and new software releases to HAIPE 4.X devices in accordance with AR 700-142 Rapid Action Revision dated October 16, 2008. Tests interfaces and provides ways to insert Data At Rest (DAR) and Data In Transit (DIT) technology within the existing and future network infrastructure. Evaluates performance of technologies and provide direction on where technology will converge to insure the lowest impact on performance while providing the greatest protection from loss of sensitive data.</p> <p>FY 2017 Plans: The program continues testing and evaluation of COMSEC devices to confirm capability and interoperability on Army networks and tactical systems as well as identifying risk areas for compliance with COMSEC regulations and procedures. The program will test and evaluate Crypto Systems compliant devices, Suite B IPsec devices built on commercial standards, Cryptographic High Value Product (CHVP), Commercial Solutions for Classified (CSfC) Standards, and new software releases to HAIPE 4.X devices in accordance with AR 700-142 Rapid Action Revision dated October 16, 2008. Tests interfaces and provides ways to insert Data At Rest (DAR) and Data In Transit (DIT) technology within the existing and future network infrastructure. Evaluates performance of technologies and provide direction on where technology will converge to insure the lowest impact on performance while providing the greatest protection from loss of sensitive data. Examples of common analysis to be performed are comparisons in encryption implementations, network initialization overhead, and comparison of emerging Commercial Solutions for Classified architectures with COMSEC architectures.</p>				
<p>Title: High Assurance Internet Protocol Encryption (HAIPE) extension manager</p> <p>Description: A management tool to configure the new extensions to the High Assurance Internet Protocol Encryption (HAIPE) standard and process the resulting data to provide early indications of cyber attacks.</p> <p>FY 2017 Plans: Conduct a software development effort that will provide configuration and management of the HAIPE extensions and the user interface for collecting and analyzing the data that results from implementation of these HAIPE extensions. This will upgrade Army HAIPEs to include new cyber-sensor functionality for the tactical cyber cell.</p>		-	-	1.503
Title: Embedded Cryptographic Modernization Initiative		-	5.530	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV5 / <i>Crypto Modernization (Crypto Mod)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: The Embedded Cryptographic Modernization Initiative conducts research and analysis to determine optimal algorithms and engineering approaches to modernizing various cryptographic modules that are embedded within Army communications systems and data links. The analysis will follow a complete life cycle approach including factors relating to fielding, training, and sustainment as well as technical factors to ensure efficiently meeting of cease key dates while minimizing cost.</p> <p>FY 2016 Plans: The Embedded Cryptographic Modernization Initiative includes research and analysis to determine optimal algorithms and engineering approaches to modernizing various embedded cryptographic modules within Army communications systems and data links. The analysis will follow a complete life cycle approach including factors relating to fielding, training, and sustainment as well as technical factors to ensure compliance with NSA mandated cease key dates, while minimizing cost. Once approaches are identified, the necessary non-recurring testing, engineering and development of hardware and software will be completed. Any necessary production will begin. Detailed fielding and training plans will be developed for each solution.</p>			
<p>Title: Embedded Cryptographic Modernization Initiative Govt Purpose Rights Software Upgrade</p> <p>Description: Software engineering and coding to upgrade the government purposed rights software code used in software defined radios to ensure these radios remain secure by employing algorithms and keys that comply with CJCSI 6510.</p> <p>FY 2017 Plans: Update software specification, software design, software coding, and develop test plan.</p>	-	-	4.589
<p>Title: Embedded Cryptographic Modernization Initiative Development Contracts</p> <p>Description: Non Recurring Engineering (NRE) contracts to comply with cease key dates mandated by CJCSI 6510.</p> <p>FY 2017 Plans: Develop, design, test/evaluate, and certify cryptographic hardware and software embedded in tactical radios to ensure these radios remain secure. System engineering activities including detailed requirements decomposition, and functional allocation. Design of modern reprogrammable cryptographic modules. Detailed hardware design and software coding.</p>	-	-	10.659
Accomplishments/Planned Programs Subtotals	3.486	9.209	21.565

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV5 / <i>Crypto Modernization (Crypto Mod)</i>
--	---	--

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
• 491: <i>Information Assurance Development</i>	6.922	18.009	7.431	-	7.431	10.092	8.783	9.228	9.814	Continuing	Continuing
• ET9: <i>Embedded Crypto Modernization</i>	-	-	4.585	-	4.585	27.256	-	-	-	0.000	31.841
• B96002: <i>Cryptographic Systems</i>	18.151	16.206	66.692	-	66.692	28.820	32.765	70.685	101.519	Continuing	Continuing
• B96006: <i>Embedded Cryptographic Modernization</i>	-	-	3.014	-	3.014	33.896	58.047	58.014	27.825	Continuing	Continuing
• BS9716: <i>NON PEO-SPARES</i>	1.721	2.530	2.545	-	2.545	2.635	3.170	4.917	4.961	Continuing	Continuing

Remarks

Line Item & Title:
 491 - Information Assurance Development - RDTE - funding executed by Net E, CIO/G6 and PL ES-CYBER
 ET9 - Embedded Crypto Modernization - RDTE
 B96002 - Cryptographic Systems - OPA2
 B96006 - Embedded Cryptographic Modernization - OPA2
 BS9716 - NON PEO-SPARES - OPA4

D. Acquisition Strategy

The objective of this program is to integrate and validate hardware and software solutions to provide COMSEC superiority in order to protect against threats, increase battlefield survivability/lethality, and enable critical Mission Command activities. The objective of the Cryptographic Systems program is to provide adaptive, flexible, and programmable cryptographic systems using best practices, lessons learned and programmatic management to meet the challenge of modernizing the Army's aging cryptographic systems. The effort will support the network operations from end-to-end throughout the force and the Common Operating Environment (COE) thus mitigating Information Assurance (IA) networked vulnerabilities to National information security systems. CDD, approved by CIO/G6, 15 Jul 10; ICD, approved by JROC, 25 Mar 11; AAO; approved by G3, 15 Dec 11 and increased, 19 Jun 15.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV5 / <i>Crypto Modernization (Crypto Mod)</i>
--	---	--

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
VACM INTEROPERABILITY																												
TEST AND EVALUATION OF LINK/TRUNK ENCRYPTORS SOFTWARE																												
TEST AND EVALUATION OF SECURE VOICE SOFTWARE AND HARDWARE																												
TEST AND EVALUATION OF IN-LINK NETWORK ENCRYPTORS SOFTWARE																												
HAIPE EXTENSION MANAGER																												
ECMI GPR SW UPGRADE																												
ECMI DEVELOPMENT																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) DV5 / <i>Crypto Modernization (Crypto Mod)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
VACM INTEROPERABILITY	4	2013	4	2017
TEST AND EVALUATION OF LINK/TRUNK ENCRYPTORS SOFTWARE	4	2013	4	2019
TEST AND EVALUATION OF SECURE VOICE SOFTWARE AND HARDWARE	4	2013	4	2021
TEST AND EVALUATION OF IN-LINK NETWORK ENCRYPTORS SOFTWARE & HARDWARE	4	2013	4	2021
HAIPE EXTENSION MANAGER	1	2017	4	2021
ECMI GPR SW UPGRADE	1	2016	4	2018
ECMI DEVELOPMENT	1	2016	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>				Project (Number/Name) ET9 / <i>Embedded Crypto Modernization (CRYPTO MOD)</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
ET9: <i>Embedded Crypto Modernization (CRYPTO MOD)</i>	-	0.000	0.000	4.585	-	4.585	27.256	0.000	0.000	0.000	0.000	31.841
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

ET9 – The Embedded Crypto Modernization line was established in July 2015

A. Mission Description and Budget Item Justification

Embedded Cryptographic Modernization Initiative (ECMI) is an upgrade activity that will ensure enduring Army radios remain secure by operating with modern crypto keys. Tactical radios using embedded cryptographic systems will no longer be able to communicate securely after Crypto Keys expire due to Cease Key dates documented in the Chairman of the Joint Chiefs Staff instruction (CJCSI) 6510. In order to ensure Warfighters continue to have secured communications (i.e., encrypted data and voice), Army tactical radios are required to modernize their cryptographic capabilities by implementing the modern algorithms. If cease key dates are not met, Army will be forced to communicate at risk.

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

	FY 2015	FY 2016	FY 2017
Title: Embedded Cryptographic Modernization Initiative	-	-	4.585
Description: ECMI Non Recurring Engineering (NRE) Contract Prep Work			
FY 2017 Plans: Contract Prep Work to include RFP, SOW and contract award for 4QFY17 ECMI Development. PMO will conduct research and analysis to determine optimal algorithms and engineering approaches to modernize various cryptographic modules that are embedded within Army tactical radios.			
Accomplishments/Planned Programs Subtotals	-	-	4.585

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
• 491: <i>Information Assurance Development</i>	6.922	18.009	7.431	-	7.431	10.092	8.783	9.228	9.814	Continuing	Continuing
• DV5: <i>Crypto Modernization</i>	3.486	9.209	21.565	-	21.565	28.424	23.990	23.579	20.444	Continuing	Continuing
• B96002: <i>Cryptographic Systems</i>	18.151	16.206	66.692	-	66.692	28.820	32.765	70.685	101.519	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) ET9 / <i>Embedded Crypto Modernization (CRYPTO MOD)</i>
--	---	---

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
• B96006: <i>Embedded Cryptographic Modernization</i>	-	-	3.014	-	3.014	33.896	58.047	58.014	27.825	Continuing	Continuing
• BS9716: <i>NON PEO-SPARES</i>	1.721	2.530	2.545	-	2.545	2.635	3.170	4.917	4.961	Continuing	Continuing

Remarks

Line Item & Title:

- 491 - Information Assurance Development - RDTE - funding executed by Net E, CIO/G6 and PL ES-CYBER
- DV5 - Crypto Modernization - RDTE
- B96002 - Cryptographic Systems - OPA2
- B96006 - Embedded Cryptographic Modernization - OPA2
- BS9716 - NON PEO-SPARES - OPA4

D. Acquisition Strategy

The objective of the Cryptographic Systems program is to provide adaptive, flexible, and programmable embedded cryptographic solutions using best practices, lessons learned and programmatic management to meet the challenge of modernizing the Army's aging cryptographic systems. ECMI will design, develop, and execute upgrade activities to ensure all enduring Army tactical radios that employs embedded cryptographic hardware will be able to accept and utilize modern cryptographic keys.

Applicable documents affecting Tactical Radio ONS, ORD, & CPDs requiring crypto:

CDD for Cryptographic Equipment and Services Modernization, Increment 1, dated March 2010.

CJCSI 6510.02E – “Cryptographic Modernization Planning”, 01 April 2014.

CNSSP-15 – “National Information Assurance Policy on the Use of Public Standards for the Secure Sharing of Information Among National Security Systems”, 01 October 2012.

NSA CSS 3-9 – “Cryptographic Modernization Initiative Requirements for Type 1 Cryptographic Products”, dated 28 March 2013.

Memorandum from Army Acquisition Executive with subject “Management and Procurement of Communications Security (COMSEC) Capability, dated 28 Feb 2012.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) ET9 / <i>Embedded Crypto Modernization (CRYPTO MOD)</i>
--	---	---

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
ECMI Development																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303140A / <i>Information Systems Security Program</i>	Project (Number/Name) ET9 / <i>Embedded Crypto Modernization (CRYPTO MOD)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ECMI Development	1	2017	4	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0303141A / Global Combat Support System
--	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	5.225	21.574	27.223	-	27.223	60.063	67.576	32.519	34.711	Continuing	Continuing
083: Global Combat Support Sys - Army	-	1.958	1.655	1.128	-	1.128	0.311	0.317	0.000	0.000	Continuing	Continuing
08A: Army Enterprise System Integration Program	-	3.267	1.685	0.896	-	0.896	0.000	0.000	0.000	0.000	0.000	5.848
EK2: GCSS-A Increment 2	-	0.000	18.234	25.199	-	25.199	59.752	67.259	32.519	34.711	0.000	237.674

A. Mission Description and Budget Item Justification

The Global Combat Support System-Army (GCSS-Army) program has two components: a functional component titled GCSS-Army and a technology enabler component titled Army Enterprise Systems Integration Program (AESIP). GCSS-Army coupled with AESIP are information and communications technology investments that will provide key enabling support to the transformation of the Army into a network-centric, knowledge-based future force. The GCSS-Army approved Capability Description Document (CDD) and Capability Production Document (CPD) require an enterprise approach to replace current logistics and maintenance Standard Army Management Information Systems (STAMIS). GCSS-Army will provide the Army's Sustainment Support for the warfighter with a seamless flow of timely, accurate, accessible and secure information management that gives combat forces a decisive edge. AESIP will provide the system's enterprise hub services, centralized master data management and cross-functional business intelligence/analytics. GCSS-Army will implement best business practices to streamline supply, accountability, maintenance, distribution, and reporting procedures in support of the future force transition path of the Army Campaign Plan.

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	4.525	12.274	11.368	-	11.368
Current President's Budget	5.225	21.574	27.223	-	27.223
Total Adjustments	0.700	9.300	15.855	-	15.855
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	9.300			
• Reprogrammings	0.870	-			
• SBIR/STTR Transfer	-0.170	-			
• Adjustments to Budget Years	-	-	15.855	-	15.855

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	
<u>Change Summary Explanation</u> FY 2017 RDTE increased to progress GCSS-Army Increment II functionality. Funding will be for technology maturation, requirements analysis and initial prototyping.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>				Project (Number/Name) 083 / <i>Global Combat Support Sys - Army</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
083: <i>Global Combat Support Sys - Army</i>	-	1.958	1.655	1.128	-	1.128	0.311	0.317	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

GCSS-Army is the tactical unit / installation logistics and financial system for the U.S. Army. GCSS-Army is an Enterprise Resource Planning (ERP) solution that will track supplies, spare parts and organizational equipment. It will track unit maintenance, total cost of ownership and other financial transactions related to logistics for all Army units. This modernized application will subsume outdated Standard Army Management Information Systems (STAMIS) that are not financially compliant and integrate about numerous local supply and logistics databases into a single, enterprise-wide authoritative system. GCSS-Army will be financially compliant and is a key component for the Army Enterprise strategy to be financially auditable by the end of FY17. When fully deployed, GCSS-Army will affect every supply room, motor pool, direct support repair shop, warehouse, Director of Operational Logistics (DOL) and property book office in the Army. GCSS-Army will modernize automated logistics by implementing best business practices to streamline supply operations, maintenance operations, property accountability, and tactical logistics and financial management and integration procedures in support of the Future Force transition path of the Army Campaign Plan. GCSS-Army is a key component of the Federated ERP Integration solution that will optimize tactical logistics and finance domain business processes into a single federated approach. It will eliminate the need for extensive maintenance and modification of aging, diverse software systems resulting in improved and efficient change control and configuration management through implementation of an enterprise system.

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

	FY 2015	FY 2016	FY 2017
Title: Government System Test and Evaluation	1.958	1.655	1.128
Description: Plans, conducts and reports on developmental tests and assists in planning, conducting, and reporting of operational and interoperability tests, assessments, and experiments in order to provide essential information for the acquisition and fielding of warfighting systems.			
FY 2015 Accomplishments: GCSS-Army conducted an Operational Assessment, lead by ATEC and DOT&E, from 12 November 2014 to 9 April 2015 in accordance with the Program's FDD Acquisition Program Baseline requirements. The system was proven to be operationally effective, suitable, and survivable in its current state.			
FY 2016 Plans: The program will be in Increment 1, Wave 1&2 Fielding, fixing any major issues in the ERP solution that are identified as the fielding continues and making necessary updates to the software baseline to meet auditability requirements.			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 083 / <i>Global Combat Support Sys - Army</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
The program will be in Increment 1, Wave 2 Fielding, fixing any major issues in the ERP solution that are identified as the fielding continues and making necessary updates to the software baseline to meet auditability requirements.			
Accomplishments/Planned Programs Subtotals	1.958	1.655	1.128

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
• W00800: <i>GCSS-Army Other Procurement, Army (OPA)</i>	117.524	143.262	152.965	-	152.965	31.178	2.408	2.479	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

GCSS-Army has an evolutionary acquisition strategy as defined in DoD Directive 5000.01 and DoD Instruction 5000.02 and will define, develop, and deploy an initial operational capability based upon proven technology, time-phased requirements, projected threat assessments, and demonstrated manufacturing capabilities. Increment 1 will be a viable stand alone capability that will not require subsequent releases to be operational.

GCSS-Army Increment I is being implemented in three releases.

Release 1.0 replaces: Standard Army Retail Supply System (SARSS) at one Direct Support Unit (DSU) in the 11th Armored Cavalry Regiment (ACR), Fort Irwin, California. An Operational Assessment (OA) was conducted on Release 1.0 and information is gathered through Continuous Evaluation.

Release 1.1 subsumes Release 1.0 and provides over 80% of the required GCSS-Army capability.

Release 1.2 represents the complete baseline with all required capabilities provided.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 083 / <i>Global Combat Support Sys - Army</i>
--	---	---

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
1. PM GCSS-Army- PMO Operations	Various	PM GCSS-Army : Fort Lee, VA 23805	103.931	-		-		-		-		-	0	103.931	62.385
Subtotal			103.931	-		-		-		-		-	0.000	103.931	62.385

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			
1. Enterprise Resource Planning (ERP) design and development	C/FPAF	Northrop Grumman Information Systems : Chester, VA 23836	465.845	-		-		-		-		-	0	465.845	453.329
Government Developer Subject Matter Experts	IA	ASA (FM&C), CASCOM and GFEBS : Various Locations	22.315	-		-		-		-		-	Continuing	Continuing	19.730
Subtotal			488.160	-		-		-		-		-	-	-	473.059

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
1. PM Support - Independent Verification and Validation (IV&V)	C/T&M	CAP Gemini : 2250 Corporate Park Dr, Herndon, VA 20171	1.031	-		-		-		-		-	0	1.031	1.031
2. PM Support - Program Management Support Services A	C/T&M	Engility Corporation : 3750 Centerview Drive Chantilly, VA 20151	1.386	-		-		-		-		-	0.000	1.386	25.580
3. PM Support - Program Management Support Services B	C/T&M	Logistics Management Institute : Colonial Heights, VA 23834	42.101	-		-		-		-		-	0	42.101	34.531

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>					Project (Number/Name) 083 / <i>Global Combat Support Sys - Army</i>						
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			44.518	-		-		-		-		-	0.000	44.518	61.142
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
1. Test and Evaluation - Test and Evaluation	IA	AEC, ATEC, OTC and JITC : Various Locations	34.762	1.958		1.655		1.128		-		1.128	Continuing	Continuing	0
Subtotal			34.762	1.958		1.655		1.128		-		1.128	-	-	0.000
			Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			671.371	1.958		1.655		1.128		-		1.128	-	-	596.586
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 083 / <i>Global Combat Support Sys - Army</i>
--	---	---

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
Field Wave 1																												
GCSS-Army Release 1.2 (Wave 2) Plan, Analyze, Design, Build & Test																												
(1) Release 1.2 (Wave 2) Lead Site Verification Test	▲ 1																											
(2) Release 1.2 (Wave 2) In Progress Review	▲ 2																											
Field Release 1.2 (Wave 2)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 083 / <i>Global Combat Support Sys - Army</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Field Wave 1	1	2013	1	2016
GCSS-Army Release 1.2 (Wave 2) Plan, Analyze, Design, Build & Test	3	2011	4	2015
Release 1.2 (Wave 2) Lead Site Verification Test	3	2015	3	2015
Release 1.2 (Wave 2) In Progress Review	4	2015	4	2015
Field Release 1.2 (Wave 2)	1	2015	4	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>				Project (Number/Name) 08A / <i>Army Enterprise System Integration Program</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
08A: <i>Army Enterprise System Integration Program</i>	-	3.267	1.685	0.896	-	0.896	0.000	0.000	0.000	0.000	0.000	5.848
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

Army Enterprise Systems Integration Program (AESIP), mission is to integrate Army business processes by providing a single source for enterprise hub services, centralized master data management, and business intelligence and analytics. AESIP is the principle GCSS-Army Business Intelligence system and will aggregate data for enterprise reporting. AESIP will support the Army's federated approach and enable the integration of end-to-end logistical and financial processes. The Army has successfully addressed concerns about the lack of integration of ERPs by leveraging AESIP core capabilities and expanding those benefits across the Army enterprise. AESIP will be an Army specific commercial off-the-shelf (COTS) web portal implementation via the NetWeaver Platform from developer Systems Applications and Products (SAP) American Group to support Army process scenarios and requirements that will provide core competencies:

- Enterprise Service Bus (Hub Services) - For a Service oriented, Single Point of Entry to connect, mediate, and control the exchange of data.
- Enterprise Business Intelligence/Business Warehouse - Aggregates data from ERP and non-ERP systems to provide flexible Enterprise level reporting.
- Enterprise Master Data Management - For a single source of authoritative data and improved workflow and business processes.

The AESIP solution establishes a framework for a fully integrated ERP centric environment that will ultimately provide Commanders Total Visibility from Factory to Battlefield thereby ensuring delivery of the right equipment to the right unit at the right time, while reducing backlogs of material on the battlefield.

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

	FY 2015	FY 2016	FY 2017
Title: Production & Full Deployment Phases Contract Activity	2.723	1.429	0.896
Description: Manage Government contracts associated with work relating to acquisition, engineering, planning and integration activities supporting Army Enterprise Systems Integration Program (AESIP).			
FY 2015 Accomplishments: Addressed system enhancement requests from users and critical requirements from CASCOM or LOGSA during the GCSS-Army full fielding. Expand Business Analytics capability across the Army providing access to data from ERP and non-ERP systems.			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 08A / <i>Army Enterprise System Integration Program</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Will address system enhancement requests from users and critical requirements from CASCOM or LOGSA during the GCSS-Army full fielding. Enhance the Customer Vender Solution (CVS); required for migrating remaining customer functionality into ERP Central Component (ECC) and expanding customer records. Expand Business Analytics capability across the Army providing access to data from ERP and non-ERP systems; retiring duplicative capabilities. FY 2017 Plans: Will address system enhancement requests from users and critical requirements from CASCOM or LOGSA during the GCSS-Army full fielding. Enhance the Customer Vender Solution (CVS); required for migrating remaining customer functionality into ERP Central Component (ECC) and expanding customer records. Expand Business Analytics capability across the Army providing access to data from ERP and non-ERP systems; retiring duplicative capabilities.			
Title: Government System Test and Evaluation Description: Plans, conducts and reports on developmental tests and assists in planning, conducting, and reporting of operational and interoperability tests, assessments, and experiments. FY 2015 Accomplishments: Continued developmental and operational (ATEC and JITC) testing and evaluation of AESIP Hub Services products as well as participated in GCSS-Army's Operational Assessment. FY 2016 Plans: Will continue evaluation in support of GCSS-Army Increment 1, Wave 1 & 2 Fielding, identifying issues during fielding and documenting necessary updates to the software baseline for auditability requirements.	0.544	0.256	-
Accomplishments/Planned Programs Subtotals	3.267	1.685	0.896

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>
• AESIP Procurement: AESIP Other Procurement, Army (OPA) (SSN W11001)	1.076	3.392	2.695	-	2.695	2.156	1.239	5.260	3.349	Continuing	Continuing
Remarks											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 08A / <i>Army Enterprise System Integration Program</i>

D. Acquisition Strategy

As the technical component of GCSS-Army, AESIP employs an evolutionary acquisition strategy as defined in DoD Directive 5000.01 and DoD Instruction 5000.02, and will define, develop, and deploy an initial operational capability based upon proven technology, time-phased requirements, projected threat assessments, and demonstrated manufacturing capabilities. The system will be developed in multiple releases then integrated and synchronized with related systems.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 08A / <i>Army Enterprise System Integration Program</i>
--	---	---

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
1. PM AESIP- PMO Operations	Various	PM AESIP : 5911 Kingstowne Village Pkwy, Alexandria, VA 22315	26.090	-		-		-		-		-	0	26.090	26.090
Subtotal			26.090	-		-		-		-		-	0.000	26.090	26.090

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			
1. Enterprise Resource Planning (ERP) Implementation Systems Integration	C/T&M	Computer Sciences Corporation (CSC) : 3160 Fairview Park Drive, Falls Church, VA 22042	118.445	-		-		-		-		-	0.000	118.445	118.445
2. Enterprise Resource Planning (ERP) Implementation - Technical Support Services	FFRDC	MITRE Corporation : 7615 Colshire Drive, McLean, VA 22102	7.179	-		-		-		-		-	0.000	7.179	7.179
3. Enterprise Resource Planning (ERP) - Government Lead Systems Integrator	IA	US Army ARDEC : Picatinny Arsenal, NJ 08706	49.500	-		-		-		-		-	Continuing	Continuing	Continuing
4. Enterprise Resource Planning (ERP) - Technical Support Services	C/T&M	Systems Applications and Services (SAP) : 1300 Pennsylvania Ave, Washington, DC 20004	16.205	-		-		-		-		-	Continuing	Continuing	Continuing
5. Enterprise Resource Planning (ERP) - ERP/SAP Technical and Management Support Services	C/T&M	iLuMina Solution Inc. : 23330 Cottonwood, California, MD 20619	5.313	-		-		-		-		-	0	5.313	5.313

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 08A / <i>Army Enterprise System Integration Program</i>
--	---	---

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			
6. Enterprise Resource Planning (ERP) - Enterprise Application Services A	C/T&M	Attain, LLC : 8000 Towers Crescent Dr., Vienna, VA 22182	8.931	-		-		-		-		-	Continuing	Continuing	Continuing
7. Enterprise Resource Planning (ERP) - Enterprise Application Services B	C/T&M	Insap Services Inc. : 12000 Lincoln Dr. Marlton, NJ 08053	0.020	-		-		-		-		-	Continuing	Continuing	Continuing
8. Enterprise Resource Planning (ERP) - Enterprise Application Services C	C/T&M	Oakland Consulting Group Inc : 9501 Sheridan, Lanham, MD 20706	11.897	-		-		0.896		-		0.896	Continuing	Continuing	Continuing
Enterprise Resource Planning (ERP) - Enterprise Application Services D	C/T&M	VARIOUS : VARIOUS	13.947	2.723	Jan 2015	1.429		-		-		-	0	18.099	0
9. Enterprise Resource Planning (ERP) - Enterprise Integration Services	C/T&M	EDC Consulting LLC : 1104 Good Hope Rd SE, Washington, DC 20020	1.364	-		-		-		-		-	Continuing	Continuing	Continuing
10. Enterprise Resource Planning (ERP) - Infrastructure Services	C/T&M	TBD : TBD	0.100	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			232.901	2.723		1.429		0.896		-		0.896	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
1. PM Support - Program Management Support Services A	C/FFP	L3 Services Inc. (MPRI Division) : 1320 Braddock	6.940	-		-		-		-		-	0	6.940	6.940

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0303141A / Global Combat Support System				08A / Army Enterprise System Integration Program							
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
		PL, Alexandria, VA 22314													
2. PM Support - Program Management Support Services B	C/T&M	LMI Government Consulting : 2000 Corporate Ridge, McLean, VA 22102	26.208	-		-		-		-		-	0.000	26.208	26.208
3. PM Support - Program Management Support Services C	C/T&M	Science Applications Internation Corporation (SAIC) : 1710 SAIC Dr., McLean, VA 22102	7.020	-		-		-		-		-	0.000	7.020	7.020
4. PM Support - Indepent Verification and Validation (IV&V)	C/T&M	CAP Gemini : 2250 Corporate Park Dr, Herndon, VA 20171	2.104	-		-		-		-		-	0.000	2.104	2.104
Subtotal			42.272	-		-		-		-		-	0.000	42.272	42.272
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
1. Test and Evaluation - Test and Evaluation	IA	AEC, ATEC, OTC and JITC : Various Locations	3.242	0.544		0.256		-		-		-	Continuing	Continuing	Continuing
Subtotal			3.242	0.544		0.256		-		-		-	-	-	-
Project Cost Totals			304.505	3.267		1.685		0.896		-		0.896	-	-	-
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 08A / <i>Army Enterprise System Integration Program</i>
--	---	---

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
Increment 1 Enterprise Service Bus (Hub Services)																												
Increment 1 Enterprise Master Data Management																												
Increment 1 - Enterprise Business Intelligence/Business Warehouse																												
Material Master (MM) Release 3.3																												
MM Release 3.5																												
GCSS-Army Release 1.1 (Wave 1) - Fielding																												
Customer Vender Solution 2.0																												
GCSS-Army Release 1.2 (Wave 2) Plan, Analyze, Design, Build & Test																												
GCSS-Army Wave 2 - Fielding																												
(1) GCSS-Army Release 1.2 (Wave 2) -In Progress Review																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) 08A / <i>Army Enterprise System Integration Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Increment 1 Enterprise Service Bus (Hub Services)	4	2008	4	2017
Increment 1 Enterprise Master Data Management	4	2008	4	2017
Increment 1 - Enterprise Business Intelligence/Business Warehouse	4	2008	4	2017
Material Master (MM) Release 3.3	4	2012	4	2015
MM Release 3.5	4	2012	2	2015
GCSS-Army Release 1.1 (Wave 1) - Fielding	1	2013	1	2016
Customer Vender Solution 2.0	2	2013	4	2016
GCSS-Army Release 1.2 (Wave 2) Plan, Analyze, Design, Build & Test	3	2011	4	2015
GCSS-Army Wave 2 - Fielding	1	2015	4	2017
GCSS-Army Release 1.2 (Wave 2) -In Progress Review	4	2015	4	2015

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>				Project (Number/Name) EK2 / <i>GCSS-A Increment 2</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
EK2: <i>GCSS-A Increment 2</i>	-	0.000	18.234	25.199	-	25.199	59.752	67.259	32.519	34.711	0.000	237.674
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Global Combat Support System-Army (GCSS-Army) program has two components: a functional component titled GCSS-Army and a technology enabler component titled Army Enterprise Systems Integration Program (AESIP). GCSS-Army coupled with AESIP are information and communications technology investments that will provide key enabling support to the transformation of the Army into a network-centric, knowledge-based future force. Building on the foundation of GCSS-Army Increment 1, Increment 2 will provide the Army Enterprise Aviation maintenance, enhanced Business Intelligence / Business Warehouse (BI/BW) and Army Pre-Positioned Stock (APS) functional capabilities to deliver greater efficiencies and to improve information flow and accuracy in real time to decision makers. Upon the completion of Increment II, the Unit Level Logistics System-Aviation (Enhanced) (ULLS-A(E)), Unmanned Aircraft System-Initiative (UAS-I), and Army War Reserve Deployment System (AWRDS) will be eligible for retirement since the necessary functionality will have been replaced by GCSS-Army increments. GCSS-A will provide the Army sustainment support for the warfighter with a seamless flow of timely, accurate, accessible and secure management information that gives combat forces a decisive edge.

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

	FY 2015	FY 2016	FY 2017
Title: Technology Maturation and Risk Reduction Phase	-	18.234	18.899
Description: During the Technology Maturation and Risk Reduction (TMRR) phase, the program develops and demonstrates prototype designs to reduce technical risk, validate design approaches, validate cost estimates, and refine requirements. TMRR is an iterative process of maturing technologies and refining user performance parameters to ensure an affordable and executable production program.			
FY 2016 Plans: Perform analysis to assess risk, affordability, and feasibility. Begin fit/gap analysis and blueprinting of stakeholder requirements. Efforts are intended to reduce the specific risks (e.g. technology, engineering, integration and life-cycle risk) associated with the incremental development of the GCSS-Army system.			
FY 2017 Plans: Perform analysis to assess risk, affordability, and feasibility. Continue fit/gap analysis and blueprinting of stakeholder requirements. Efforts are intended to reduce the specific risks (e.g. technology, engineering, integration and life-cycle risk) associated with the incremental development of the GCSS-Army system.			
Title: System Design, Build and Test	-	-	6.300

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) EK2 / <i>GCSS-A Increment 2</i>
--	---	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: The purpose of this phase is to begin development of a system or an incremental capability that is affordable and executable that satisfies Key Performance Parameters and Key System Attributes .</p> <p>FY 2017 Plans: Maturation of technologies including demonstrating and assessing them in a relevant environment. Perform trade analysis between cost, schedule and performance with revision of requirements and designs. Creation of the Systems functional baseline, System performance specification in preparation for a Preliminary Design Review.</p>			
Accomplishments/Planned Programs Subtotals	-	18.234	25.199

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• GCSS-Army Increment II OPA: GCSS-Army Increment II Other Procurement (SSN W11011)	-	-	-	-	-	-	7.110	31.314	56.763	0.000	95.187

Remarks

D. Acquisition Strategy
In FY16 and FY17, initial work in blueprinting, architecture development and documentation required for a MS B decision will take place. The request for proposal and contract strategy will be formulated during this time with an RFP release scheduled for late FY17. The program will request permission from the MDA, the USD(AT&L), to begin Increment 2 work in FY17, working towards a MS B Decision in 2QFY18. Development work will begin in FY18 upon contract award.

E. Performance Metrics
N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) EK2 / <i>GCSS-A Increment 2</i>
--	---	---

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
Preliminary Design, RFP, Source Selection, Prototyping, Requirements																												
(1) MDA Meeting					▲ 1																							
(2) Milestone B													▲ 2															
(3) Milestone C																					▲ 3							
(4) Milestone FDD																					▲ 4							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303141A / <i>Global Combat Support System</i>	Project (Number/Name) EK2 / <i>GCSS-A Increment 2</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Preliminary Design, RFP, Source Selection, Prototyping, Requirements Analysis	1	2016	3	2017
MDA Meeting	2	2016	2	2016
Milestone B	3	2018	3	2018
Milestone C	1	2020	1	2020
Milestone FDD	1	2020	1	2020

Note

The schedule for GCSS-Army Increment 2 is draft and pre-decisional and may change once work begins in FY16. The above schedule is based on estimates from the DoDI 5000.02 for an incrementally deployed software intensive program.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303142A / <i>SATCOM Ground Environment (SPACE)</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	9.978	9.355	18.815	-	18.815	10.677	8.993	9.055	8.416	Continuing	Continuing
253: <i>Dscs-Dcs (Phase II)</i>	-	4.067	1.594	5.164	-	5.164	6.626	5.857	5.930	6.084	Continuing	Continuing
456: <i>MILSATCOM System Engineering</i>	-	2.871	0.926	4.287	-	4.287	4.051	3.136	3.125	2.332	0.000	20.728
EA3: <i>Transportable Tactical Cmd Comms (T2C2)</i>	-	3.040	3.885	3.652	-	3.652	0.000	0.000	0.000	0.000	0.000	10.577
EK8: <i>Enroute Mission Command</i>	-	0.000	2.950	5.712	-	5.712	0.000	0.000	0.000	0.000	0.000	8.662

A. Mission Description and Budget Item Justification

Military Satellite Communication (MILSATCOM) systems are joint program/project efforts to satisfy ground mobile requirements for each Service, the Joint Chiefs of Staff (JCS), the National Command Authority, the combatant commanders, the Office of the Secretary of Defense, and other governmental, non-DoD users. The worldwide MILSATCOM systems are: the Super High Frequency (SHF) Defense Satellite Communications System (DSCS); the Wideband Global SATCOM (WGS); the MILSTAR Extremely High Frequency (EHF) Low Data Rate (LDR) and Medium Data Rate (MDR); the Advanced Extremely High Frequency (AEHF); and future MILSATCOM capabilities. All of these systems are required to support legacy, interim and emerging communication space architectures and Future Force requirements. The Army is responsible for materiel development, acquisition, product improvement, testing, fielding and integrated logistics support of ground satellite terminals and SATCOM control subsystems and all associated equipment used to provide range extension of Mission Command Networks and Systems. The Army also participates in the development of MILSATCOM programs, including architectures, payloads, waveforms, antennas and terminal developments to ensure US Army equities are appropriately addressed with our sister services. This includes technology assessment efforts associated with the integration of MILSATCOM components to US Army Landwarnet. This responsibility also includes maintaining the life cycle logistics support required to achieve end-to-end connectivity and interoperability, satisfying JCS network operations in support of the President, JCS, combatant commanders, Military Departments, Department of State, and other government Departments and Agencies. Project EK 8 to support testing for Enroute Mission Command (EMC) has been added to SATCOM Ground Environment programs in FY16. EMC supports Global Response Force (GRF) and other Army units with the requirement to conduct Airborne forcible entry operations with the ability to conduct mission command.

This program is designated as a DoD Space Program.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)
---	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	11.006	9.355	17.748	-	17.748
Current President's Budget	9.978	9.355	18.815	-	18.815
Total Adjustments	-1.028	0.000	1.067	-	1.067
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.028	-			
• Adjustments to Budget Years	-	-	1.067	-	1.067

Change Summary Explanation

FY2017 increase is a net increase driven by:
T2C2: \$3.6M Increase
DSCS: \$2.259M Reduction
MILSATCOM: \$0.249M Reduction
EMC: \$0.077M Reduction

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 253 / Dscs-Dcs (Phase II)
--	---	---

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
253: Dscs-Dcs (Phase II)	-	4.067	1.594	5.164	-	5.164	6.626	5.857	5.930	6.084	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides funds to develop Satellite Communication (SATCOM) ground subsystem equipment and software in support of Joint Chiefs of Staff (JCS) validated Mission Command Network and Systems requirements for the worldwide Defense Enterprise Wideband SATCOM System (DEWSS). DEWSS is composed of the Super High Frequency (SHF) Defense Satellite Communications System (DSCS) and Wideband Global SATCOM (WGS) programs, which are required to support legacy, interim and emerging communication space architectures and future Force requirements. Expansion of the WGS constellation and upgrades to both DSCS and WGS are vital to support the Army's emerging power projection and rapid deployment role. DSCS and WGS provide multiple channels of tactical end-to-end connectivity and interoperability with strategic networks and national decision-makers, satisfying JCS network operations in support of the President, JCS, combatant commanders, military departments, Department of State and other government departments and agencies.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Netcentric System Engineering and Analysis</p> <p>Description: Funding is provided for the following effort:</p> <p>FY 2015 Accomplishments: Fund analysis for Netcentric System Engineering</p> <p>FY 2016 Plans: Continue analysis for Netcentric System Engineering</p> <p>FY 2017 Plans: Continue analysis for Netcentric System Engineering</p>	1.516	0.551	0.350
<p>Title: Future analysis of Wideband SATCOM Operational Management System (WSOMS) database consolidation effort.</p> <p>Description: Funding is provided for the following effort:</p> <p>FY 2015 Accomplishments: WSOMS database consolidation effort to evaluate existing database schemas (structure) for each independent Wideband Control subsystem. The result of the analysis will be to define a structure of a consolidated database along with a transition plan. The desired impact will be to reduce total cost of ownership for multiple subsystems in terms of recurring annual licensing costs and shorten logistics trail with associated database storage equipment.</p>	1.123	-	-
<p>Title: Protected SATCOM Modem</p>	1.428	1.043	4.814

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 253 / Dscs-Dcs (Phase II)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Funding is provided for the following effort:</p> <p>FY 2015 Accomplishments: Fund modem pilot program to address Anti-Jam (AJ) and Anti-Scintillation (AS) for the WGS constellation.</p> <p>FY 2016 Plans: To investigate the possibility of integrating anti-jam features into current Commercial Off-The-Shelf (COTS), Network Management System (NMS).</p> <p>FY 2017 Plans: Build a prototype network of 6 modems and integrate with Gateway equipment at Joint SATCOM Engineering Center (JSEC). Study Anti-Jam System behavior when subjected to real threat in a classified environment.</p>			
Accomplishments/Planned Programs Subtotals	4.067	1.594	5.164

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
• 20: Defense Enterprise Wideband SATCOM Systems (DEWSS) (BB8500)	121.085	172.306	143.805	-	143.805	133.863	178.093	170.270	139.721	Continuing	Continuing

Remarks

D. Acquisition Strategy

FY2017 funding in the amount of \$5.164 million finances Project Manager, Defense Communications and Army Transmission Systems (PM DCATS) netcentric systems engineering, modem risk mitigation, and DoD Information Assurance Certification Accreditation Process (DIACAP) support. Funding provides for SATCOM terminal upgrades, enhancement of baseband throughput capabilities, technology insertion and upgrades which enhance decision support capabilities, allowing for full utilization of Wideband Global SATCOM (WGS) capabilities. Both the Wideband SATCOM Operational Management System (WSOMS) and the Enterprise Wideband SATCOM Terminal System (EWSTS) Capability Production Documents (CPDs) contain Netcentric-Ready Key Performance Parameters (NR-KPPs) as required by CJCSI 6212.01C. Netcentric efforts are required to facilitate the migration from the current trunk-based communications systems to Internet Protocol (IP) based systems and to engineer, test and integrate IP based capabilities into EWSTS and WSOMS systems. Studies, risk mitigation, system integration and advanced demonstrations for netcentric baseband and policy based control will accommodate technology insertion, data sharing, remote operations, architecture efforts and use of commercial technology, thus ensuring the life of the Defense Enterprise Wideband System (DEWSS) terminal family beyond 2025 and reducing lifecycle costs and enterprise requirements on the WGS and Defense Satellite Communication System (DSCS) satellites in the future.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / <i>SATCOM Ground Environment (SPACE)</i>	Project (Number/Name) 253 / <i>Dscs-Dcs (Phase II)</i>

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 253 / Dscs-Dcs (Phase II)
--	---	---

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			
Netcentric SE Studies and Analysis	MIPR	CERDEC : APG, MD	2.684	1.000		0.594		0.350		-		0.350	0	4.628	0
Conduct Analysis of WSOMS Database Consolidation	MIPR	CERDEC : APG, MD	2.152	0.950		-		-		-		-	0	3.102	0
Protected SATCOM Modems	MIPR	CERDEC : APG, MD	0.918	0.587		0.210		3.514		-		3.514	0	5.229	0
Subtotal			5.754	2.537		0.804		3.864		-		3.864	0.000	12.959	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
In house Support	Allot	PdM WESS : Ft. Belvoir, VA	0.929	0.480		0.290		0.600		-		0.600	0	2.299	0
Contractor Support	C/CPFF	ACC-APG : APG, MD	1.697	1.050	Jul 2015	0.500	Nov 15	0.700	Nov 2016	-		0.700	0	3.947	0
Subtotal			2.626	1.530		0.790		1.300		-		1.300	0.000	6.246	0.000

Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract			
Project Cost Totals			8.380	4.067	1.594	5.164	-	5.164	0.000	19.205	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 253 / Dscs-Dcs (Phase II)
--	---	---

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
Netcentric System Engineering, Conducting Studies/Analysis																												
Conduct Analysis of WSOMS Database Consolidation, Net Migration																												
Protected SATCOM Modems																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 253 / Dscs-Dcs (Phase II)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Netcentric System Engineering, Conducting Studies/Analysis	1	2006	4	2021
Conduct Analysis of WSOMS Database Consolidation, Net Migration	1	2014	4	2016
Protected SATCOM Modems	1	2015	4	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)				Project (Number/Name) 456 / MILSATCOM System Engineering			
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
456: MILSATCOM System Engineering	-	2.871	0.926	4.287	-	4.287	4.051	3.136	3.125	2.332	0.000	20.728
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Military Satellite Communications (MILSATCOM) System Engineering (SE) assures that tactical Army Satellite Communications (SATCOM) and SATCOM On-The-Move (SOTM) systems are engineered to legally and efficiently operate worldwide. MILSATCOM SE shapes Joint SATCOM systems' design efforts, standards development and planning processes. MILSATCOM SE represents the Army's tactical interests within DoD, Commercial & International forums to ensure affordable and scalable future SATCOM capabilities for maneuver forces. These efforts, performed by MILSATCOM SE, lead to savings for the overall Army in the out years.

FY 17 funds support the continued systems engineering required to support technology maturation, systems analysis, and planning associated with joint SATCOM development efforts including the outcomes of the Protected SATCOM communications Systems (PSCS) Analysis of Alternatives (AoA), the follow-on Wideband AoA, and other efforts that have impact on tactical Army use of military and commercial satellite constellations. These efforts have a direct impact in reducing technical and programmatic risk for the acquisition efforts for tactical Army SATCOM systems using these constellations.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Protected Communications System Engineering</p> <p>Description: Protected Communications System Engineering</p> <p>FY 2015 Accomplishments: Protected Communications System Engineering</p> <p>FY 2016 Plans: Protected Communications System Engineering</p> <p>FY 2017 Plans: Protected Communications System Engineering</p>	1.646	0.463	2.354
<p>Title: Wideband Global SATCOM (WGS) Communications System Engineering</p> <p>Description: WGS Communications System Engineering</p> <p>FY 2015 Accomplishments: WGS Communications System Engineering to improve Ku/Ka antenna SWAP</p> <p>FY 2016 Plans:</p>	1.225	0.463	1.833

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 456 / MILSATCOM System Engineering

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
WGS Communications System Engineering to improve Ku/Ka antenna SWAP			
FY 2017 Plans: WGS Communications System Engineering to improve Ku/Ka antenna SWAP			
Title: Experimentation, development, testing and certification of critical SATCOM and Satellite-On-The-Move (SOTM) communication and network technologies. Description: Experimentation, development, testing and certification of critical SATCOM and SOTM communication and network technologies. FY 2017 Plans: Experimentation, development, testing and certification of critical SATCOM and SOTM communication and network technologies.	-	-	0.100
Accomplishments/Planned Programs Subtotals	2.871	0.926	4.287

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

N/A

Remarks

D. Acquisition Strategy

This project funds advanced systems engineering, research, development, test and evaluation of new and emerging technologies to optimize terminal performance and communications control. Once the technologies are mature and deemed feasible, funding and management responsibility for implementation of the technology will transition to WIN-T and related PoRs.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 456 / MILSATCOM System Engineering
--	---	--

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 Oversight	MIPR	PM WIN T : PEO C3T	2.914	0.100		-		-		-		-	0.000	3.014	0.000
Advanced Architecture/ Advanced Wideband System Architecture	MIPR	MIT Lincoln Labs : Lexington , MA	11.474	-		-		-		-		-	0	11.474	0
Subtotal			14.388	0.100		-		-		-		-	0.000	14.488	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			
Protected Communications and WGS Communications SE	TBD	Various : APG, MD	74.231	0.300		-		1.151		-		1.151	0	75.682	Continuing
FCC/ITU SOTM Regulatory Proposals/ Analyses/Modifications	MIPR	John Hopkins Universtiy Applied Physics Lab : Laurel, MD	2.655	-		-		-		-		-	0.000	2.655	0.000
T2C2 Development Analysis of AoA activity, market research, MS C	TBD	PEO C3T PM WIN-T : APG, MD	2.444	-		-		-		-		-	0	2.444	Continuing
Subtotal			79.330	0.300		-		1.151		-		1.151	0.000	80.781	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering (In House)	MIPR	PM WIN T : APG, MD	26.988	1.220		0.300		1.200		-		1.200	Continuing	Continuing	Continuing
Engineering Contractors Support	C/CPFF	PM WIN-T : APG, MD	38.935	0.500		0.626		1.136		-		1.136	Continuing	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 456 / MILSATCOM System Engineering
--	---	--

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Architecture & Analysis	Various	CERDEC PM WIN-T : APG, MD	17.501	-		-		0.200		-		0.200	Continuing	Continuing	Continuing
T2C2 preparation for Milestone C; Request for Proposal and solicitation preparation	TBD	PEO C3T PM WIN T : APG, MD	0.500	-		-		-		-		-	0	0.500	0
Subtotal			83.924	1.720		0.926		2.536		-		2.536	-	-	-

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			
Terminal Testing and Evaluation System Engineering	FFRDC	PEO C3T WIN T : TBD	2.304	0.200		-		0.200		-		0.200	Continuing	Continuing	Continuing
Test Support	MIPR	MATRIX : PM WIN T	22.387	0.200		-		0.200		-		0.200	Continuing	Continuing	Continuing
Testing, Certification	MIPR	Support Technical Testing : PM WIN T	6.650	0.351		-		0.200		-		0.200	Continuing	Continuing	Continuing
Test support to study the feasibility of moving small terminal activity from COMSATCOMO to MILSATCOM	C/CPFF	PEO C3T : PM WIN-T	0.400	-		-		-		-		-	0	0.400	0
T2C2 complete Initial Operational Test and Evaluation	TBD	PEO C3T : PM WIN-T	1.960	-		-		-		-		-	0	1.960	0
Subtotal			33.701	0.751		-		0.600		-		0.600	-	-	-

	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		211.343	2.871	0.926	4.287	-	4.287	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 456 / MILSATCOM System Engineering
--	---	--

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
WGS/Wideband SE																												
MILSATCOM SE Protected COTM Terminal Engineering																												
SATCOM SOTM Development Support																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) 456 / MILSATCOM System Engineering

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
WGS/Wideband SE	1	2004	4	2020
MILSATCOM SE Protected COTM Terminal Engineering	1	2015	4	2020
SATCOM SOTM Development Support	1	2018	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)				Project (Number/Name) EA3 / Transportable Tactical Cmd Comms (T2C2)			
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
EA3: <i>Transportable Tactical Cmd Comms (T2C2)</i>	-	3.040	3.885	3.652	-	3.652	0.000	0.000	0.000	0.000	0.000	10.577
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Transportable Tactical Command Communications (T2C2) extends the Warfighter Information Network Tactical (WIN-T) network to small company and team sized early entry units. The T2C2 system is based on combat proven capabilities and provides robust voice and data communication capabilities. The T2C2 systems will also integrate users into the higher capacity WIN-T network and extend that network to the tactical edge; T2C2 also enables warfighters in select small Command Posts (CP) (typically Company level) and select Army teams to send and receive time sensitive Situational Awareness (SA), Intelligence, and Mission Command (MC) information while At-the-Halt (ATH) in support of all Joint determined and defined operational phases. These phases span from the initial Shaping Phase, designed to dissuade or deter adversaries and assure mission friends, to Deterrence, Initiative Seizure and Domination phases culminating with post maneuver Stabilization and Enabling of Civil Authorities enabling legitimate civil governance in safe and secure environment. FY17 funds are in support of T2C2 systems (Light and Heavy) Initial Operational Test & Evaluation (IOT&E) in support a Full Rate Production (FRP) decision scheduled for FY18.

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

	FY 2015	FY 2016	FY 2017
Title: T2C2 Testing	2.731	3.885	3.652
Description: Testing requirements to achieve FRP.			
FY 2015 Accomplishments: Supported the completion of Milestone C and initial testing requirements to support efforts to achieve FRP.			
FY 2016 Plans: Supports testing requirements including Electromagnetic testing, Environmental testing, AIC testing, a Network test and Joint Interoperability Testing Command (JITC) Certification.			
FY 2017 Plans: Initial Operational Test & Evaluation at the Network Integration Event (NIE) 17.2 (May 2017).			
Title: T2C2 Testing Articles and Transportation	0.309	-	-
Description: Procurement of testing articles and the transportation of assets to the testing location.			
FY 2015 Accomplishments: Transportation of test assets to the testing location.			
Accomplishments/Planned Programs Subtotals	3.040	3.885	3.652

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) EA3 / Transportable Tactical Cmd Comms (T2C2)

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>			<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• Transportable Tactical Command Comm: <i>Transportable Tactical Command Communications (T2C2) (B85800)</i>	10.847	50.722	36.580	-	36.580	62.600	62.988	78.444	79.022	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Transportable Tactical Command Communications (T2C2) program Acquisition Strategy (AS) is based on integration of existing Commercial-Off-the-Shelf (COTS)/ Non-Developmental Items (NDI) into new integrated systems fielded in the needed configuration for small teams or small unit Command Posts (CP) to allow these units to receive and transmit data. T2C2 will provide a high bandwidth tactical network extension for small unit CPs operating beyond line-of-sight from their higher headquarters and for teams operating outside the full tactical network architecture. A competitive award using an existing IDIQ contract will take advantage of the competitive forces of the commercial marketplace which will result in lower prices, better quality, and reduced time from requirements identification to award. The systems will be improved over time through technology insertions/refreshments via new competitions every three to five years. T2C2 will utilize a two-level maintenance concept, will be Soldier-maintained, and initially supported by Interim Contractor Support. An analysis will be conducted to determine the ultimate supportability path. This strategy will allow a capability to be integrated and delivered quickly to support a limited deployment of Low Rate Initial Production (LRIP) units in FY17 required for Production Verification and the Initial Operational Test and Evaluation, with FRP planned for FY18.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) EA3 / Transportable Tactical Cmd Comms (T2C2)
--	---	---

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
Milestone C Preparation	MS C Preparation																											
(1) Milestone C Decision					▲ MS C																							
T2C2 Product Verification, AIC & JITC Testing									Testing																			
(2) Initial Operational Test & Evaluation									IOT&E ▲ 2																			
(3) T2C2 Full Rate Production Decision Review													▲ 3 FRP Decision															

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) EA3 / Transportable Tactical Cmd Comms (T2C2)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone C Preparation	3	2014	1	2016
Milestone C Decision	1	2016	1	2016
T2C2 Product Verification, AIC & JITC Testing	3	2016	3	2017
Initial Operational Test & Evaluation	3	2017	3	2017
T2C2 Full Rate Production Decision Review	2	2018	2	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) EK8 / Enroute Mission Command
--	---	---

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
EK8: Enroute Mission Command	-	0.000	2.950	5.712	-	5.712	0.000	0.000	0.000	0.000	0.000	8.662
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Funds in this program element are for testing requirements.

A. Mission Description and Budget Item Justification

Enroute Mission Command (EMC) supports the Global Response Force (GRF) and other Army units with the requirement to conduct Airborne forced entry operations with the ability to conduct mission command, to include mission planning and rehearsal, while enroute on board US Air Force Air Mobility Command (AMC) aircraft. EMC provides a modernization to enroute communications to enable broadband reach-back data capability utilizing military or commercial networks with adequate bandwidth support required by Mission Command and Intelligence applications. EMC will provide commanders with the ability to obtain and share near real-time information regarding intelligence, situational awareness and command and control information while enroute to their objective. The ability to adjust plans and strategize utilizing the latest Intel data will give the GRF the information dominance needed to execute their mission once they arrive at their objective. FY17 funding will support test by the Army Test and Evaluation Command (ATEC) during Operational Assessment (OA). The OA supports the Milestone Decision Authority (MDA) Disposition Decision (FY18) to continue procurement and fielding.

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

	FY 2015	FY 2016	FY 2017
Title: EMC Testing	-	2.950	5.712
Description: EMI/EMC, Flight Test and Operational Assessment			
FY 2016 Plans: Flight Test and EMI/EMC Testing			
FY 2017 Plans: Operational Assessment			
Accomplishments/Planned Programs Subtotals	-	2.950	5.712

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

N/A

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) EK8 / Enroute Mission Command

D. Acquisition Strategy

The continued procurement of the EMC full operational capability follows DoDI 5000.02, 7 Jan 2015, Enclosure 13, Rapid Fielding of Capabilities. The Milestone Decision Authority (MDA) and project manager will tailor and streamline program strategy based on the required timelines to meet urgent need capability requirements. The Army Executive Agent signed an Acquisition Decision Memorandum (ADM) on 27 April 2015 delegating MDA to PEO C3T. The MDA signed an ADM on 11 May 2015 selecting the KuKa Antenna and Radome for the Full Operational Capability. An ADM was signed on 20 May 2015 granting approval to enter into production and deployment phase.

Due to rephasing of FY17 OPA funding into FY18/19, program has been restructured. Initial Operational Capability met in May 2015 with modification of five C-17s with satellite antennae and installation kits, and roll-on/roll-off, battalion level, Key Leader Node (KEN). Full Operational Capability (FOC) is 35 C-17s, seven KENs, and 21 company level Dependent Airborne Nodes (DAN), and an airborne command post suite (CASPER). FOC is currently projected for FY20. Planning to field an interim capability and conduct an Operational Assessment in FY17.

FY17 RDT&E funding will support test by the Army Test and Evaluation Command (ATEC) during Operational Assessment (OA). The OA supports the Milestone Decision Authority (MDA) Disposition Decision (FY18) to continue procurement and fielding.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) EK8 / Enroute Mission Command
--	---	---

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) MDA Decision			MDA ▲																													
(2) ONS IOC			ONS IOC ▲																													
EMI/EMC Test																																
Flight Test																																
Operational Assessment																																
(3) Disposition Decision																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303142A / SATCOM Ground Environment (SPACE)	Project (Number/Name) EK8 / Enroute Mission Command

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MDA Decision	3	2015	3	2015
ONS IOC	3	2015	3	2015
EMI/EMC Test	2	2016	2	2016
Flight Test	4	2016	4	2016
Operational Assessment	3	2017	3	2017
Disposition Decision	1	2018	1	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303150A / <i>WWMCCS/Global Command and Control System</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	2.493	7.034	4.718	-	4.718	4.710	4.510	5.441	14.325	Continuing	Continuing
C86: <i>Army Global C2 System</i>	-	2.493	7.034	0.467	-	0.467	0.316	0.000	0.000	0.000	0.000	10.310
EA5: <i>Strategic and Joint Mission Command</i>	-	0.000	0.000	4.251	-	4.251	4.394	4.510	5.441	14.325	Continuing	Continuing

A. Mission Description and Budget Item Justification

Global Command and Control System-Army (GCCS-A): This project is the Army component system that directly supports the implementation of the Global Command and Control System Family of Systems. GCCS-A provides automated command and control tools for Army Strategic and Operational Theater Commanders to enhance warfighter capabilities throughout the spectrum of conflict during joint and combined operations in support of National Security. The GCCS-A developed software systems dramatically improves the Army's ability to analyze courses of action; develop and manage Army Forces; and ensure feasibility of war plans. In accordance with Army Command Post Computing Environment and Joint Command and Control objectives, GCCS-A will be re-architected away from a scalable process architecture based server - thick client architecture to a virtualized server - web client architecture hosted on Battle Command Common Services (BCCS)/ Tactical Server Infrastructure (TSI) and Mission Command Workstation by the end of Fiscal Year 2016. GCCS-A strategic tools for readiness reporting have been modernized and replaced with the Defense Readiness Reporting System - Army (DRRS-A), a suite of web based applications for Army Readiness, Force Registration and Force Projection.

Army Joint and Strategic Command and Control (AJaSC2) or "Ajax" is a modernization development effort for the Army's joint and strategic C2 capabilities. AJaSC2 provides the materiel solution in response to the Army Mission Command for Unified Action Capability Definition Package (AMCUA CDP). AJaSC2 enables Army operational headquarters to integrate with the Joint Force Commands and Unified Action Partners (UAP). AJaSC2 provides Army leaders: Joint Common Operating Picture (COP); Adaptive planning and execution capabilities for distributed, synchronous and asynchronous collaboration services to develop, revise, and execute their warfighting plans supported by theaterwide analytics; strategic Situational Awareness (SA) to coalition operations and other mission partners and Coordination and synchronization of Joint Execution Mission Management.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303150A / <i>WWMCCS/Global Command and Control System</i>
---	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	2.150	7.053	9.767	-	9.767
Current President's Budget	2.493	7.034	4.718	-	4.718
Total Adjustments	0.343	-0.019	-5.049	-	-5.049
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.343	-			
• SBIR/STTR Transfer	-	-0.019			
• Adjustments to Budget Years	-	-	-5.049	-	-5.049

Change Summary Explanation

FY2015 increase provided funding for DRRS-A.

FY2016 slight reduction for SBIR/STTR.

FY2017 reduction due to level of support required for Strategic and Joint Mission Command.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System	Project (Number/Name) C86 / Army Global C2 System
--	---	---

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
C86: Army Global C2 System	-	2.493	7.034	0.467	-	0.467	0.316	0.000	0.000	0.000	0.000	10.310
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Global Command and Control System-Army (GCCS-A): This project is the Army component of the Global Command and Control System (GCCS) Family of Systems (FoS). GCCS-A provides automated command and control tools, including Force readiness, planning and movement, and situational awareness, for Army Strategic and Operational Theater commanders to enhance warfighter capabilities throughout the spectrum of conflict during Joint and combined operations in support of National Security. GCCS-A dramatically improves the Army's ability to analyze courses of action, develop and manage Army forces and execute war plans. GCCS-A links the GCCS-Joint Common Operating Picture with the Army Mission Command systems. In accordance with Army Command Post Computing Environment and Joint Command and Control objectives, GCCS-A will be re-architected away from a scalable process architecture based server - thick client architecture to a virtualized server - web client architecture hosted on Battle Command Common Services (BCCS)/Tactical Server Infrastructure (TSI) and Mission Command Workstation by the end of Fiscal Year 2016. GCCS-A strategic tools for readiness reporting have been modernized and replaced with the Defense Readiness Reporting System - Army (DRRS-A), a suite of web based applications for Army Readiness, Force Registration and Force Projection.

Fiscal Year 2017 Base funding in the amount of \$0.467 million supports GCCS-A 4.3 software updates and Army Interoperability Certification (AIC) testing of the GCCS-A Bridge Effort in conjunction with Common Operating Environment. Certification testing ensures that GCCS-A Bridge Effort software is successfully configured as a virtual machine on BCCS/TSI and is interoperable with Army and Joint Mission Command Systems.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Software and System Engineering (Common Operating Environment (COE) System Engineering)</p> <p>Description: Software and System Engineering for GCCS-A and DRRS-A Modernization</p> <p>FY 2015 Accomplishments: Software and System Engineering for GCCS-A and DRRS-A Modernization</p> <p>FY 2016 Plans: Software and System Engineering for GCCS-A and DRRS-A Modernization</p> <p>FY 2017 Plans: Software and System Engineering modifications to existing GCCS-A version 4.3 baseline</p>	0.669	3.044	0.180
<p>Title: Synchronize with COE and Command Post Computing Environment (CP CE) and Joint C2 objective Architecture</p> <p>Description: Software enhancement efforts required to synchronize with COE/CPCE and Joint C2 objective Architecture</p>	-	2.910	0.047

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System	Project (Number/Name) C86 / Army Global C2 System		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
FY 2016 Plans: Software enhancement efforts required to synchronize with COE/CPCE and Joint C2 objective Architecture				
FY 2017 Plans: Synchronize existing baseline with any COE standard modifications				
Title: Data Engineering (COE Data Engineering) Description: Data Engineering for GCCS-A and DRRS-A Modernization		0.678	-	-
FY 2015 Accomplishments: Data Engineering for GCCS-A and DRRS-A Modernization				
Title: Test and Evaluation Description: Test and Evaluation for GCCS-A		0.662	0.450	0.110
FY 2015 Accomplishments: Test and Evaluation for GCCS-A				
FY 2016 Plans: Test and Evaluation for GCCS-A. JITC/CTSF/SEC testing.				
FY 2017 Plans: Test and Evaluation for GCCS-A. CTSF and SEC testing/support.				
Title: Program Support and Management Description: Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning meetings and IPTs		0.484	0.630	0.130
FY 2015 Accomplishments: Program Support and Management for GCCS-A and DRRS-A Modernization				
FY 2016 Plans: Program Support and Management for GCCS-A				
FY 2017 Plans: Program Support and Management for GCCS-A				
Accomplishments/Planned Programs Subtotals		2.493	7.034	0.467

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System	Project (Number/Name) C86 / Army Global C2 System

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>			<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• BA8250: BA8250 Army Global Cmd & Control Sys (AGCCS) - OPA	-	10.137	2.530	-	2.530	2.658	1.033	-	-	0	16.358

Remarks

D. Acquisition Strategy

GCCS-A is modernizing to meet the requirements defined in the Joint C2 Capability Development Document (CDD) and to align with the Joint and Army Enterprise architectures and Common Operating Environment (COE) standards.

In accordance with the Joint Requirements Oversight Committee (JROC) Memorandum (JROCM) 145-09 which states, "The JROC endorses efforts to develop and implement programmatic recommendations to support the "Do No Harm" Strategy", GCCS-A continues to synchronize and modernize along with the GCCS Family of Systems (FoS).

The GCCS-A Modernization Strategy will consist of two separate program efforts. (1) A Bridge effort, Acquisition Category (ACAT) III level and (2) a Modernization development effort for the Army's Joint and Strategic command and Control capabilities and Common Operating Environment (COE) infrastructure software products. The GCCS-A modernization development effort will be in compliance with Joint Command and Control Capability Development Document (JC2 CDD) and Army Mission Command for Unified Action Capability Definition Package (AMCUA CDP). DRRS-A developmental efforts will continue to satisfy readiness reporting requirements from Army Readiness Division (DAMO-ODR). The Bridge Effort's acquisition approach consists of a support agreement with CECOM LCMC SEC as the prime software developer utilizing a mix of government and contractor support.

In accordance with the Training and Doctrine Command (TRADOC) requirements document approved in 2011, entitled Net Enabled Mission Command (NeMC) Initial Capabilities Document (ICD), software capability will be developed in 3-year increments as capability sets designed to Collaborate, Collapse and Converge Mission Command products. The product development funded under this R-Form is an integral part of the Mission Command System of Systems, under a strategy designed to optimize opportunity for improved interoperability among the systems, to capture the benefits of competition where possible and to ensure the rapid integration of new capability into warfighter systems. This strategy is designed to reduce the physical footprint, logistics support requirements and increase operational efficiency through deployment as a virtualized server on Battle Command Common Services and web clients.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System	Project (Number/Name) C86 / Army Global C2 System
--	---	---

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Office Management	Various	Various : Various Locations	14.694	0.484	Nov 2014	0.630	Feb 2016	0.130	Jan 2017	-		0.130	0	15.938	15.805
Subtotal			14.694	0.484		0.630		0.130		-		0.130	0.000	15.938	15.805

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			
Software Development (Completed Contracts)	Various	Lockheed Martin Corp (LMC) : Springfield, VA	156.206	-		-		-		-		-	0.000	156.206	156.206
GCCS-A and DRRS-A Bridge Effort Software Development (Completed Contract)	C/CPAF	Lockheed Martin Corp (LMC) : Springfield, VA	21.312	-		-		-		-		-	0	21.312	21.312
GCCS-A/DRRS-A Bridge Effort Software Development (Completed Contract)	Various	Software Engineering Center : Aberdeen Proving Ground, MD	15.069	-		-		-		-		-	0	15.069	16.304
Defense Readiness Reporting System-Army Bridge Effort Software Development (Completed Contract)	Various	Software Engineering Center : APG, MD	10.217	-		-		-		-		-	0	10.217	10.217
GCCS-A/DRRS-A Bridge Effort Software Development	MIPR	Software Engineering Center : APG, MD	11.237	0.669	Feb 2015	5.954	Feb 2016	0.227	Nov 2016	-		0.227	0	18.087	4.893
Subtotal			214.041	0.669		5.954		0.227		-		0.227	0.000	220.891	208.932

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
2040 / 7				PE 0303150A / WWMCCS/Global Command and Control System					C86 / Army Global C2 System						
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
Support Contractors	C/FP	Various : Various	16.655	0.678	Feb 2015	-		-		-		-	0	17.333	17.333
Subtotal			16.655	0.678		-		-		-		-	0.000	17.333	17.333
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
ATEC/JTIC/CTSF/SEC	MIPR	Various : Various	4.826	0.662	Feb 2015	0.450	Mar 2016	0.110	Jan 2017	-		0.110	0	6.048	6.878
Subtotal			4.826	0.662		0.450		0.110		-		0.110	0.000	6.048	6.878
Project Cost Totals			250.216	2.493		7.034		0.467		-		0.467	0.000	260.210	248.948
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System	Project (Number/Name) C86 / Army Global C2 System
--	---	---

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
Software Fielding and IA 4.2b (Procurement Funded)	Software Fielding 4.2B																											
GCCS-A Bridge Effort Software Development GCCS-A v4.3 (COE v2)	COE v2																											
Integration & Test GCCS-A v4.3 (COE v2)	Integration & Test																											
(1) Software Materiel Release GCCS-A v4.3 (COE v2)					GCCS-A 4.3 SMR																							
Software Fielding and IA GCCS-A v4.3 (COE v2) (Procurement Funded)									Software Fielding 4.3																			
(2) Full Deployment GCCS-A v4.3 (COE v2)																	Full Deployment											
DRRS-A Modernization Effort					DRRS-A Modernization																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System	Project (Number/Name) C86 / Army Global C2 System

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Software Fielding and IA 4.2b (Procurement Funded)	4	2014	3	2016
GCCS-A Bridge Effort Software Development GCCS-A v4.3 (COE v2)	4	2014	4	2016
Integration & Test GCCS-A v4.3 (COE v2)	4	2015	4	2016
Software Materiel Release GCCS-A v4.3 (COE v2)	4	2016	4	2016
Software Fielding and IA GCCS-A v4.3 (COE v2) (Procurement Funded)	3	2017	2	2019
Full Deployment GCCS-A v4.3 (COE v2)	2	2019	2	2019
DRRS-A Modernization Effort	1	2014	4	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System				Project (Number/Name) EA5 / Strategic and Joint Mission Command			
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
EA5: Strategic and Joint Mission Command	-	0.000	0.000	4.251	-	4.251	4.394	4.510	5.441	14.325	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start Army program in support of the Joint Command and Control community's way ahead for modernizing the Global Command and Control family of systems.

A. Mission Description and Budget Item Justification

Army Joint and Strategic Command and Control (AJaSC2) or "Ajax" is a modernization development effort for the Army's joint and strategic C2 capabilities. AJaSC2 provides the materiel solution in response to the Army Mission Command for Unified Action Capability Definition Package (AMCUA CDP). AJaSC2 enables Army operational headquarters to integrate with the Joint Force Commands and Unified Action Partners (UAP). AJaSC2 provides Army leaders: Joint Common Operating Picture (COP); Adaptive planning and execution capabilities for distributed, synchronous and asynchronous collaboration services to develop, revise, and execute their warfighting plans supported by theaterwide analytics; strategic Situational Awareness (SA) to coalition operations and other mission partners and Coordination and synchronization of Joint Execution Mission Management.

Fiscal Year 2017 Base funding in the amount of \$4.251 million supports initial development of Capability Packages.

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

	FY 2015	FY 2016	FY 2017
Title: Software Development and Systems Engineering	-	-	3.341
Description: Software Development and Systems Engineering of Capability Packages (Common Operating Environment (COE) System Engineering)			
FY 2017 Plans: Supports initial software development and engineering support of Capability Packages.			
Title: Synchronization with COE and Command Post Computing Environment (CP CE) and Joint C2 objective Architecture	-	-	0.510
Description: Software enhancement efforts required to sync with COE/CPCE and Joint C2 objective architecture			
FY 2017 Plans: Software enhancement efforts required to synchronize with COE/CPCE and Joint C2 objective Architecture			
Title: Program Support and Management	-	-	0.400

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System	Project (Number/Name) EA5 / Strategic and Joint Mission Command

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Description: Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning meetings and IPTs			
FY 2017 Plans: Program Support and Management for AJaSC2			
Accomplishments/Planned Programs Subtotals	-	-	4.251

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
• BA8250A: BA8250 Army Global Cmd & Control Sys (AGCCS) - OPA	-	-	-	-	-	-	1.610	4.688	12.592	0.000	18.890

Remarks

D. Acquisition Strategy

In accordance with the Army Mission Command for Unified Action (AMCUA) CDP approved December of 2014. The AMCUA CDP provides an overarching structure for future Army Mission Command systems, to include the successor of GCCS-A. The AMCUA initiative will meet the requirements to enable planning and share situational awareness within an interdependent enterprise services network comprised of Unified Action Partners (UAP) and sister service components to achieve integrated mission operations. The AMCUA CDP defines the Land Component-unique Mission Command (MC) capabilities that the Army will develop to enable unified action through integration with existing and future Joint and Service command and control applications. MC capability contributions will enable Joint Forces Land Component Command (JFLCC) Commanders to gain and maintain Situational Awareness (SA), make decisions, and exercise authority and direction via a flexible, distributive and seamless system.

The acquisition strategy for AJaSC2 consists of the development, testing and fielding of Capability Packages implemented over time and synchronized with Command Post Computing Environment infrastructure. AJaSC2 will utilize the "Information Technology (IT) Box" construct. As such, evolutionary development of the software will continue as defined Capability Packages to meet emerging requirements that fall within the bounds of the approved IT Box. AJaSC2 strategy will consist of agile application development which will utilize and leverage existing and emerging technologies from Programs of Record and Common Operating Environment (COE) infrastructure. The product development under this R-Form will be accomplished in part under a Project Manager, Mission Command engineering services contract approach which will consist of multiple prime contractors competitively bidding on development efforts.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System	Project (Number/Name) EA5 / Strategic and Joint Mission Command
--	---	---

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) AJaSC2 MDD					▲ AJaSC2 MDD																							
(2) Build Decision Milestone B																												
AJaSC2 Development (CPs #1-6)																												
Test and Integration (CPs #1-6)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0303150A / WWMCCS/Global Command and Control System	Project (Number/Name) EA5 / Strategic and Joint Mission Command

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AJaSC2 MDD	4	2016	4	2016
Build Decision Milestone B	1	2017	1	2017
AJaSC2 Development (CPs #1-6)	2	2017	4	2021
Test and Integration (CPs #1-6)	1	2018	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0305179A / Integrated Broadcast Service (IBS)							
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	0.750	0.000	-	0.000	0.000	0.450	0.459	0.467	Continuing	Continuing
EF4: Integrated Broadcast System	-	0.000	0.750	0.000	-	0.000	0.000	0.450	0.459	0.467	Continuing	Continuing

Note

Funding realigned from PE 0603850A Project 472.

A. Mission Description and Budget Item Justification

The Joint Program Office (JPO) for IBS Terminals supports all of the Joint Services and SOCOM. The IBS is the worldwide DoD standard network enterprise for transmitting time-sensitive tactical and strategic intelligence and targeting data to all echelons of Joint Service operational Users. The JPO's role is to coordinate modernization and sustainment of IBS terminals compatible with the UHF SATCOM IBS broadcasts. The transmit/receive-capable Joint Tactical Terminal (JTT) systems currently consist of the JTT-Senior and JTT-IBS configurations, and they satisfy the radio communication KPPs for the IBS Program. The JTT is the official IBS producer system, and ensures continued IBS interoperability to a variety of tactical producers/consumers across the Joint Services.

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	0.750	0.000	-	0.000
Current President's Budget	0.000	0.750	0.000	-	0.000
Total Adjustments	0.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305179A / <i>Integrated Broadcast Service (IBS)</i>	Project (Number/Name) EF4 / <i>Integrated Broadcast System</i>
--	---	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
EF4: <i>Integrated Broadcast System</i>	-	0.000	0.750	0.000	-	0.000	0.000	0.450	0.459	0.467	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

JPO for IBS Terminal performs JTT life cycle program management and technical fixes. The IBS network uses encryption, Common Interactive Broadcast (CIB), and Common Message Format (CMF). Funds support acquisition related technical development, requirements, testing and integration of next generation JTT systems and components.

There is no FY17 funding requested.

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

	FY 2015	FY 2016	FY 2017
Title: Integration and Test	-	0.550	-
Description: Integration and testing of enhancements for modernization of the JTT fleet.			
FY 2016 Plans: Integration and testing of enhancements.			
Title: Support Costs and Management Services	-	0.200	-
Description: Project Management Support			
FY 2016 Plans: Project Management and Matrix Support.			
Accomplishments/Planned Programs Subtotals	-	0.750	-

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
• V29600 / JTT/CIBS-M: <i>OTHER PROCUREMENT, ARMY</i>	0.870	0.881	5.337	-	5.337	0.904	0.924	0.940	0.963	Continuing	Continuing

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305179A / <i>Integrated Broadcast Service (IBS)</i>	Project (Number/Name) EF4 / <i>Integrated Broadcast System</i>

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305179A / <i>Integrated Broadcast Service (IBS)</i>	Project (Number/Name) EF4 / <i>Integrated Broadcast System</i>
--	---	--

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
IBS terminals integration and test support					Integration and test support																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305179A / <i>Integrated Broadcast Service (IBS)</i>	Project (Number/Name) EF4 / <i>Integrated Broadcast System</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IBS terminals integration and test support	2	2016	4	2016

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	20.290	13.225	8.218	-	8.218	14.303	7.714	8.003	8.214	Continuing	Continuing
11A: <i>Advanced Payload Develop & Spt (MIP)</i>	-	5.271	3.589	2.830	-	2.830	3.050	3.099	3.171	3.235	Continuing	Continuing
11B: <i>Tsp Development (MIP)</i>	-	10.324	7.138	1.446	-	1.446	6.685	0.000	0.000	0.000	0.000	25.593
123: <i>Joint Technology Center System Integration</i>	-	4.695	2.498	3.942	-	3.942	4.568	4.615	4.832	4.979	Continuing	Continuing

Note

The Fiscal Year (FY) 2016 funding request was reduced by \$2.0 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

Project 11A: The Advanced Payloads Development project line is a shared funding line between multiple Payload programs. These Payload programs support the Army's transformation by developing Reconnaissance, Surveillance and Target Acquisition (RSTA) and Intelligence, Surveillance and Reconnaissance (ISR) payload systems for Brigade Combat Teams, Divisions, and Corps Unmanned Aircraft Systems (UAS). This is in accordance with Headquarters Department of the Army (HQDA) and Training and Doctrine Command (TRADOC) UAS priorities. Additionally, this Program Element (PE) supports Future Advanced Payloads for Army UAS systems.

Small Tactical Radar - Lightweight (STARLite) Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI) is a lightweight, high performance, all weather, multi-functional radar system for the Gray Eagle UAS. The STARLite system provides wide area, near real time Reconnaissance, Surveillance and Target Acquisition (RSTA) capabilities. It operates throughout the UAS flight mission profile in adverse weather and through battlefield obscurants. The Synthetic Aperture Radar (SAR) mode generates quality images for the battlefield commander for detection, classification and location of stationary commercial wheeled vehicle-size targets. The MTI mode detects moving ground targets, to include man-sized detection, and provides location information and performs cross-cue with the Electro-Optic/Infrared (EO/IR) sensors. STARLite is increasing its software capabilities based on Initial Operational Test and Evaluation (IOT&E) results which will increase automation and upgrade to a common Graphical User Interface (GUI) to align with the Common Operating Environment (COE) requirement to enable Sensor Processing and Exploitation (SPE). The SPE software enhancements will improve performance, reduce operator workload and enhance operator effectiveness.

Common Sensor Payload (CSP) - Electro Optical / Infra Red / Laser Designator (EO/IR/LD) provides High Definition (HD) Full Motion Video (FMV) in both the Electro Optical and Mid Wave IR spectrums with day/night capability to collect and display continuous imagery with the ability to designate targets of interest for attack by laser guided precision weapons. It is the EO/IR/LD sensor for Gray Eagle UAS which supports force applications, battlespace awareness, force protection, and net-centric operations across the battlefield to provide wide area, near real time RSTA capabilities. Additional initiatives will continue to focus on the transition of technologies directly supporting emerging requirements and the Army's Current and Future Force. CSP is being procured for the Gray Eagle UAS program and has potential application to other platforms.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>
---	--

Project 11B: The Tactical Signals Intelligence (SIGINT) Payload (TSP) is a SIGINT sensor for the Gray Eagle that detects radio frequency (RF) emitters. The TSP system will provide a SIGINT capability to the tactical commander. The TSP system will be a modular, scalable payload using an architecture that is software reconfigurable to allow for growth and flexibility as technology, and as the adversaries use of technology, changes. This flexible architecture allows for third party software applications to be integrated into the TSP system. The TSP system processing, control and data dissemination is integrated into the Distributed Common Ground System - Army (DCGS-A) via the Operational Ground Station. It supports Manned/Unmanned (MUM) teaming with Brigade Combat Team ground SIGINT Terminal Guidance (STG) teams and manned airborne assets. The TSP system improves situational awareness and shortens the targeting cycle by detecting and identifying emitters associated with high value targets (HVTs). The TSP system is capable of processing conventional signals, standard military signals, and modern signals of interest. This includes detection, recognition, identification, direction finding, and high confidence geo-location.

Project 123: The UAS Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is a Joint facility that develops, integrates, and supports the enhancement of its Multiple Unified Simulation Environment (MUSE) capability for Army systems and operational concepts. The JTC/SIL conducts prototype hardware and software development, builds the UAS Institutional Mission Simulator (IMS) trainers for the Shadow, Hunter, and Gray Eagle programs, and provides modeling and simulation support. The MUSE is a real-time, operator in-the-loop simulation that may be integrated with larger simulations in support of Army and Joint training and exercises. The MUSE is also employed as a Mission Rehearsal Tool for ongoing combat operations. This project funds the management of the JTC/SIL and MUSE enhancements. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	22.870	13.225	12.703	-	12.703
Current President's Budget	20.290	13.225	8.218	-	8.218
Total Adjustments	-2.580	0.000	-4.485	-	-4.485
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.580	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-4.485	-	-4.485

Change Summary Explanation

The FY2017 funding request was reduced by \$4,485,000 to account for availability of prior year execution balances.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>				Project (Number/Name) 11A / <i>Advanced Payload Develop & Spt (MIP)</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
11A: <i>Advanced Payload Develop & Spt (MIP)</i>	-	5.271	3.589	2.830	-	2.830	3.050	3.099	3.171	3.235	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Advanced Payloads Development project is a shared funding line between multiple Payload programs. These Payload programs support the Army's transformation by developing Reconnaissance, Surveillance and Target Acquisition (RSTA) and Intelligence, Surveillance and Reconnaissance (ISR) payload systems for Brigade Combat Teams, Divisions, and Corps Unmanned Aircraft Systems (UAS). This is in accordance with Headquarters Department of the Army (HQDA) and Training and Doctrine Command (TRADOC) UAS priorities. Additionally, this Program Element (PE) supports Future Advanced Payloads for Army UAS systems.

Small Tactical Radar - Lightweight (STARLite) ACAT III - Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI) is a lightweight, high performance, all weather, multi-functional radar system for the Gray Eagle UAS. The STARLite system provides wide area, near real time RSTA capabilities. It operates throughout the UAS flight mission profile in adverse weather and through battlefield obscurants. The Synthetic Aperture Radar (SAR) mode generates quality images for the battlefield commander for detection, classification and location of stationary commercial wheeled vehicle-size targets. The MTI mode detects moving ground targets, to include man-sized detection, and provides location information and performs cross-cue with the Electro-Optic/Infrared (EO/IR) sensors. STARLite is increasing its software capabilities based on Initial Operational Test and Evaluation (IOT&E) results which will increase automation and upgrade to a common Graphical User Interface (GUI) to align with the Common Operating Environment (COE) requirement to enable Sensor Processing and Exploitation (SPE). The SPE software enhancements will improve performance, reduce operator workload and enhance operator effectiveness.

Common Sensor Payload (CSP)- ACAT III - Electro Optical / Infra Red / Laser Designator (EO/IR/LD) provides Standard Definition (SD) or High Definition (HD) as an upgrade. Full Motion Video (FMV) in both the Electro Optical and Mid Wave IR spectrums with day/night capability to collect and display continuous imagery with the ability to designate targets of interest for attack by laser guided precision weapons. It is the EO/IR/LD sensor for Gray Eagle UAS which supports intelligence gathering, force applications, battlespace awareness, force protection, and net-centric operations across the battlefield to provide wide area, near real time RSTA capabilities. Additional initiatives will continue to focus on the transition of technologies directly supporting emerging requirements and the Army's Current and Future Force. CSP is being procured for the Gray Eagle UAS program and has potential application to other platforms. Additional updates to enhance the CSP's usability for the Warfighter is to reduce cognitive burden by providing improved situational awareness, while providing multiple fields of view in a simplified manner through Hardware (H/W) and Software (S/W) improvements.

Fiscal Year (FY) 2017 base development dollars in the amount of \$2.830 million is for STARLite SPE Software developmental test and integration onto Gray Eagle and enhanced CSP to reduce cognitive burden on the Warfighter.

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

	FY 2015	FY 2016	FY 2017
Title: STARLite SPE	5.271	1.795	1.415

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 11A / <i>Advanced Payload Develop & Spt (MIP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Software Development to improve STARLite SPE Development, Testing and Integration.</p> <p>FY 2015 Accomplishments: Continued Software Development for STARLite SPE.</p> <p>FY 2016 Plans: Continued Software Development for STARLite SPE. Begin SPE integration onto Gray Eagle.</p> <p>FY 2017 Plans: Complete test and integration of SPE Software improvements onto Gray Eagle</p>			
<p>Title: CSP Increased Usability</p> <p>Description: S/W development to increase the usability of the CSP. Development to increase the usability of the CSP while reducing cognitive burden on the Warfighter.</p> <p>FY 2016 Plans: S/W development to increase the usability of the CSP. Development to increase the usability of the CSP while reducing cognitive burden on the Warfighter.</p> <p>FY 2017 Plans: Complete test and migration of SPE Software improvements onto Gray Eagle.</p>	-	1.794	1.415
Accomplishments/Planned Programs Subtotals	5.271	3.589	2.830

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
• A00020: MQ-1 PAYLOAD - UAS - A00020	-	-	-	-	-	-	-	-	-		
• A01003: SAR/MTI (MIP) - A01003	3.686	30.220	1.324	-	1.324	-	-	-	-	Continuing	Continuing
• A01005: CSP FMV (MIP) - A01005	8.409	68.472	4.729	-	4.729	4.410	-	-	-	Continuing	Continuing

Remarks
MQ-1 PAYLOAD - UAS - A00020 was a shared Aircraft Procurement, Army (APA) funding line for CSP, STARLite and Tactical Signals Intelligence (SIGINT) Payload (TSP). STARLite (A01003), and CSP (A01005) are broken into individual lines within MQ-1Payload (MIP) (A01001). SAR/MTI (MIP) - A01003: Procurement funding line for STARLite

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 11A / <i>Advanced Payload Develop & Spt (MIP)</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
CSP FMV (MIP) - A01005: Procurement funding line for CSP											

D. Acquisition Strategy

STARLite SAR/MTI is a threshold requirement for the Gray Eagle UAS. The acquisition strategy for STARLite program was based on a full and open competition for the Army. Full Rate Production (FRP) was successfully achieved in June 2013. A follow-on production contract was awarded in April 2014 to procure all remaining STARLite Payloads required for the Gray Eagle platform. Based on Initial Operational test and Evaluation (IOT&E) results, STARLite is increasing its software capabilities to increase automation and upgrade to a common Graphical User Interface (GUI) and aligns SPE with the COE requirements. The SPE software enhancements will improve performance, reduce operator workload and enhance operator effectiveness. A competitive Research, Development, Test, and Evaluation (RDTE) funded contract was awarded to Northrop Grumman in October 2013 to perform trade studies and begin the development of the software improvements. Integration onto the Gray Eagle will be done via a sole source cost-plus fixed fee contract with the UAS prime contractor, General Atomics ASI.

CSP EO/IR/LD enables the Gray Eagle to meet a Key Performance Parameter (KPP) requirement. The acquisition strategy for the CSP program was based on a full and open competition for the Army. A competitive contract was awarded in Nov 2007 to Raytheon for the build, integration, test and delivery of the CSP. FRP was completed June 2013. A three year system support contract was awarded in July 2015 for sustainment and upgrade of the CSP to include retrofitting standard definition sensors with high definition sensors and to perform RDTE activities. CSP is being procured for the Gray Eagle UAS program with fielding through FY2018 and has potential application to other platforms.

The acquisition strategy is to complete STARLite SPE software developmental test and integration onto Gray Eagle; and Non-Recurring Engineering (NRE) support to the Night Vision and Electronic Sensors Directorate (NVESD) to continue enhancing CSP's usability for the Warfighter to reduce cognitive burden by providing improved situational awareness, while providing multiple fields of view in a simplified manner through Hardware (H/W) and S/W improvements.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0305204A / Tactical Unmanned Aerial Vehicles				Project (Number/Name) 11A / Advanced Payload Develop & Spt (MIP)							
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
TSP Program Management	Various	PM ARES : Aberdeen, MD	11.255	-		-		-		-		-	0	11.255	0
CSP/STARLite Program Management	Various	PM RUS : Aberdeen, MD	8.524	-		-		-		-		-	0	8.524	0
CSP Program Management	MIPR	PM EOIR : Fort Belvoir, VA	0.000	-		0.090		0.100	Dec 2016	-		0.100	Continuing	Continuing	Continuing
STARLite Program Mgmt Personnel	Various	PM SAI : Aberdeen, MD	0.500	0.500	Apr 2015	-		0.150	Dec 2016	-		0.150	Continuing	Continuing	Continuing
Subtotal			20.279	0.500		0.090		0.250		-		0.250	-	-	-
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
CSP Development	C/CPFF	Raytheon : McKinney, TX	84.022	-		-		-		-		-	0	84.022	0
STARLite Development	C/CPFF	Northrop Grumman : Linthicum, MD	6.786	-		-		-		-		-	0	6.786	0
STARLite Improvements to Sensor Processing and Exploitation	MIPR	Northrop Grumman : Linthicum, MD	5.054	4.771	Feb 2015	-		-		-		-	Continuing	Continuing	Continuing
STARLite SPE Software Integration onto Gray Eagle	SS/CPFF	General Atomics ASI : Potway, CA	0.000	-		1.295		1.265	Mar 17	-		1.265	Continuing	Continuing	Continuing
CSP HW/SW Improvements Reduce Cognitive Burden	MIPR	Night Vision Labs : Fort Belvoir, VA	0.000	-		1.704		1.115	Mar 17	-		1.115	Continuing	Continuing	Continuing
Subtotal			95.862	4.771		2.999		2.380		-		2.380	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 11A / <i>Advanced Payload Develop & Spt (MIP)</i>
--	--	---

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
CSP (EO/IR/LD) Production	Production																											
CSP HD (EO/IR/LD) Production					CSP HD Production																							
CSP HD Retrofit					CSP HD Retrofit																							
CSP HW/SW Improvements Reduce Cognitive Burden Development									Development																			
CSP HW/SW Improvements Reduce Cognitive Burden Testing / Integrat													Testing / Integration															
CSP HW/SW Improvements Reduce Cognitive Burden Modification Cut																					Prod							
Improvements to STARLite Sensor Processing and Exploitation					Sensor Improvements																							
STARLite SPE SW Developmental Test					Developmental Test																							
STARLite SPE SW Integration onto Gray Eagle									SPE SW Int.																			
Advanced Payloads Development																					Advanced Payload Development							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 11A / <i>Advanced Payload Develop & Spt (MIP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CSP (EO/IR/LD) Production	1	2008	2	2015
CSP HD (EO/IR/LD) Production	2	2013	3	2018
CSP HD Retrofit	4	2013	4	2016
CSP HW/SW Improvements Reduce Cognitive Burden Development	1	2016	2	2018
CSP HW/SW Improvements Reduce Cognitive Burden Testing / Integration	3	2017	4	2019
CSP HW/SW Improvements Reduce Cognitive Burden Modification Cut-In	1	2020	4	2021
Improvements to STARLite Sensor Processing and Exploitation	1	2014	3	2016
STARLite SPE SW Developmental Test	2	2016	4	2016
STARLite SPE SW Integration onto Gray Eagle	4	2016	3	2017
Advanced Payloads Development	1	2020	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>				Project (Number/Name) 11B / <i>Tsp Development (MIP)</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
11B: <i>Tsp Development (MIP)</i>	-	10.324	7.138	1.446	-	1.446	6.685	0.000	0.000	0.000	0.000	25.593
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tactical Signals Intelligence (SIGINT) Payload (TSP) is a SIGINT sensor for the Gray Eagle that detects radio frequency (RF) emitters. The TSP system will provide a SIGINT capability to the tactical commander. The TSP system will be a modular, scalable payload using an architecture that is software reconfigured to allow for growth and flexibility as technology, and as the adversaries use of technology, changes. This flexible architecture allows for third party software applications to be integrated into the TSP system. The TSP system processing, control and data dissemination is integrated into the Distributed Common Ground System - Army (DCGS-A) via the Operational Ground Station. It supports Manned/Unmanned (MUM) teaming with Brigade Combat Team ground SIGINT Terminal Guidance (STG) teams and manned airborne assets. The TSP system improves situational awareness and shortens the targeting cycle by detecting and identifying emitters associated with high value targets (HVTs). The TSP system is capable of processing conventional signals, standard military signals, and modern signals of interest. This includes detection, recognition, identification, direction finding, and high confidence geo-location.

Fiscal Year (FY) 2017 Base funding in the amount of \$1.446 million completes engineering corrective actions and regression testing from Developmental Testing / Operational Testing (DT/OT) testing and preparations for TSP Block 2 Request For Proposal(RFP)

The FY2017 funding request was reduced by \$2.929 million to account for the availability of prior year execution balances, (\$.929 million decrement and \$2,000,000 shifted to FY18)

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

	FY 2015	FY 2016	FY 2017
Title: TSP Engineering Manufacturing Development (EMD) and Low Rate Initial Production (LRIP) Research and Development (R&D) Support.	10.324	7.138	1.446
Description: TSP EMD Development and Equipment; LRIP R&D: Logistics, Training, corrective action engineering support and test activities.			
FY 2015 Accomplishments: Continued TSP Block 1. Includes Contractor/ Government Developmental Testing, MQ-1C air worthiness release, System Support Package development, Key Personnel Training, Logistics Demonstration, and prepared for the Initial Operational Test and Evaluation (IOT&E). Initiated preparation for TSP Block 2 activities.			
FY 2016 Plans:			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 11B / <i>Tsp Development (MIP)</i>
--	--	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continues TSP Block 1 LRIP. Conducts IOT&E with MQ-1C. Prepare for Full rate Production Decision and Material Release approval. Initiate the Interim Contractor Logistics Support (ICLS) contract.			
<i>FY 2017 Plans:</i> Continues TSP Block 1 LRIP, support TSP integration into Improved Gray Eagle (IGE). Prep for TSP Block 2 activities. Initial planning for Future upgrades. Continue support of TSP Interim Contractor Logistics Support (ICLS).			
Accomplishments/Planned Programs Subtotals	10.324	7.138	1.446

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
• A00020: <i>A00020 - MQ-1 Payload (MIP)</i>	-	-	-	-	-	-	-	-	-	0.000	0.000
• A01004: <i>A01004 - SIGINT (MIP)</i>	13.218	49.661	39.065	-	39.065	15.672	3.421	3.487	3.431	0	127.955
• 0605766A: <i>TSP Theater Net-Centric Geolocation (TNG) - PE0605766A, Project DX9: TNG funding included in Tactical Exploitation of National Capabilities (TENCAP) funding line.</i>	-	-	-	-	-	-	1.000	1.800	1.000	1.000	4.800

Remarks

MQ-1 PAYLOAD - UAS - A00020: Shared Aircraft Procurement, Army (APA) procurement funding line for CSP, STARLite, TSP, and Advanced Payloads.

SIGINT (MIP) - A01004: Procurement funding line for TSP Payloads. Under Parent Line MQ-1 Payloads (MIP) - A01001.

TSP Theater Net-Centric Geolocation (TNG) - PE0605766A, Project DX9: TNG funding included in Tactical Exploitation of National Capabilities (TENCAP) funding line.

D. Acquisition Strategy

TSP is a threshold requirement for the MQ-1C Gray Eagle UAS. The TSP program entered the Engineering and Manufacturing Development (EMD) phase with a Milestone B decision in September 2011. The TSP Program EMD contract award was based on full-and-open competition and was focused on integration and test onto the Gray Eagle platform and integration and test of TSP software into the Operational Ground Station. The TSP EMD program is a derivative of systems that were fielded as a Quick Reaction Capability on the MQ-1C UAS and a variety of other manned platforms. The demonstrated scalability of these fielded materiel solutions allows the TSP EMD program to leverage effort that directly supports the TSP EMD program.

UNCLASSIFIED

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

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 7	PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	11B / <i>Tsp Development (MIP)</i>

The TSP Block 1 is the current Program of Record capability. TSP Block 2 will address objectives and remaining deferred Block 1 threshold requirements as reflected in the approved Capability Production Document (CPD).

Block 1 Low Rate Initial Production (LRIP) Milestone C was approved on 2 May 2014. TSP LRIP contract award was 12 Jun 2014.

Block 1 TSP EMD contract period of performance was completed on Oct 2015.

Improved Gray Eagle (IGE)- Program Manager Unmanned Aircraft Systems(PM UAS)received a Congressional plus up of \$49M President's Budget15(PB15) to procure Extended Range UAS which increases the CPD objective endurance requirements for the current GE configuration to an Improved Gray Eagle (IGE). To meet the PM UAS IGE test schedule 1st QTR FY18 and first unit equipped date, TSP must be integrated and tested on the IGE and the A-kit must be modified before the IGE Follow on Test Evaluation#2 2QFY18.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
2040 / 7				PE 0305204A / Tactical Unmanned Aerial Vehicles					11B / Tsp Development (MIP)						
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-Gov	RO	PM SAI : APG	7.700	0.406	Dec 2014	0.450		0.375		-		0.375	0	8.931	0
Program Management Support	MIPR	Various : APG	4.575	-		-		-		-		-	0	4.575	Continuing
FFRDC Support	FFRDC	MITRE : APG	1.848	-		0.150		-		-		-	0	1.998	0
Subtotal			14.123	0.406		0.600		0.375		-		0.375	0.000	15.504	-
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
TSP EMD	C/CPIF	BAE Systems, : Nashua, NH	20.206	-		-		-		-		-	0	20.206	0
TSP Engineering Changes	SS/CPFF	BAE Systems : Nashua, NH	7.495	0.800	Jul 2015	-		1.071	Feb 2017	-		1.071	0	9.366	0
MQ-1C and OGS Integration	SS/CPFF	Various : Various	4.630	-		-		-		-		-	0	4.630	0
TSP System Support (Logistics, Training, & Test)	SS/CPFF	Various : Various	6.870	3.143	Jul 2015	1.830		-		-		-	0	11.843	0
Subtotal			39.201	3.943		1.830		1.071		-		1.071	0.000	46.045	0.000
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	MIPR	Various : Various	4.041	0.579	Mar 2014	1.538		-		-		-	0	6.158	0
Subtotal			4.041	0.579		1.538		-		-		-	0.000	6.158	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 11B / <i>Tsp Development (MIP)</i>
--	--	--

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
TSP Block 1 Integration and Test	System I&T																											
MQ-1C Integration and Test					MQ-1C I&T																							
TSP/MQ-1C Air Worthiness Release					AWR																							
Contractor / Gov't Production Qualification Test 2					CT / PQT 2																							
Logistics Demonstration/IKPT					IKPT Log Demo																							
TSP Initial Operational Test and Evaluation					IOT&E																							
(1) TSP Block 1 Full Production Decision					▲																							
TSP Future Upgrade Planning									Future Upgrade Planning																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 11B / <i>Tsp Development (MIP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TSP Block 1 Integration and Test	1	2015	4	2016
MQ-1C Integration and Test	1	2016	4	2016
TSP/MQ-1C Air Worthiness Release	1	2016	1	2016
Contractor / Gov't Production Qualification Test 2	1	2016	2	2016
Logistics Demonstration/IKPT	4	2015	4	2015
TSP Initial Operational Test and Evaluation	3	2016	3	2016
TSP Block 1 Full Production Decision	4	2016	4	2016
TSP Future Upgrade Planning	1	2017	1	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>				Project (Number/Name) 123 / <i>Joint Technology Center System Integration</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
123: <i>Joint Technology Center System Integration</i>	-	4.695	2.498	3.942	-	3.942	4.568	4.615	4.832	4.979	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Unmanned Aircraft System (UAS) Joint Technology Center/System Integration Laboratory (JTC/SIL) is a Joint facility that develops, integrates, and supports the enhancement of its Multiple Unified Simulation Environment (MUSE) capability for Army systems and operational concepts. The JTC/SIL conducts prototype hardware and software development, builds the UAS Institutional Mission Simulator (IMS) trainers for the Shadow, Hunter, and Gray Eagle programs, and provides modeling and simulation support. The MUSE is a real-time, operator in-the-loop simulation that may be integrated with larger simulations in support of Army and Joint training exercises. The MUSE is also employed as a Mission Rehearsal Tool for ongoing combat operations. This project funds the management of the JTC/SIL and MUSE enhancements.

This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

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

	FY 2015	FY 2016	FY 2017
Title: Product Development	2.313	2.298	3.611
Description: Funding is provided for the following efforts.			
FY 2015 Accomplishments: Continue Development of application based software for portable devices. Enhance mission planning software to facilitate ease of use and currency with UAS mission planning application capabilities. Develop and enhance Service Oriented Architecture to support Cloud computing for US military exercises. Develop new sensors simulation capabilities to reflect Service UAS capabilities.			
FY 2016 Plans: Redesign Vignette Planning and Rehearsal Software (ViPRS) by implementing a Service Oriented Architecture (SOA) to facilitate external users developing generic solutions without Joint Technology Center System Integration Laboratory (JSIL) assistance and to optimize the software baseline to keep up with training audience requirements, thereby reducing the costs of travel and training. Redesign MUSE/ Air Force Synthetic Environment for regognizance and Surveillance (AFSERS) U2/GlobalHawk, Tactical Exploitation of National Capabilities (TENCAP), to meet the growing demands of the war fighter training audience and to optimize User Interface for ease of use, which will reduce training costs and the need for JSIL personnel to attend every event. Design and implement a Heads Up Display (HUD) capability for the UAS platforms that MUSE/AFSERS simulates. This will reduce costs			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 123 / <i>Joint Technology Center System Integration</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>since HUD modifications will be able to be modified without having to implement code changes. Continued examination of all Graphical User Interfaces (GUIs) to ensure maximum usability for the war fighter.</p> <p>FY 2017 Plans: Re-design and implementation of Windows Entity Server (WES) and NetLink to maintain pace with ever expanding Military Exercises. Continued integration with Night Vision Electronics & Sensors Directorate's (NVEDS's), Night Vision Imagery Generator (NVIG). Implementation of a Weather server that will facilitate the injection of weather, into the modeling and simulation domain, for Military Exercises. 4586 tech insertion into MUSE for Command & Control (C2) to facilitate the testing of data feeds prior to using the C2 feed on the live asset. 4609 technical insertion into MUSE for video with embedded Key Line Value (KLV) to be compliant with standard video feeds and to work with US ally standard video feeds.</p>			
<p>Title: Support Office of the Secretary of Defense (OSD) Joint UAS Interoperability Requirements and Activities</p> <p>Description: Funding is provided for the following efforts.</p> <p>FY 2015 Accomplishments: Continue development of UCS Architecture environment and compliance tools. Continue to develop and publish multiple new USIPs based on OSD prioritization. Continue to provide technical and administrative support to I IPT and associated WGs.</p>	2.000	-	-
<p>Title: Management Services</p> <p>Description: Funding is provided for the following efforts.</p> <p>FY 2015 Accomplishments: Continue coordination and oversight of MUSE product development.</p> <p>FY 2016 Plans: Continue coordination and oversight of MUSE product development.</p> <p>FY 2017 Plans: Continue coordination and oversight of MUSE product development.</p>	0.382	0.200	0.331
Accomplishments/Planned Programs Subtotals	4.695	2.498	3.942

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>
• PE 0603261N Navy: <i>PE 0603261N Navy</i>	2.000	-	-	-	-	-	-	-	-	-	Continuing Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 123 / <i>Joint Technology Center System Integration</i>
--	--	---

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PE 0305206F Air Force: <i>PE 0305206F Air Force</i>	3.934	3.475	3.841	-	3.841	3.419	3.479	3.544	3.607	Continuing	Continuing

Remarks
The JTC/SIL and the MUSE receive funding from the Air Force and Navy. This effort is a continuing effort in support of Service UAS programs.

D. Acquisition Strategy
Continued MUSE development will be accomplished through a combination of Government in-house functional directorate support using a variety of existing contract vehicles.

E. Performance Metrics
N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0305204A / Tactical Unmanned Aerial Vehicles				123 / Joint Technology Center System Integration							
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	MIPR	AMC, AMCOM, AMRDEC, SED : Redstone Arsenal, AL	2.106	0.382	Dec 2014	0.200	Nov 2015	0.331	Nov 2016	-		0.331	Continuing	Continuing	Continuing
Subtotal			2.106	0.382		0.200		0.331		-		0.331	-	-	-
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
MUSE Development	MIPR	AMC, AMCOM, AMRDEC, SED : Redstone Arsenal, AL	8.837	2.313	Dec 2014	2.298	Dec 2015	3.611	Dec 2016	-		3.611	Continuing	Continuing	Continuing
Subtotal			8.837	2.313		2.298		3.611		-		3.611	-	-	-
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
Interoperability Support	MIPR	AMC, RDECOM, AMRDEC : Redstone Arsenal, AL	7.460	2.000	Dec 2014	-		-		-		-	Continuing	Continuing	0
Subtotal			7.460	2.000		-		-		-		-	-	-	0.000
Project Cost Totals			18.403	4.695		2.498		3.942		-		3.942	-	-	-
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 123 / <i>Joint Technology Center System Integration</i>
--	--	---

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
Windows Entity Server and NetLink Redesign																												
Risk Management Framework: MUSE/AFFERS SW Dev. Kit																												
Vignette Planning and Rehearsal SW Refactoring(Service Oriented Archi																												
Incorporate Command and Control Using STANAG 4586																												
Generic 6 Degrees of Freedom																												
Web Based MUSE/AFSERS																												
Integration of Night Vision Image Generator (NVIG)																												
User Interface Redesign																												
Key Resolve Exercises																												
Ulchi Freedom Guardian Exercises																												
Yama Sakura Exercises																												
MUSE/AFSERS Releases																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / <i>Tactical Unmanned Aerial Vehicles</i>	Project (Number/Name) 123 / <i>Joint Technology Center System Integration</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Windows Entity Server and NetLink Redesign	1	2015	3	2016
Risk Management Framework: MUSE/AFFERS SW Dev. Kit	3	2015	4	2021
Vignette Planning and Rehearsal SW Refactoring(Service Oriented Architecture)	2	2015	4	2021
Incorporate Command and Control Using STANAG 4586	1	2016	3	2017
Generic 6 Degrees of Freedom	1	2017	4	2018
Web Based MUSE/AFSERS	1	2018	4	2019
Integration of Night Vision Image Generator (NVIG)	2	2019	4	2020
User Interface Redesign	1	2015	4	2021
Key Resolve Exercises	1	2015	1	2022
Ulchi Freedom Guardian Exercises	3	2015	3	2021
Yama Sakura Exercises	4	2015	4	2021
MUSE/AFSERS Releases	3	2015	3	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0305206A / <i>Airborne Reconnaissance Systems</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	22.870	11.799	-	11.799	3.133	9.977	8.010	7.554	Continuing	Continuing
EH2: <i>EMARSS ADV DEV (MIP)</i>	-	0.000	1.740	0.000	-	0.000	0.000	3.205	3.218	0.000	Continuing	Continuing
EH3: <i>EMARSS Payloads ADV DEV (MIP)</i>	-	0.000	3.532	0.130	-	0.130	0.133	4.772	4.792	6.543	Continuing	Continuing
EH4: <i>ARL ADV DEV (MIP)</i>	-	0.000	5.100	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
EH5: <i>ARL Payloads ADV DEV (MIP)</i>	-	0.000	12.498	11.669	-	11.669	3.000	2.000	0.000	1.011	Continuing	Continuing

Note
This program is not a New Start and funding transferred from Program Element (PE) 0605626.

A. Mission Description and Budget Item Justification

Airborne Reconnaissance Low - Enhanced (ARL-E) is a worldwide self-deployable airborne Intelligence Surveillance Reconnaissance (ISR) system designed for timely, accurate, assured support to tactical forces over the full spectrum of operations. This system is a De Havilland DHC-8 aircraft replacing the DHC-7 in accordance with the Aerial ISR (AISR) 2020 Strategy. ARL-E will enhance the ARL-M sensor capability sets through the procurement of new and refurbished sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. It provides a persistent capability to include: Broad-Area Surveillance and/or Focused Stare on Target Areas of Interest (Point or Objective Targets), Electro-Optical/Infrared (EO/IR)/Full-Motion Video (FMV) , Multi-Mode Radar, Robust Communications Intelligence (COMINT), on-Board Collection, Analysis, Sensor Cross Cue and dissemination through Distributed Common Ground System-Army (DCGS-A) Enabled workstations. ARL-E will be assigned to the U.S. Army Intelligence and Security Command's Aerial ISR Brigade providing AISR support to combatant commanders. For the overall system, the Army Acquisition Objective and the Army Procurement Objective, is nine. The Mission Equipment Package (MEP) objective is eight.

The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) is the Army's next generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. It provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS will be assigned to the U.S. Army Intelligence and Security Command's Aerial Exploitation Battalions, providing Aerial Intelligence, Surveillance and Reconnaissance support to combatant commanders. The Army Acquisition Objective for EMARSS is 36 systems, with an Army Procurement Objective of 24, to include the following variants: eight EMARSS-G (Geo-INT); four EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight EMARSS-M (Multi-INT); and four EMARSS-S (SIGINT).

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305206A / <i>Airborne Reconnaissance Systems</i>
---	--

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	22.870	0.130	-	0.130
Current President's Budget	0.000	22.870	11.799	-	11.799
Total Adjustments	0.000	0.000	11.669	-	11.669
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	11.669	-	11.669

Change Summary Explanation

Fiscal Year (FY) 2017 funds increase is a result of a funds realignment to support the Long Range Radar development.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems				Project (Number/Name) EH2 / EMARSS ADV DEV (MIP)			
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
EH2: EMARSS ADV DEV (MIP)	-	0.000	1.740	0.000	-	0.000	0.000	3.205	3.218	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) is the Army's next generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. It provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS will be assigned to the U.S. Army Intelligence and Security Command's Aerial Exploitation Battalions, providing Aerial Intelligence, Surveillance and Reconnaissance support to combatant commanders. The Army Acquisition Objective for EMARSS is 36 systems, with an Army Procurement Objective of 24, to include the following variants: eight EMARSS-G (Geo-INT); four EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight EMARSS-M (Multi-INT); and four EMARSS-S (SIGINT).

This funding line supports non-recurring engineering (NRE), development of supplemental type certificates (STC), testing, integration and Pre-Planned Product Improvement (P3I) of Army Aerial, Intelligence, Surveillance and Reconnaissance (AISR) systems. Funding provides for Department of Defense (DoD) mandated safety equipment to meet current and evolving International Standards. It also enhances aircraft communications, navigations and surveillance (CNS); aircraft survivability equipment (ASE) and the integration of the AISR mission equipment package (MEP) as well as obsolescence issues involved with the conversion of Liberty Project Aircraft (LPA) to the EMARSS Program of Record (POR), in regards to the Navy AAR-47 converting to Army AAR-57, Blue Force Tracker (BFT) to Blue Force Tracker-2 (BFT-2) and Common Missile Warning Systems (CMWS) upgrades.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Non-Recurring Engineering	-	1.740	-	-	-
Description: This funding line supports NRE, development of STC, testing and integration of Army AISR systems. Funding provides for DoD mandated safety equipment to meet current and evolving International Standards. It also enhances aircraft CNS, ASE and the integration of the AISR MEP as well as obsolescence issues involved with the LPA in regards to the Navy AAR-47 changing to Army AAR-57, BFT to BFT-2.					
FY 2016 Plans: Will provide for all associated NRE for conversion of initial Quick Reaction Capability (QRC) systems into the EMARSS POR. Upgraded communication and MEP will ensure continued worldwide deployability and over match dominance for AISR.					
Accomplishments/Planned Programs Subtotals	-	1.740	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH2 / EMARSS ADV DEV (MIP)
--	---	--

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
• Aerial Common Sensors (ACS): A02005	119.890	96.500	-	-	-	-	-	-	-	0	216.390
• EMARSS SEMA Mods (MIP): A02112	-	13.669	13.197	42.700	55.897	3.279	21.139	4.416	5.981	Continuing	Continuing
• EMARSS Payloads (MIP): AZ2054	-	13.670	13.197	3.900	17.097	3.279	21.138	4.418	5.982	Continuing	Continuing
• EMARSS Payloads Adv Dev (MIP): 375206-EH3	-	3.532	0.130	-	0.130	0.133	4.772	4.792	6.543	Continuing	Continuing

Remarks

The EMARSS RDTE efforts are found in the following two project lines; 0305206AEH2 EMARSS ADV DEV (MIP) (Fixed Wing Project Office) and 0305206AEH3 EMARSS Payloads ADV DEV (Project Manager Sensors - Aerial Intelligence). The supporting procurement lines are A02112 and AZ2054. Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne intelligence systems to Program Executive Officer for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors.

D. Acquisition Strategy

The acquisition strategy, supported by the EMARSS CPD, is to design and test 24 systems as well as provide enhancements to the following sensor capabilities in order to maintain relevancy to the Warfighter: Electro-optical/Infrared (EO/IR)/Full Motion Video (FMV); Communications Intelligence (COMINT); Wide Area Aerial Surveillance (WAAS); Light Imaging Detection and Ranging (LiDAR) and improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar; line-of-site (LOS) and beyond line-of-site (BLOS) communications; and Processing Exploitation and Dissemination (PED) supporting two Distributed Common Ground System - Army (DCGS-A) enabled operator workstations. The EMARSS fleet of 24 systems will consist of the following variants: eight (8) EMARSS-G (Geo-INT); four (4) EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight (8) EMARSS-M (Multi-INT); and four (4) EMARSS-S (SIGINT).

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH2 / EMARSS ADV DEV (MIP)
--	---	--

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
Non-Recurring Engineering																												
Pre Planned Product Improvements																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH2 / EMARSS ADV DEV (MIP)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Non-Recurring Engineering	1	2016	4	2016
Pre Planned Product Improvements	1	2019	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems				Project (Number/Name) EH3 / EMARSS Payloads ADV DEV (MIP)			
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
EH3: EMARSS Payloads ADV DEV (MIP)	-	0.000	3.532	0.130	-	0.130	0.133	4.772	4.792	6.543	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The EMARSS RDTE efforts are found in the following two (2) project lines; 0305206AEH2 EMARSS ADV DEV (MIP) (Fixed Wing Project Office) and 0305206AEH3 EMARSS Payloads ADV DEV (Project Manager Sensors - Aerial Intelligence). The supporting procurement lines are A02112 and AZ2054. Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne intelligence systems to Program Executive Officer for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors.

A. Mission Description and Budget Item Justification

The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) is the Army's next generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. It provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS will be assigned to the U.S. Army Intelligence and Security Command's Aerial Exploitation Battalions, providing Aerial Intelligence, Surveillance and Reconnaissance support to combatant commanders. The Army Acquisition Objective for EMARSS is 36 systems, with an Army Procurement Objective of 24, to include the following variants: eight EMARSS-G (Geo-INT); four EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight EMARSS-M (Multi-INT); and four EMARSS-S (SIGINT).

This funding line supports enhancements to the following sensor capabilities in order to maintain relevancy to the Warfighter: Electro-Optical/Infrared (EO/IR)/Full Motion Video (FMV); Communications Intelligence (COMINT); Wide Area Aerial Surveillance (WAAS); Light Imaging Detection and Ranging (LiDAR) and improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar; line-of-site (LOS) and beyond line-of-site (BLOS) communications; and Processing Exploitation and Dissemination (PED) supporting two Distributed Common Ground System - Army (DCGS-A) enabled operator workstations.

Fiscal Year (FY) 2017 funding in the amount of \$130,000 provides Mission Equipment Packages (MEP) and PED Sensor Engineering Support.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: EMARSS - Product Enhancement	-	2.579	-	-	-
Description: Research, Development, Test, and Evaluation (RDTE) funds Sensor Engineering Change Proposals (ECPs) and contractor system support.					
FY 2016 Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH3 / EMARSS Payloads ADV DEV (MIP)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Sensor ECPs and contractor system support.					
Title: EMARSS - Sensor Engineering Support	-	0.200	0.130	-	0.130
Description: Matrix Government and Matrix Contractor engineering support for sensor enhancements.					
FY 2016 Plans: Funds Matrix Government and Matrix Contractor engineering support for sensor enhancements.					
FY 2017 Base Plans: Funds Matrix Government and Matrix Contractor engineering support for sensor enhancements.					
Title: Program Management Support	-	0.195	-	-	-
Description: Program Management Office (PMO) support and travel, as well as Systems Engineering and Technical Assistance (SETA) support.					
FY 2016 Plans: PMO support and travel, as well as SETA support.					
Title: EMARSS - Test and Evaluation	-	0.558	-	-	-
Description: Sensor Specific Testing					
FY 2016 Plans: Sensor specific testing resulting from engineering design and development.					
Accomplishments/Planned Programs Subtotals	-	3.532	0.130	-	0.130

C. Other Program Funding Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• Aerial Common Sensor: A02005	119.890	96.500	-	-	-	-	-	-	-	0	216.390
• EMARSS SEMA: A02112	-	13.669	13.197	42.700	55.897	3.279	21.139	4.416	5.981	Continuing	Continuing
• EMARSS MEP/PED Procurement: AZ2054	-	13.670	13.197	3.900	17.097	3.279	21.138	4.418	5.982	Continuing	Continuing
• EMAARSS SEMA: 375206 EH2	-	1.740	-	-	-	-	3.205	3.218	-	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH3 / EMARSS Payloads ADV DEV (MIP)

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>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

Remarks

The EMARSS RDTE efforts are found in the following two (2) project lines; 0305206AEH2 EMARSS ADV DEV (MIP) (Fixed Wing Project Office) and 0305206AEH3 EMARSS Payloads ADV DEV (Project Manager Sensors - Aerial Intelligence). The supporting procurement lines are A02112 and AZ2054. Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne intelligence systems to Program Executive Officer for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors.

D. Acquisition Strategy

The acquisition strategy, supported by the EMARSS CPD, is to design and test 24 systems as well as provide enhancements to the following sensor capabilities in order to maintain relevancy to the Warfighter: EO/IR FMV; COMINT; WAAS; LiDAR and improved SAR/MTI radar; LOS and BLOS communications; and PED supporting two DCGS-A enabled operator workstations. The EMARSS fleet of 24 systems will consist of the following variants: eight EMARSS-G (Geo-INT); four EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight EMARSS-M (Multi-INT); and four EMARSS-S (SIGINT).

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH3 / EMARSS Payloads ADV DEV (MIP)
--	---	---

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			
PMO	RO	PEO IEW&S, PM SAI : APG, MD	0.000	-		0.095		-		-		-	0	0.095	0
SETA	C/CPFF	BAH : APG, MD	0.000	-		0.100		-		-		-	0	0.100	0
Subtotal			0.000	-		0.195		-		-		-	0.000	0.195	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			
LiDAR sensor enhancement	SS/CPFF	JHU APL : Laurel, MD	0.000	-		1.205		-		-		-	0	1.205	0
AWAPSS Sensor enhancement	C/CPFF	BAE : Nashua, CT	0.000	-		1.374	Nov 2015	-		-		-	0	1.374	0
Subtotal			0.000	-		2.579		-		-		-	0.000	2.579	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Matrix Government Engineering Support	MIPR	USACERDEC, I2WD : APG, MD	0.000	-		0.100		0.130	Jan 2017	-		0.130	0	0.230	0
Matrix Contractor Engineering Support	C/CPFF	BAH : APG, MD	0.000	-		0.100		-		-		-	0	0.100	0
Subtotal			0.000	-		0.200		0.130		-		0.130	0.000	0.330	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Development Testing	MIPR	USA ATEC : APG, MD	0.000	-		0.558		-		-		-	0	0.558	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH3 / EMARSS Payloads ADV DEV (MIP)
--	---	---

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
EMARSS - P3I/Test																												
QRC to POR - Modification and Conversion																												
Fielding																												
Sensor Upgrades/Enhancements																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH3 / EMARSS Payloads ADV DEV (MIP)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMARSS - P3I/Test	3	2016	2	2017
QRC to POR - Modification and Conversion	2	2015	4	2019
Fielding	3	2017	2	2020
Sensor Upgrades/Enhancements	1	2019	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH4 / ARL ADV DEV (MIP)
--	---	---

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
EH4: ARL ADV DEV (MIP)	-	0.000	5.100	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Airborne Reconnaissance Low - Enhanced (ARL-E) is a worldwide self-deployable airborne Intelligence Surveillance Reconnaissance (ISR) system designed for timely, accurate, assured support to tactical forces over the full spectrum of operations. This system is a De Havilland DHC-8 aircraft replacing the DHC-7 IAW the Aerial ISR (AISR) 2020 Strategy. ARL-E will enhance the ARL-M sensor capability sets through the procurement of new and refurbished sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. It provides a persistent capability to include: Broad-Area Surveillance and/or Focused Stare on Target Areas of Interest (Point or Objective Targets), Electro-Optical/Infrared (EO/IR)/Full-Motion Video (FMV) , Multi-Mode Radar, Robust Communications Intelligence (COMINT), on-Board Collection, Analysis, Sensor Cross Cue and dissemination through Distributed Common Ground System-Army (DCGS-A) Enabled workstations. ARL-E will be assigned to the U.S. Army Intelligence and Security Command's Aerial ISR Brigade providing AISR support to combatant commanders. For the overall system, the Army Acquisition Objective and the Army Procurement Objective, is nine. The Mission Equipment Package (MEP) objective is eight.

This funding line supports non-recurring engineering (NRE), development of supplemental type certificates (STC), testing, and integration. Funding provides for Department of Defense (DoD) mandated safety equipment to meet current and evolving International Standards. It also enhances aircraft communications, navigations and surveillance (CNS); aircraft survivability equipment (ASE) and the integration of the AISR mission equipment package (MEP) as well as obsolescence issues involved with the conversion of Quick Reaction Capability (QRC) to the ARL-E Program of Record (POR).

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Non-Recurring Engineering	-	5.100	-	-	-
Description: Funding will provide for NRE and the technical drawing package associated with the Department of Army mandated installation of ASE on a DeHavilland dash 8 and the associated validation testing required for the installed ASE. This funding will also be utilized for the associated system level testing after the final sensor installation on the ARL-E DeHavilland dash 8 replacement platforms.					
FY 2016 Plans: Will provide Department of Army mandated ASE compliance and total system level testing for the ARL-E DeHavilland dash 8 replacement Program of Record aircraft. These aircraft will provide the Department of Army with a state of the art AISR platform ready for worldwide deployment in support of national interest.					
Accomplishments/Planned Programs Subtotals	-	5.100	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH4 / ARL ADV DEV (MIP)
--	---	---

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• ARL SEMA (MIP): A02109	-	-	-	-	-	-	12.103	12.294	9.796	Continuing	Continuing
• ARL SEMA Mods (MIP): A02110	-	48.302	6.793	-	6.793	18.223	19.636	22.023	-	Continuing	Continuing
• ARL Payloads (MIP): AZ2050	131.892	68.540	74.380	-	74.380	53.365	7.613	8.215	-	Continuing	Continuing
• ARL Payloads ADV DEV (MIP): 375206-EH5	-	12.498	11.669	-	11.669	3.000	2.000	-	1.011	Continuing	Continuing

Remarks

Note: The Airborne Reconnaissance Low- Enhanced (ARL-E) RDTE efforts are found in the following two (2) project lines; 0305206AEH4 ARL ADV DEV (MIP) (Fixed Wing Project Office) and 0305206AEH5 ARL Payloads ADV DEV (Project Manager Sensors - Aerial Intelligence). The supporting procurement lines are A02110 and AZ2050. Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne Intelligence systems to Program Executive Officer for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors.

D. Acquisition Strategy

ARL-E will enhance the ARL-M sensor capability sets through the procurement of new and refurbished sensors to meet the ARL-E CPD requirements. It provides a persistent capability to include: Broad-Area Surveillance and/or Focused Stare on Target Areas of Interest (Point or Objective Targets), EO/IR FMV, COMINT, on-Board Collection, Analysis, Sensor Cross Cue and dissemination through DCGS-A Enabled workstations.

The development and testing of Long Range radar (LRR) is required to replace the current ARL Phoenix Eye Radar to increase performance and meet the improved requirements of the Appendix J Payload for the approved ARL-E CPD. The remainder will fund software development to enhance COMINT collection capabilities. The software will be added to the existing COMINT systems to effectively prosecute high priority and emerging modern signal emitters.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH4 / ARL ADV DEV (MIP)
--	---	---

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
Non-Recurring Engineering associated with MEP/Sensor Integration																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / <i>Airborne Reconnaissance Systems</i>	Project (Number/Name) EH4 / <i>ARL ADV DEV (MIP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Non-Recurring Engineering associated with MEP/Sensor Integration	3	2016	3	2017

Note

This budget line provides for Non-Recurring Engineering (NRE) and the technical drawing package associated with the Department of Army mandated installation of Aviation Survival Equipment (ASE) on a DeHavilland dash 8 and the associated validation testing required for the installed ASE. This funding will also be utilized for the associated system level testing after the final MEP/sensor installation on the Aerial Reconnaissance Low Enhanced (ARL-E) DeHavilland dash 8 replacement platforms.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems				Project (Number/Name) EH5 / ARL Payloads ADV DEV (MIP)			
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
EH5: ARL Payloads ADV DEV (MIP)	-	0.000	12.498	11.669	-	11.669	3.000	2.000	0.000	1.011	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Airborne Reconnaissance Low - Enhanced (ARL-E) is a worldwide self-deployable airborne Intelligence Surveillance Reconnaissance (ISR) system designed for timely, accurate, assured support to tactical forces over the full spectrum of operations. This system is a De Havilland DHC-8 aircraft replacing the DHC-7 IAW the Aerial ISR (AISR) 2020 Strategy. ARL-E will enhance the ARL-M sensor capability sets through the procurement of new and refurbished sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. It provides a persistent capability to include: Broad-Area Surveillance and/or Focused Stare on Target Areas of Interest (Point or Objective Targets), Electro-Optical/Infrared (EO/IR)/Full-Motion Video (FMV) , Multi-Mode Radar, Robust Communications Intelligence (COMINT), on-Board Collection, Analysis, Sensor Cross Cue and dissemination through Distributed Common Ground System-Army (DCGS-A) Enabled workstations. ARL-E will be assigned to the U.S. Army Intelligence and Security Command's Aerial ISR Brigade providing AISR support to combatant commanders. For the overall system, the Army Acquisition Objective and the Army Procurement Objective, is nine. The Mission Equipment Package (MEP) objective is eight.

Fiscal Year (FY) 2017 funding of \$11.669 million completes the Long Range Radar (LRR) effort, and initiates new signal enhancement efforts. This funding line supports development and testing of the LRR to replace the current ARL Phoenix Eye Radar to meet the increased performance requirements of the Appendix J Payload for ARL-E approved CPD. LRR effort will add required SAR modes, address obsolescence, Information Assurance (IA) issues, and improved probability at greater required ranges. Effort will produce a prototype and conduct flight testing to characterize the prototype performance. Funding is planned for test and evaluation of LRR capability integrated in ARL-E system. Also, it supports the software development to enhance COMINT collection capabilities to effectively prosecute high priority and emerging modern signal emitters.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Long Range Radar Development	-	12.498	-	-	-
Description: LRR Research and Development (R&D) Support					
FY 2016 Plans: Completion of LRR prototype effort					
Title: Test Support to LRR and New Signals (COMINT/Software Upgrades)	-	-	4.000	-	4.000
Description: Complete the LRR test and New Signal Upgrades					
FY 2017 Base Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH5 / ARL Payloads ADV DEV (MIP)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete the LRR test and New Signal Upgrades					
Title: New Signals (COMINT/Software Upgrades)	-	-	7.669	-	7.669
Description: Add new COMINT Software Upgrades					
FY 2017 Base Plans: Start development of COMINT Software Upgrades					
Accomplishments/Planned Programs Subtotals	-	12.498	11.669	-	11.669

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
• AZ2050 ARL MODS (MIP): AZ2050	116.892	68.540	74.380	-	74.380	53.365	7.613	8.215	-	0.000	329.005
• Theater Net-Centric Geol: 0605766A-DX9	-	-	1.360	-	1.360	1.898	0.257	0.257	-	0	3.772
• A02109 ARL SEMA: A02109	-	-	-	-	-	-	12.103	12.294	9.796	0.000	34.193
• A02110 ARL SEMA MODS (MIP): A02110	-	48.302	6.793	-	6.793	18.223	19.636	22.023	-	Continuing	Continuing
• ARL ADV DEV (MIP): 0305206A-EH4	-	5.100	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

The Airborne Reconnaissance Low- Enhanced (ARL-E) RDTE efforts are found in the following two (2) project lines; 0305206AEH4 ARL ADV DEV (MIP) (Fixed Wing Project Office) and 0305206AEH5 ARL Payloads ADV DEV (Project Manager Sensors - Aerial Intelligence). The supporting procurement lines are A02110 and AZ2050. Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne Intelligence systems to Program Executive Officer for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors.

D. Acquisition Strategy

ARL-E will enhance the ARL-M sensor capability sets through the procurement of new and refurbished sensors to meet the ARL-E CPD requirements. It provides a persistent capability to include: Broad-Area Surveillance and/or Focused Stare on Target Areas of Interest (Point or Objective Targets), EO/IR FMV, COMINT, on-Board Collection, Analysis, Sensor Cross Cue and dissemination through DCGS-A Enabled workstations.

UNCLASSIFIED

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

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 7	PE 0305206A / <i>Airborne Reconnaissance Systems</i>	EH5 / <i>ARL Payloads ADV DEV (MIP)</i>

The development and testing of LRR is required to replace the current ARL Phoenix Eye Radar to increase performance and meet the improved requirements of the Appendix J Payload for the approved ARL-E CPD. The remainder will fund software development to enhance COMINT collection capabilities. The software will be added to the existing COMINT systems to effectively prosecute high priority and emerging modern signal emitters.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH5 / ARL Payloads ADV DEV (MIP)
--	---	--

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			
Long Range Radar Development	C/CPFF	Northrop Grumman : Linthicum Heights, MD	0.000	-		11.498	Mar 2016	-		-		-	0	11.498	0
New Signals (COMINT/ Software Upgrades)	C/CPFF	Leidos : Aberdeen Proving Ground	0.000	-		-		7.669	Nov 2016	-		7.669	0	7.669	0
Subtotal			0.000	-		11.498		7.669		-		7.669	0.000	19.167	0.000

Remarks
 Long Range Radar Contract: W15P7T-10-D-D408/KZ01. FY17 will complete the development and integration and of Long Range Radar (LRR). The development and integration of the LRR is required to replace the current ARL Phoenix Eye Radar to increase performance meet the improved requirement documents of the Appendix J Payload for Airborne Reconnaissance Low -Enhanced (ARL-E) approved Capability Production Document (CPD).
 New Signals Contract: W56KGY-16-D-0001. The remaining FY17 funding will fund software development to enhance the COMINT collection capabilities. The software will be added to existing COMINT subsystems to effectively prosecute high priority and emerging modern signal emitters.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support to LRR and New Signals (COMINT/ Software Upgrades)	C/CPFF	Leidos : Aberdeen Proving Ground, MD	0.000	-		1.000		4.000	Nov 2016	-		4.000	0	5.000	0
Subtotal			0.000	-		1.000		4.000		-		4.000	0.000	5.000	0.000

Remarks
 Long Range Radar Contract: W15P7T-10-D-D408/KZ01. FY17 will complete the testing of Long Range Radar (LRR). The testing of the LRR is required to determine if the LRR meets the requirements in Appendix J Payload for Airborne Reconnaissance Low - Enhanced (ARL-E) approved Capability Production Document (CPD).
 New Signals Contract: W56KGY-16-D-0001. The remaining FY17 funding will support the testing of the software to see if it meets the requirements in the ARL-E CPD.

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	0.000	-	12.498	11.669	-	11.669	0.000	24.167	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH5 / ARL Payloads ADV DEV (MIP)
--	---	--

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) ARL-E - Radar Development Contract Award	Radar Development Contract Award				Radar Development Contract Award																							
ARL-E Radar Development					Radar Development																							
(2) ARL-E MEP Contract Award	ARL-E MEP Contract Award				ARL-E MEP Contract Award																							
ARL-E MEP Integration									Test & Evaluation																			
(3) ARL-E System LUT													Test & Evaluation															
ARL-E New Signals Development and Test									Development & Test				Development & Test															
(4) ARL-E System LRR FOT&E																	Test and Evaluation											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305206A / Airborne Reconnaissance Systems	Project (Number/Name) EH5 / ARL Payloads ADV DEV (MIP)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ARL-E - Radar Development Contract Award	3	2015	3	2015
ARL-E Radar Development	4	2015	4	2017
ARL-E MEP Contract Award	1	2016	1	2016
ARL-E MEP Integration	1	2017	3	2018
ARL-E System LUT	3	2018	3	2018
ARL-E New Signals Development and Test	1	2017	1	2020
ARL-E System LRR FOT&E	4	2019	4	2019

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	20.155	25.592	32.284	-	32.284	39.537	50.756	49.143	46.535	Continuing	Continuing
956: <i>Distributed Common Ground System (MIP)</i>	-	10.570	8.923	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
D07: <i>DCGS-A Common Modules (MIP)</i>	-	9.585	16.669	32.284	-	32.284	39.537	50.756	49.143	46.535	Continuing	Continuing

Note

The Distributed Common Ground Systems - Army (DCGS-A) is a designated Major Automation Information System (MAIS) program.

A. Mission Description and Budget Item Justification

Distributed Common Ground System - Army (DCGS-A) is the Intelligence, Surveillance and Reconnaissance (ISR) System of Systems (SoS) for Joint, Interagency, Allied, Coalition, and National data analysis, sharing and collaboration. The core functions of DCGS-A are: the vertical and horizontal synchronization of ISR Processing, Exploitation and Dissemination (PED) efforts; operations in a networked environment at multiple security levels; the control of select Army and joint sensor systems; the fusion of all acquired data and information, and distribution of relevant red (threat), gray (non-aligned), and environmental (weather and terrain) information; and providing the Warfighters' early warning, targeting, and sensor ground station capabilities. DCGS-A provides a single integrated ISR ground processing system composed of common components that are interoperable with sensors, other information sources, all Warfighting Functions, and the Defense Information & Intelligence Enterprise (DI2E) and Intelligence Community Information Technology Enterprise (ICITE). DCGS-A is fielded in Fixed, Mobile, and embedded configurations emphasizing the use of reach and split based operations by improving accessibility of data in order to reduce forward deployed footprint. As enhanced capabilities are developed and tested, a continuing series of software releases will be integrated into Army Common/commodity hardware and fielded to units IAW the Army Resourcing Priority List (ARPL) process.

The Army Acquisition Executive designated PEO IEW&S and DCGS-A as the Command Post Computing Environment (CPCE) Lead. As such, DCGS-A is defining the architecture to fit within the Common Operating Environment (COE) as described by the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)) COE Implementation Plan. This is in accordance with the G-3/5/7 priority to align all Army networks, procurements, and enhancements under one COE and one vision leveraging intelligence community investments.

DCGS-A consolidated, enhanced, and modernized the Tasking, Processing, Exploitation, and Dissemination (TPED) capabilities formerly found in nine Army intelligence programs of record (Common Ground Station (CGS), Guardrail Common Sensor (GRCS), Counterintelligence & Interrogation Operations Workstation (CI&I OPS WS), All Source Analysis System (ASAS), Enhanced TrackWolf (ETW), Digital Topographic Support System (DTSS), Integrated Meteorological System (IMETS), Tactical Exploitation System (TES), and Prophet Control) and two Quick Reaction Capabilities (Joint Intelligence Operations Center – Iraq (JIOC-I) and Imagery Work Station(IWS)). DCGS-A provides these technologically advanced PED capabilities in tailored and scalable mobile, fixed, and embedded configurations in all maneuver and maneuver support units from Company Intelligence Support Team to Army Service Component Command, and in select maneuver sustainment units battalion and

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>
---	--

above. The program develops software packages to be embedded in mission command and other select systems to provide required ISR/analytic capabilities. DCGS-A is one of the Army's top modernization priorities.

DCGS-A software is tailored by echelon and scalable to each unit's mission. DCGS-A provides commanders and staffs the ability to maintain an accurate and up to date understanding of the operational environment. The DCGS-A contribution to commanders' visualization and situational awareness, rapid planning, and the synchronization of all warfighting functions, enable Army units to operate within the enemy's decision cycle. This capability enhances tactical and operational maneuver and the conduct of full spectrum operations across the range of military operations from humanitarian to major combat operations and campaigns through all phases of the Joint Continuum of Military Operations.

The DCGS-A configurations range from laptops to systems integrated in tactical shelters and mounted on tactical vehicles to large commodity servers operating in a sanctuary based processing environment. The fundamental intent and tenet of this approach is to reduce forward deployed equipment/footprint by co-locating the advanced analytics capabilities within the DCGS-A baseline with the regional data centers, where the data is stored. This infrastructure consolidation simultaneously reduces processor and communications requirements in tactical units by limiting the number of large data files transported across tactical communications systems. Following a successful operational assessment and Milestone C in 2QFY12/Full Deployment Decision in 1QFY13, the program is deploying DCGS-A Increment 1 Release 1 Software Baseline capability throughout the Army.

Project 956 does not have funds in FY17.

FY17 Base funding in the amount of \$32.284 million for D07, will continue the iterative DCGS-A software releases that will increase the Processing, Exploitation, and Dissemination capability our Army requires. Increment 2 of the DCGS-A program will continue critical updates to the Army's ISR PED and multi-intelligence planning, analysis, and production capabilities through the exploitation of Cloud Computing and advanced analytics capabilities. This approach will achieve Information Technology efficiencies through alignment with the Intelligence Community Information Technology Environment, while developing the incremental software updates required to remain current.

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	20.155	25.592	25.777	-	25.777
Current President's Budget	20.155	25.592	32.284	-	32.284
Total Adjustments	0.000	0.000	6.507	-	6.507
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	6.507	-	6.507

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>
---	--

Change Summary Explanation

The \$6.507M adjustment will resource the continued development and testing of Increment 2, Project D07.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>				Project (Number/Name) 956 / <i>Distributed Common Ground System (MIP)</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
956: <i>Distributed Common Ground System (MIP)</i>	-	10.570	8.923	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Distributed Common Ground System - Army (DCGS-A) is designated a Major Automation Information System (MAIS) program.

A. Mission Description and Budget Item Justification

Distributed Common Ground System - Army (DCGS-A) is the Intelligence, Surveillance and Reconnaissance (ISR) System of Systems (SoS) for Joint, Interagency, Allied, Coalition, and National data analysis, sharing and collaboration. The core functions of DCGS-A are: the vertical and horizontal synchronization of ISR Processing, Exploitation and Dissemination (PED) efforts; operations in a networked environment at multiple security levels; the control of select Army and joint sensor systems; the fusion of all acquired data and information, and distribution of relevant red (threat), gray (non-aligned), and environmental (weather and terrain) information; and providing the Warfighters' early warning, targeting, and sensor ground station capabilities. DCGS-A provides a single integrated ISR ground processing system composed of common components that are interoperable with sensors, other information sources, and all Warfighting Functions. DCGS-A is fielded in Fixed, Mobile, and embedded configurations emphasizing the use of reach and split based operations by improving accessibility of data in order to reduce forward deployed footprint. As enhanced capabilities are developed and tested, a continuing series of software releases will be integrated into Army common/commodity hardware and fielded to units in accordance with the Dynamic Army Resourcing Priority List (DARPL) process.

The Army Acquisition Executive designated PEO IEW&S and DCGS-A as the Command Post Computing Environment (CPCE) Lead. As such, DCGS-A is defining the architecture to fit within the Common Operating Environment (COE) as described by the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)) COE Implementation Plan. This is in accordance with the G-3/5/7 priority to align all Army networks, procurements, and enhancements under one COE and one vision leveraging intelligence community investments.

DCGS-A consolidated, enhanced, and modernized the Tasking, Processing, Exploitation, and Dissemination (TPED) capabilities formerly found in nine Army intelligence programs of records (Common Ground Station (CGS), Guardrail Common Sensor (GRCS), Counterintelligence & Interrogation Operations Workstation (CI&I OPS WS), All Source Analysis System (ASAS), Enhanced TrackWolf (ETW), Digital Topographic Support System (DTSS), Integrated Meteorological System (IMETS), Tactical Exploitation System (TES), and Prophet Control) and two Quick Reaction Capabilities (Joint Intelligence Operations Center – Iraq (JIOC-I) and Imagery Work Station(IWS)). DCGS-A provides these technologically advanced PED capabilities in tailored and scalable mobile, fixed, and embedded configurations in all maneuver and maneuver support units from Company Intelligence Support Team to Army Service Component Command, and in select maneuver sustainment units battalion and above. The program also develops software packages to be embedded in mission command and other select systems to provide required ISR/analytic capabilities. DCGS-A is one of the Army's top modernization priorities.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 956 / <i>Distributed Common Ground System (MIP)</i>
--	--	---

DCGS-A software is tailored by echelon and scalable to each unit's mission. DCGS-A provides commanders and staffs the ability to maintain an accurate and up to date understanding of the operational environment. The DCGS-A contribution to commanders' visualization and situational awareness, rapid planning, and the synchronization of all warfighting functions, enable Army units to operate within the enemy's decision cycle. This capability enhances tactical and operational maneuver and the conduct of full spectrum operations across the range of military operations from humanitarian to major combat operations and campaigns through all phases of the Joint Continuum of Military Operations.

The DCGS-A configurations range from laptops to systems integrated in tactical shelters and mounted on tactical vehicles to large commodity servers operating in a sanctuary based processing environment. The fundamental intent and tenet of this approach is to reduce forward deployed equipment/footprint by co-locating the advanced analytics capabilities within the DCGS-A baseline with the regional data centers, where the data is stored. This infrastructure consolidation simultaneously reduces processor and communications requirements in tactical units by limiting the number of large data files transported across tactical communications systems. Following a successful operational assessment and Milestone C in 2QFY12/Full Deployment Decision in 1QFY13, the program is deploying DCGS-A Increment 1 Release 1 Software Baseline capability throughout the Army.

Project 956 has no funds in FY17.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Design and Development of DCGS-A enterprise level net-centric architecture</p> <p>Description: Continue design and development of DCGS-A enterprise level net-centric architecture to include: Development & Integration of DCGS-A Software; Developmental Test/Operational Test, Mobile Basic Contract Deliverables, and Program Management support costs. Global Unified Data Environment (Cloud) - development - to create direct Data Ingest of varying intelligence data types and development of analytical tools to exploit single intelligence data, further enhancing Cloud Enterprise Account Management load distribution of enterprise level complex searches. Development of Cloud to Cloud Data Synchronization technologies and enhanced data management applications between Cloud and Edge nodes.</p> <p>FY 2016 Plans: Fund will be used to correct of deficiencies discovered during the Follow-On Operational Test and Evaluation (FOT&E) and to integrate software baselines that will begin fielding in 2016 on both SIPR and TS/SCI networks</p>	-	4.530	-	-	-
<p>Title: Matrix support including systems integration lab software support.</p> <p>Description: Matrix support including systems integration lab software support.</p> <p>FY 2015 Accomplishments:</p>	1.356	2.000	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 956 / <i>Distributed Common Ground System (MIP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Performed matrix support including systems integration lab software support. FY 2016 Plans: Will utilize matrix support for systems integration lab software requirements.					
Title: Army and Joint Testing/Development/Operational Test Support/Software Fixes Description: Ongoing Army and Joint interoperability testing and evaluation to include Operational Assessment (Network Integration Evaluation (NIE) Operational Assessment), Joint Interoperability Test Command, and Operational Test and Software Fixes FY 2015 Accomplishments: Supported the Limited User Test (LUT) at NIE 15.2 and funded software fixes once complete. FY 2016 Plans: Will support completion of software fixes.	8.321	1.500	-	-	-
Title: Support Costs and Management Services Description: Funding is provided for the following effort/Project Management Support FY 2015 Accomplishments: Provided program management office support. FY 2016 Plans: Will support program management office requirements.	0.893	0.893	-	-	-
Accomplishments/Planned Programs Subtotals	10.570	8.923	-	-	-

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
• DCGS-A (MIP) Procurement: BZ7316 - Procurement	192.038	304.408	242.514	33.032	275.546	273.518	283.944	-	-	Continuing	Continuing
• Theater Net-Centric Geolocation TNG: Theater Net-Centric Geolocation (TNG) RDTE	0.350	0.166	0.166	-	0.166	0.410	0.606	-	-	0	1.698

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 956 / <i>Distributed Common Ground System (MIP)</i>

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

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

Remarks

D. Acquisition Strategy

The Distributed Common Ground System-Army (DCGS-A) program was created in response to the Department of Defense (DoD) Distributed Common Ground/Surface System (DCGS) Mission Area Initial Capabilities Document (MA ICD) dated 13 Aug 2004, which captured the overarching requirements for an Intelligence, Surveillance, and Reconnaissance (ISR) Family of Systems (FoS) that will contribute to Joint and combined Warfighter needs. That ICD was updated as the Distributed Common Ground/Surface System (DCG/SS) Enterprise ICD, and approved by the Joint Requirements Oversight Council (JROC) 27 Feb 2009. The Army requirements were refined in the DCGS-A Capabilities Development Document (CDD), and approved by the JROC 31 Oct 2005. The DCGS-A program is currently in the Production and Deployment phase and was designated as a Major Automated Information System (MAIS) in OSD (AT&L) Memorandum, 29 Mar 2010.

DCGS-A is following an evolutionary acquisition approach to develop and field system capabilities over time to satisfy the requirements of the DCGS-A Capability Development Document (CDD). Following this approach, the first increment was defined and a Capability Production Document (CPD) was created with full consideration of all of the preceding supporting documents and analysis. As part of its initial staffing, a Cost Benefit Analysis was completed in support of the DCGS-A CPD. This analysis projected a significant cost avoidance/savings over the life cycle by not limiting the hardware configuration to a one size fits all unit types design but rather integrating the DCGS-A Software capabilities into common servers and other IT components fielded at that echelon. This approach was validated during the Milestone C and Full Deployment Decision process in FY2012 through the Office of the Secretary of Defense (OSD) Cost Assessment and Program Evaluation (CAPE) approval of the Economic Analysis. This Economic Analysis validated the cost savings achieved utilizing the acquisition approach outlined above.

PM DCGS-A has been designated as the Command Post Computing Environment (CPCE) Lead for PEO IEW&S. As such, DCGS-A is currently aligning it's architecture to fit within the Common Operating Environment (COE) as described by the ASA(ALT) COE Implementation Plan. This alignment is in accordance with the G-3/5/7 priority to align all Army networks, procurements, and enhancements under one COE and one vision. Our acquisition strategy supports this initiative as we continue to collapse PORs and reduce footprint following our capability migration path and iterative development of software releases which continue to increase capabilities to satisfy the remaining CPD requirements beyond Initial Minimal Capability. As DCGS-A continues the path through Increment 1 and beyond, each release will focus on the COE and continually align the Command Post activities with POR migration activities. The program office expects to continue as the DCGS-A System Integrator for software development and hardware integration for Increment 1, and will continue to access multiple vendors by leveraging a variety of competitively awarded contracts.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0305208A / Distributed Common Ground/Surface Systems				956 / Distributed Common Ground System (MIP)							
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
Project Management	Various	PM, DCGS-A : APG, MD	28.882	0.893	Oct 2014	0.893	Oct 2015	-		-		-	Continuing	Continuing	Continuing
Subtotal			28.882	0.893		0.893		-		-		-	-	-	-
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
Metadata Catalog	Various	MITRE, : various	17.865	-		-		-		-		-	Continuing	Continuing	Continuing
Design & Develop DCGS-A Architecture	Various	Northrup Grumman, Various : Linthicum, MD, Various	247.877	-		-		-		-		-	0	247.877	0
Design & Develop DCGS-A Incr 1 Software	Various	Various : Various	13.964	-		-		-		-		-	Continuing	Continuing	0
Secure Common Data Link (SCDL)	Various	CUBIC : Orlando, Fla.	0.788	-		-		-		-		-	Continuing	Continuing	0
Global Unified Data Environment (Cloud) Development	Various	CERDEC/SEC : APG, MD	21.500	-		-		-		-		-	Continuing	Continuing	0
Software Fixes	C/CPFF	Various : Various	0.000	1.300	Jul 2015	2.530	Nov 2015	-		-		-	0	3.830	0
Design & Develop DCGS-A Architecture (CPCE & Sensor CE)	C/CPFF	Various : Various	0.000	-		2.000	Feb 2016	-		-		-	0	2.000	0
Subtotal			301.994	1.300		4.530		-		-		-	-	-	-
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
Matrix Support Government Test & Integration Lab	Various	CECOM : CECOM	22.816	1.356	Oct 2014	2.000	Oct 2015	-		-		-	Continuing	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 956 / <i>Distributed Common Ground System (MIP)</i>
--	--	---

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			22.816	1.356		2.000		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Operational Test Support for DCGS-A Rel 2	Various	ATEC, OTC, Various : APG, MD, EPG, Various	16.149	-		-		-		-		-	Continuing	Continuing	Continuing
Software Integration/Fixes	Various	TBD : TBD	0.000	4.894	May 2015	1.500	Jan 2016	-		-		-	0	6.394	0
Developmental Testing for Sensor CE	Various	I2WD, Various : APG, MD, Various	0.000	2.127	Jan 2015	-		-		-		-	0	2.127	0
NIE for Rel 2 and CPCE COE V2	Various	NIE : Ft. Bliss	11.087	-		-		-		-		-	Continuing	Continuing	Continuing
Operational Assessments/ Joint Demo for Inc 1 and CPCE	Various	Empire Challenge, ULCHI Freedom Guardia, Unified Vision : AZ, KO, EU	2.100	-		-		-		-		-	0	2.100	0
Certification Test	Various	JITC/CTSF : ATEC	1.616	-		-		-		-		-	0	1.616	0
Subtotal			30.952	7.021		1.500		-		-		-	-	-	-

	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	384.644	10.570	8.923	-	-	-	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 956 / <i>Distributed Common Ground System (MIP)</i>
--	--	---

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
Inc 1 Rel 1 - 2 Development	Inc 1 Rel 1 - 2 Development																											
Developmental Test/Operational Test/Log Demo Inc 1 Rel 2	DT/OT Inc 1 Rel 2																											
Fielding & Training Inc 1 Rel 1 IAW DARPL Rotations	F/T Inc 1 Rel 1																											
Fielding & Training Inc 1 Rel 2 IAW DARPL Rotations					F/T Inc 1 Rel 2																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 956 / <i>Distributed Common Ground System (MIP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Inc 1 Rel 1 - 2 Development	1	2012	4	2016
Developmental Test/Operational Test/Log Demo Inc 1 Rel 2	2	2014	4	2016
Fielding & Training Inc 1 Rel 1 IAW DARPL Rotations	3	2013	4	2015
Fielding & Training Inc 1 Rel 2 IAW DARPL Rotations	1	2016	4	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>				Project (Number/Name) D07 / <i>DCGS-A Common Modules (MIP)</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
D07: <i>DCGS-A Common Modules (MIP)</i>	-	9.585	16.669	32.284	-	32.284	39.537	50.756	49.143	46.535	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Distributed Common Ground System - Army (DCGS-A) is designated a Major Automation Information System (MAIS) program.

A. Mission Description and Budget Item Justification

Distributed Common Ground System - Army (DCGS-A) is the Intelligence, Surveillance and Reconnaissance (ISR) System of Systems (SoS) for Joint, Interagency, Allied, Coalition, and National data analysis, sharing and collaboration. The core functions of DCGS-A are: the vertical and horizontal synchronization of ISR Processing, Exploitation and Dissemination (PED) efforts; operations in a networked environment at multiple security levels; the control of select Army and joint sensor systems; the fusion of all acquired data and information, and distribution of relevant red (threat), gray (non-aligned), and environmental (weather and terrain) information; and providing the Warfighters' early warning, targeting, and sensor ground station capabilities. DCGS-A provides a single integrated ISR ground processing system composed of common components that are interoperable with sensors, other information sources, all Warfighting Functions, compliant with standards providing the Defense Information & Intelligence Enterprise (DI2E) and Intelligence Community Information Technology Enterprise (ICITE). DCGS-A is fielded in Fixed, Mobile, and embedded configurations emphasizing the use of reach and split based operations by improving accessibility of data in order to reduce forward deployed footprint. As enhanced capabilities are developed and tested, a continuing series of software releases will be integrated into Army Common/commodity hardware and fielded to units IAW the Army Resourcing Priority List (ARPL) process.

The Army Acquisition Executive designated PEO IEW&S and DCGS-A as the Command Post Computing Environment (CPCE) Lead. As such, DCGS-A is defining the architecture to fit within the Common Operating Environment (COE) as described by the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)) COE Implementation Plan. This is in accordance with the G-3/5/7 priority to align all Army networks, procurements, and enhancements under one COE and one vision leveraging intelligence community investments.

DCGS-A provides technologically advanced Processing, Exploitation, and Dissemination (PED) capabilities through iterative software releases delivered in tailored and scalable mobile, fixed, and embedded configurations in all maneuver and maneuver support units from Company Intelligence Support Team to Army Service Component Command, and in select maneuver sustainment units battalion and above. The program develops software packages to be embedded in mission command and other select systems to provide required ISR/analytic capabilities. DCGS-A is one of the Army's top ten modernization priorities.

FY17 Base funding in the amount of \$32.284 million will continue the iterative DCGS-A software releases that will increase the Processing, Exploitation, and Dissemination capability our Army requires. Increment 2 of the DCGS-A program will continue critical updates to the Army's ISR PED and multi-intelligence planning, analysis, and production capabilities through the exploitation of Cloud Computing and advanced analytics capabilities. This approach will achieve Information

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) D07 / <i>DCGS-A Common Modules (MIP)</i>
--	--	--

Technology efficiencies through alignment with the Intelligence Community Information Technology Environment, while developing the incremental software updates required to remain current.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Design & Develop DCGS-A Inc 2 Software</p> <p>Description: Continue efforts to design & develop DCGS-A Inc 2 software. Increment 2 expands on the capabilities provided by Increment 1 by adding capabilities at the Army and below echelons while developing new, enhanced, and leap-ahead Intelligence, Surveillance, and Reconnaissance (ISR) and Standard and Shareable Geospatial Foundation (SSGF) enterprise capabilities to align with the Intelligence Community (IC) and Army's Common Operating Environment (COE) and transformation objectives. Increment 2 and beyond will leverage the investment made in previous DCGS-A increments and include emerging technologies related to: Tasking of sensors; controlling select Army sensor systems; Processing, fusing, and Exploiting data and information; supporting knowledge generation; providing ground station capabilities; automated support to intelligence product generation; Disseminating information and intelligence about the threat, weather, and terrain at all echelons; automating intelligence synchronization, including ISR planning, reconnaissance and surveillance integration and assessment; supporting situation understanding; supporting targeting and effects; providing the Standard and Sharable Geospatial Foundation (SSGF) to COE Computing Environments (CEs). These requirements will be defined in the DCGS-A Requirements Data Package (RDP) and Capability Drops (CDs) as necessary to ensure DCGS-A provides the data, information, intelligence, situation awareness, and interoperability needed to support the Warfighter.</p> <p>FY 2015 Accomplishments: Designed & developed DCGS-A Inc 2 software.</p> <p>FY 2016 Plans: Continue to design & develop DCGS-A Inc 2 software.</p> <p>FY 2017 Base Plans: Will continue to design & develop DCGS-A Inc 2 software.</p>	1.836	10.085	27.791	-	27.791
<p>Title: System reconfiguration/redesign</p> <p>Description: System Reconfiguration to enhance the systems to deliver higher performance to leverage industry enhancements/innovation.</p> <p>FY 2015 Accomplishments:</p>	1.720	2.300	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) D07 / <i>DCGS-A Common Modules (MIP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Initiated System Reconfiguration to enhance the systems delivered higher performance to leverage industry enhancements/innovation.</p> <p>FY 2016 Plans: Completing System Reconfiguration to enhance the systems to deliver higher performance to leverage industry enhancements/innovation.</p>					
<p>Title: Matrix Support Government for Software Development and Integration</p> <p>Description: Matrix Support Government for Software Development and Integration support for software integration to the target platforms.</p> <p>FY 2015 Accomplishments: Initiated Matrix Support Government for Software Development and Integration support for software integration to the target platforms.</p> <p>FY 2016 Plans: Continuing Matrix Support Government for Software Development and Integration support for software integration to the target platforms.</p> <p>FY 2017 Base Plans: Will continue Matrix Support Government for Software Development and Integration support for software integration to the target platforms.</p>	1.657	2.148	1.131	-	1.131
<p>Title: Project Management</p> <p>Description: Project Management support to manage the cost, schedule, and performance metrics for the program.</p> <p>FY 2015 Accomplishments: Initiated Project Management support.</p> <p>FY 2016 Plans: Continuing Project Management support.</p> <p>FY 2017 Base Plans: Will continue Project Management support.</p>	1.054	1.136	1.641	-	1.641
<p>Title: Army and Joint Testing/Development/Operational Test Support</p>	-	1.000	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) D07 / <i>DCGS-A Common Modules (MIP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Development and Testing of Increment 2					
FY 2016 Plans: Will begin development and testing of Increment 2					
Title: Milestone preparation	3.318	-	-	-	-
Description: Milestone preparation; Activities; Analyze, define, and document the acquisition approach and achieve a successful Materiel Development Decision for the Increment 2 program.					
FY 2015 Accomplishments: Analyzed, defined, and documented the acquisition approach and achieved a successful Materiel Development Decision for the Increment 2 program.					
Title: Training Development	-	-	1.316	-	1.316
Description: Training development - embedded computer based training (CBT) for the Inc 2 software.					
FY 2017 Base Plans: Will initiate training development - embedded computer based training (CBT) for the Inc 2 software.					
Title: Logistics Documentation	-	-	0.405	-	0.405
Description: Logistics activities including task maintenance task analysis, level of repair analysis, user manual, training support package, and MANPRINT activities.					
FY 2017 Base Plans: Will initiate logistics activities including task maintenance task analysis, level of repair analysis, user manual, training support package, and MANPRINT activities.					
Accomplishments/Planned Programs Subtotals	9.585	16.669	32.284	-	32.284

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
• BZ7316 - DCGS-A Procurement: <i>BZ7316 - DCGS-A (MIP)</i>	192.038	304.408	242.514	33.032	275.546	273.518	283.944	-	-	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) D07 / <i>DCGS-A Common Modules (MIP)</i>

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• Theater Net-Centric Geolocation TNG: <i>Theater Net-Centric Geolocation (TNG) RDTE</i>	0.350	0.166	0.166	-	0.166	0.410	0.606	-	-	0	1.698

Remarks

D. Acquisition Strategy

DCGS-A Increment 2 is an ACAT IAM, Major Automated Information System (MAIS) program entering Milestone B decision for the Engineering and Manufacturing Development (EMD) acquisition phase. The DCGS-A Increment 2 program will consist of multiple software releases structured to meet DCGS-A Increment 2 Requirements Definition Package (RDP) requirements. These releases will be referred to as DCGS-A Increment 2, Releases 1, 2, etc. as defined by the Army Requirements Oversight Council (AROC) Process Review Board (APRB). The APRB will identify the capabilities associated with each release in a Capability Drop (CD) document. The DCGS-A Increment 2 program will follow the Information Technology (IT) Box concept for an agile acquisition strategy to iteratively develop and field Intelligence, Surveillance, and Reconnaissance (ISR) capabilities, hosted on Commercial off the Shelf (COTS) equipment/hardware, providing a low risk, efficient, time-phased releases of capability to satisfy the Army's operational needs.

The DCGS-A capabilities developed under Increment 1 will be leveraged to the maximum extent where applicable to meet the Increment 2 requirements set. The DCGS-A Increment 2 will also leverage the Increment 1 configuration platforms fielded across the Army.

DCGS-A Increment 2 is a collection of software packages (developmental, COTS, and GOTS products) selected to provide each Army echelon (from Battalion up to Echelon Above Corps (EAC)) the capability to synthesize and exploit intelligence data. DCGS-A Increment 2 delivers these software packages on COTS and GOTS hardware components, tailored to meet each Army Echelon's intelligence mission requirements. DCGS-A Increment 2 will deliver these capabilities by fielding software releases with incremental increases in capabilities with each release. DCGS-A Increment 2 is the Army's ISR Foundation Layer for Tasking, Processing, Exploitation, Dissemination (TPED) and development of situation understanding using intelligence information about the threat, weather, and terrain at all Army Echelons. DCGS-A Increment 2 provides the capabilities necessary for Commanders to access information, task organic sensors, and synchronize non-organic sensor assets with their organic assets. DCGS-A Increment 2 will continuously acquire and synthesize data and information from Joint, Interagency, Intergovernmental, and Multi-national (JIIM) sources to maintain an updated and accurate understanding of the operational environment to inform critical and time sensitive command decisions.

The DCGS-A Increment 2 software baseline will be updated and fielded every 24-36 months to address emerging and prioritized operational requirements as approved by the APRB. PM DCGS-A, in coordination with the operational user community, chose the 24-36 month release time phasing to align releases with the technological readiness of targeted enhancements, and to support low-risk development and test cycle times in accordance with an agile acquisition approach. The time phasing of planned content of each release will be based upon an assessment of available and projected technological solution sets; this assessment will result in the approach to complete additional releases beyond Release 1 of Initial Minimum Capability (IMC) to satisfy the entire DCGS-A Increment 2 RDP. The DCGS-A Increment 2 software design will be hardware agnostic that the software is virtualized and can be deployed in any processing hardware equipment. This allows the DCGS-A Increment 2

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) D07 / <i>DCGS-A Common Modules (MIP)</i>

software to be scalable and deployable in different hardware system configurations, as required by the Army at different echelons. The implementation of the Virtual Machine technology also allows leveraging of the latest COTS hardware server technology and procurement through the Army Common Hardware System (CHS) program with the established post-deployment hardware sparing, sustainment, and maintenance provisions, resulting in significant cost efficiencies.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) D07 / <i>DCGS-A Common Modules (MIP)</i>
--	--	--

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Project Management	TBD	Various : Various	0.000	1.054	Mar 2015	1.136	Oct 2015	1.641	Oct 2016	-		1.641	Continuing	Continuing	0
Milestone preparation; Activities; Trade Space Analysis (TSA)	MIPR	Various : Various	0.000	3.318	Mar 2015	-		-		-		-	0	3.318	0
Subtotal			0.000	4.372		1.136		1.641		-		1.641	-	-	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			
Design & Develop DCGS-A Inc 2 software	C/CPFF	Various : Various	0.000	1.836	May 2015	10.085	Jun 2016	27.791	Oct 2016	-		27.791	Continuing	Continuing	Continuing
System reconfiguration/redesign	C/CPFF	Various : Various	0.000	1.720	Mar 2015	2.300	Nov 2015	-		-		-	Continuing	Continuing	0
Subtotal			0.000	3.556		12.385		27.791		-		27.791	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Matrix Support	C/CPFF	Various : Various	0.000	1.657	Mar 2015	2.148	Oct 2015	1.131	Oct 2016	-		1.131	Continuing	Continuing	0
Training Development	C/CPFF	Various : TBD	0.000	-		-		1.316	Mar 2017	-		1.316	Continuing	Continuing	0
Logistics Documentation	C/CPFF	Various : TBD	0.000	-		-		0.405	Mar 2017	-		0.405	Continuing	Continuing	0
Subtotal			0.000	1.657		2.148		2.852		-		2.852	-	-	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) D07 / <i>DCGS-A Common Modules (MIP)</i>
--	--	--

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
Acquisition Requirements Package Dev, Source Selection, & Risk Redu					Acq Req, SS, & RR Inc 2																							
Development and Test Inc 2 Rel 1 Software									Dev and Test Inc 2 Rel 1 SW																			
Development and Test Inc 2 Rel 2 Software																	Dev and Test Inc 2 Rel 2 SW											
Operational Test Inc 2 Rel 1																	OT Inc 2 Rel 1											
(1) Increment 2 MDD	▲ MDD Inc 2																											
(2) Development RFP Release Decision					▲ 2																							
(3) RFP Release Increment 2					▲ 3 RFP Rel																							
(4) Milestone B					▲ 4 MS B																							
(5) Development Contract Award Increment 2					▲ 5 Contract Award Inc 2																							
Fielding Inc 2																					Inc 2 Fielding							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305208A / <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) D07 / <i>DCGS-A Common Modules (MIP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Acquisition Requirements Package Dev, Source Selection, & Risk Reduction Inc 2	3	2015	3	2016
Development and Test Inc 2 Rel 1 Software	4	2016	4	2019
Development and Test Inc 2 Rel 2 Software	1	2020	4	2021
Operational Test Inc 2 Rel 1	4	2019	1	2020
Increment 2 MDD	2	2015	2	2015
Development RFP Release Decision	1	2016	1	2016
RFP Release Increment 2	1	2016	1	2016
Milestone B	3	2016	3	2016
Development Contract Award Increment 2	3	2016	3	2016
Fielding Inc 2	2	2020	4	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	46.472	0.000	13.470	-	13.470	0.000	0.000	0.000	0.000	Continuing	Continuing
MQ1: MQ-1 Gray Eagle - Army UAV (MIP)	-	46.472	0.000	13.470	-	13.470	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

The MQ-1C Gray Eagle provides Reconnaissance, Surveillance, Target Acquisition (RSTA), Command and Control, Communications Relay, Signals Intelligence (SIGINT), Battle Damage Assessment, and Manned-Unmanned Teaming Capability. MQ-1C Gray Eagle is a dedicated, assured, multi-mission Unmanned Aircraft System (UAS) fielded to all Army Divisions, Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities.

The Fiscal Year (FY) 2017 MQ-1 Gray Eagle funding of \$13.470 million will support Test and Evaluation efforts associated with the Improved Gray Eagle (IGE) Engineering Change Proposal (ECP). The test effort will evaluate the changes materiel. The types of effort required include Environmental Testing, Electromagnetic Environmental Effects (E3) testing, and Follow-On Operational Test and Evaluation II (FOTE II).

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	46.472	0.000	0.000	-	0.000
Current President's Budget	46.472	0.000	13.470	-	13.470
Total Adjustments	0.000	0.000	13.470	-	13.470
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	13.470	-	13.470

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV				Project (Number/Name) MQ1 / MQ-1 Gray Eagle - Army UAV (MIP)			
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
MQ1: MQ-1 Gray Eagle - Army UAV (MIP)	-	46.472	0.000	13.470	-	13.470	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The MQ-1C Gray Eagle provides Reconnaissance, Surveillance, Target Acquisition (RSTA), Command and Control, Communications Relay, Signals Intelligence (SIGINT), Battle Damage Assessment, and Manned-Unmanned Teaming Capability. MQ-1C Gray Eagle is a dedicated, assured, multi-mission Unmanned Aircraft System (UAS) fielded to all Army Divisions, Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities.

The Fiscal Year (FY) 2017 MQ-1 Gray Eagle funding of \$13.470 million will support Test and Evaluation efforts associated with the Improved Gray Eagle (IGE) Engineering Change Proposal (ECP). The test effort will evaluate the changes to materiel(Improved Gray Eagle). The types of effort required include Environmental Testing, Electromagnetic Environmental Effects (E3) testing, and Follow-On Operational Test and Evaluation (FOTE II).

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

	FY 2015	FY 2016	FY 2017
<p>Title: Gray Eagle Software / Hardware Development</p> <p>Description: Gray Eagle Software / Hardware Development</p> <p>FY 2015 Accomplishments: Complete development of 4.3.X software.</p>	18.965	-	-
<p>Title: Government Test Support</p> <p>Description: Government test support including support of developmental test, E3 testing on the Universal Ground Control Station (UGCS), Joint Interoperability Test Center efforts, Link 16 testing, and FOT&E II test planning, site preparation, and complete FOT&E II.</p> <p>FY 2015 Accomplishments: Complete developmental test to include Captive Carry, Transport/Mobility. Conduct and complete FOT&E.</p>	21.858	-	-
<p>Title: Ground Base Sense and Avoid (GBSAA)</p> <p>Description: Ground Base Sense and Avoid (GBSAA)</p> <p>FY 2015 Accomplishments:</p>	5.649	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV	Project (Number/Name) MQ1 / MQ-1 Gray Eagle - Army UAV (MIP)
--	---	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Development of the GBSAA software, integration, and perform testing.			
Title: MQ-1C Improved Gray Eagle (IGE) Testing	-	-	13.470
Description: MQ-1C IGE Testing			
FY 2017 Plans: IGE Environmental Testing, E3 testing, and FOTE II.			
Accomplishments/Planned Programs Subtotals	46.472	-	13.470

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	
• MQ-1 UAV / APA - Base: A00005	238.081	286.973	55.388	-	55.388	10.806	-	-	-	-	Continuing	Continuing
• Gray Eagle Mods: A00002	-	-	-	-	-	92.694	11.806	58.724	27.662	Continuing	Continuing	

Remarks

D. Acquisition Strategy

An Extended Range Multi-Purpose (ERMP) Operational Requirement Document (ORD) was approved by the Joint Requirement Oversight Council (JROC) 6 Apr 2005. Milestone B occurred on 20 Apr 2005, and the System Development and Demonstration contract was awarded 8 Aug 2005, as a result of a competitive solicitation which included a vendor system capabilities demonstration. A Capabilities Production Document (CPD), version 8.7 was approved on 17 Jul 15. MQ-1C Gray Eagle completed FOTE 12 Jun 2015. On 14 Jul 2015, the trigger Configuration Steering Board (CSB) concurred with the Course of Action (COA) to validate the revised requirement for the Echelons Above Division (EAD) Gray Eagle and grant authorities through a new Acquisition Decision memorandum (ADM) to pursue the extended range capable Gray Eagle (Improved Gray Eagle) configuration. IGE is an enhanced derivative of the MQ-1C Gray Eagle UAS and closes the capability gap by delivering extended surveillance coverage which supports Army RSTA missions in excess of 27 hours. IGE's extended range provides the capacity for multi-intelligence payloads, precision strike capability, special reconnaissance in support of Special Operations Forces (SOF), Mission command from Aerial Intelligence Brigade (AIB) and U.S. Army Special Operations Command (USASOC). The Gray Eagle Research, Development, Test, and Evaluation (RDTE) acquisition strategy emphasis will be to complete Developmental test events (Environmental, E3, Transportability, & Performance Tests) to define and address system risks, followed by a FOTE II for the IGE.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV	Project (Number/Name) MQ1 / MQ-1 Gray Eagle - Army UAV (MIP)
--	---	--

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	MIPR	PM UAS : Redstone Arsenal, AL	9.066	-		-		-		-		-	0	9.066	0
Subtotal			9.066	-		-		-		-		-	0.000	9.066	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			
Development Engineering	C/CPIF	General Atomics / ASI : San Diego, CA	165.070	-		-		-		-		-	0	165.070	0
Prototype Manufacturing	Various	General Atomics / ASI : San Diego, CA	213.776	-		-		-		-		-	0	213.776	0
Ground Support Equipment	C/CPIF	Various : Various	9.075	-		-		-		-		-	0	9.075	0
Ground Base Sense & Avoid (GBSAA)	SS/CPFF	Various : Various	10.796	5.649	Jan 2016	-		-		-		-	0	16.445	0
Software / Hardware Development	SS/CPIF	General Atomics : San Diego, CA	76.214	18.965	Feb 2015	-		-		-		-	0	95.179	0
Subtotal			474.931	24.614		-		-		-		-	0.000	499.545	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Engineering Support	MIPR	Ft. Huachuca : Ft. Huachuca	24.501	-		-		-		-		-	0	24.501	0
Training and Training Equipment	MIPR	Ft. Huachuca : Ft. Huachuca	43.892	-		-		-		-		-	0	43.892	0
Government Engineering Support	C/FFP	Various : Various	18.859	-		-		-		-		-	0	18.859	0
Subtotal			87.252	-		-		-		-		-	0.000	87.252	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV	Project (Number/Name) MQ1 / MQ-1 Gray Eagle - Army UAV (MIP)
--	---	--

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) Operational Test Readiness Review I									▲ OTRR1																						
(2) Operational Test Readiness Review II												▲ OTRR2																			
(3) Operational Test Readiness Review III												▲ OTRR3																			
(4) Follow-on Operational Test and Evaluation II												▲ FOT&E II																			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV	Project (Number/Name) MQ1 / MQ-1 Gray Eagle - Army UAV (MIP)
--	---	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Operational Test Readiness Review I	2	2017	2	2017
Operational Test Readiness Review II	4	2017	4	2017
Operational Test Readiness Review III	1	2018	1	2018
Follow-on Operational Test and Evaluation II	1	2018	1	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0305232A / RQ-11 UAV
--	---

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	1.613	-	1.613	1.652	1.700	1.746	1.782	Continuing	Continuing
RA7: RQ-11 Raven (MIP)	-	0.000	0.000	1.613	-	1.613	1.652	1.700	1.746	1.782	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Small Unmanned Aircraft System (SUAS) provides the battalion and below ground maneuver elements critical situational awareness and enhance force protection. The system provides the small unit commander an organic and responsive tactical Reconnaissance, Surveillance, and Target Acquisition capability through the ability to view real-time Full Motion Video and sensor data via the system ground control stations. Other compatible receivers, such as the One System Remote Video Terminal and appropriately equipped manned platforms may also receive the SUAS products.

A SUAS includes three hand-launched aircraft that do not require an improved launch/recovery location. In addition to the aircraft, the system contains ground control equipment, which includes an interoperable hand controller. The equipment is fully transportable in or on rucksack type packs that are organic to the unit. SUAS is transitioning to a Capabilities Production Document (CPD) that will utilize existing RQ-11 and RQ-20 in a system of systems fielding concept, with a Short Range Micro (SRM) to be included later.

Justification: Fiscal Year (FY) 2017 Research, Development, Test, and Evaluation (RDTE) Base funding of \$1.613 million will be utilized for Program Management Engineering support and to meet CPD Increment II Block II related requirements. Specifically, the development of Tactical Open Government Architecture (TOGA) functionality to support new capabilities for mobile operations (embedded radio) and interface/control features including Interface Control Document (ICD) needed for SRM control and also perform developmental testing requirements as TOGA software is updated.

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	1.613	-	1.613
Total Adjustments	0.000	0.000	1.613	-	1.613
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	1.613	-	1.613

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305232A / RQ-11 UAV				Project (Number/Name) RA7 / RQ-11 Raven (MIP)			
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
RA7: RQ-11 Raven (MIP)	-	0.000	0.000	1.613	-	1.613	1.652	1.700	1.746	1.782	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Small Unmanned Aircraft System (SUAS) provides the battalion and below ground maneuver elements critical situational awareness and enhance force protection. The system provides the small unit commander an organic and responsive tactical Reconnaissance, Surveillance, and Target Acquisition capability through the ability to view real-time Full Motion Video and sensor data via the system ground control stations. Other compatible receivers, such as the One System Remote Video Terminal and appropriately equipped manned platforms may also receive the SUAS products.

A SUAS includes three hand-launched aircraft that do not require an improved launch/recovery location. In addition to the aircraft, the system contains ground control equipment, which includes an interoperable hand controller. The equipment is fully transportable in or on rucksack type packs that are organic to the unit. SUAS is transitioning to a Capabilities Production Document (CPD) that will utilize existing RQ-11 and RQ-20 in a system of systems fielding concept, with a Short Range Micro (SRM) to be included later.

Justification: Fiscal Year (FY) 2017 Research, Development, Test, and Evaluation (RDTE) Base funding of \$1.613 million will be utilized for Program Management Engineering support and to meet CPD Increment II Block II related requirements. Specifically, the development of Tactical Open Government Architecture (TOGA) functionality to support new capabilities for mobile operations (embedded radio) and interface/control features including Interface Control Document (ICD) needed for SRM control and also perform developmental testing requirements as TOGA software is updated.

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

	FY 2015	FY 2016	FY 2017
Title: Program Management Support Description: Program Management Support FY 2017 Plans: Program Management Support	-	-	0.581
Title: Developmental Engineering Description: Developmental Engineering FY 2017 Plans: Integration of the TOGA controller with an embedded mini Digital Datalink (DDL) radio to allow for mobile operations in support of employment of the SRM. Identify and update the interface control requirements for the TOGA controller as needed for SRM control.	-	-	0.927
Title: System Test and Evaluation	-	-	0.105

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305232A / RQ-11 UAV	Project (Number/Name) RA7 / RQ-11 Raven (MIP)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Description: System Test and Evaluation			
FY 2017 Plans: Developmental Testing of the software changes in the TOGA Controller			
Accomplishments/Planned Programs Subtotals	-	-	1.613

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>
• RQ-11 (RAVEN) - A00010: RQ-11 (RAVEN) - A00010	3.964	-	-	-	-	6.929	7.069	7.208	6.986	Continuing	Continuing

Remarks

D. Acquisition Strategy

SUAS Product Office executed a single award best value Indefinite Delivery Indefinite-Quantity (IDIQ) contract utilizing full and open competition. This contract provides affordable access for a fully staffed Technical, Management, Training, and Logistics organization, over a five-year period of performance (three year base period and two, single year options). The Government will make contract award based upon competitive source selection criteria.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305232A / RQ-11 UAV	Project (Number/Name) RA7 / RQ-11 Raven (MIP)
--	---	---

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 Personnel	RO	AMRDEC, Redstone Arsenal, AL : AMRDEC, Redstone Arsenal, AL	1.109	-		-		0.581	Nov 2016	-		0.581	0	1.690	0
Subtotal			1.109	-		-		0.581		-		0.581	0.000	1.690	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			
Developmental Engineering	C/IDIQ	Aberdeen Proving Grounds, Natick Contracting Division, Orlando, FL : Aberdeen Proving Grounds, Natick Contracting Divis	8.897	-		-		0.927	Dec 2016	-		0.927	0	9.824	0
Developmental Engineering	C/IDIQ	AMRDEC, Redstone Arsenal, Redstone, Al : AMRDEC, Redstone Arsenal, Redstone, Al	1.935	-		-		-		-		-	0	1.935	0
Subtotal			10.832	-		-		0.927		-		0.927	0.000	11.759	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Other Government Agencies	MIPR	Various : Various	0.000	-		-		-		-		-	0.000	0	0.000
Subtotal			0.000	-		-		-		-		-	0.000	0.000	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305232A / RQ-11 UAV	Project (Number/Name) RA7 / RQ-11 Raven (MIP)
--	---	---

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
TOGA Developmental Engineering									TOGA																			
TOGA Test Event 1													TTE 1															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305232A / RQ-11 UAV	Project (Number/Name) RA7 / RQ-11 Raven (MIP)
--	---	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TOGA Developmental Engineering	1	2017	4	2017
TOGA Test Event 1	4	2017	4	2017

Note
N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305233A / RQ-7 UAV
---	--

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	16.389	11.797	4.597	-	4.597	10.389	10.087	13.789	0.096	Continuing	Continuing
RQ7: <i>RQ-7 Shadow UAV</i>	-	16.389	11.797	4.597	-	4.597	10.389	10.087	13.789	0.096	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Tactical Unmanned Aerial System (TUAS) RQ-7 provides the Army Brigade Commander with dedicated Reconnaissance, Surveillance and Target Acquisition (RSTA), Intelligence, Battle Damage Assessment (BDA), and Force Protection. In line with the Army's Aviation Restructure Initiative (ARI) three Shadow Platoons are being integrated into the Combat Aviation Brigade's (CAB) Apache Reconnaissance Battalion. This will provide Aviation Brigades with Manned-Unmanned-Teaming (MUM-T) and enhanced Aerial Scout capabilities. The RQ-7B Shadow has logged over 945,600 flight hours, most of which were flown in support of Overseas Contingency Operations (OCO).

The full Shadow system consists of four air vehicles with payload, two Universal Ground Control stations, two Universal Ground Data Terminals, one Portable Ground Control Station with Portable Ground Data Terminal, Ground Support Equipment, two launchers, ten High Mobility Multipurpose Wheeled Vehicles (HMMWVs) with trailer(s), and a Light Medium Tactical Vehicle. Each system is equipped with one Maintenance Section Multifunctional (MSM) and is supported at the division level by a Mobile Maintenance Facility (MMF). The baseline fielded payload was the electro-optic infrared (EO/IR), but half of those were replaced with a Laser Designator (LD) payload. All 104 systems required by the Army Procurement Objective (APO) have been procured. In 2010 the Army G8 established an RQ-7B Unmanned Aerial Vehicle (UAV) MODs program. This budget line procures modifications including the Shadow v2, System Modifications, Mission Simulators, and One System Remote Video Terminal upgrades (OSRVT).

Implements Shadow v2: Tactical Common Data Link with Type 1 Encryption and North Atlantic Treaty Organization (NATO) interoperability; solves obsolescence associated with legacy computer hardware and the SOLARIS operating system. Government Furnished Equipment (GFE) and spares are also included.

Justification: Fiscal Year (FY) 2017 RQ-7 UAV Base funding of \$4.597 million will be used for capability and reliability improvements, specifically: Air Vehicle modifications development of the ability to operate in Global Positioning System (GPS) denied environment. Additionally, funds will be for system engineering and system test and evaluation support. Base funding will also be used to incorporate enhanced performance and interoperability into the OSRVT.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305233A / RQ-7 UAV
---	--

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	16.389	7.297	7.928	-	7.928
Current President's Budget	16.389	11.797	4.597	-	4.597
Total Adjustments	0.000	4.500	-3.331	-	-3.331
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	4.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	-3.331	-	-3.331

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0305233A / RQ-7 UAV				Project (Number/Name) RQ7 / RQ-7 Shadow UAV			
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
RQ7: RQ-7 Shadow UAV	-	16.389	11.797	4.597	-	4.597	10.389	10.087	13.789	0.096	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tactical Unmanned Aerial System (TUAS) RQ-7 provides the Army Brigade Commander with dedicated Reconnaissance, Surveillance and Target Acquisition (RSTA), Intelligence, Battle Damage Assessment (BDA), and Force Protection. In line with the Army's Aviation Restructure Initiative (ARI) three Shadow Platoons are being integrated into the Combat Aviation Brigade's (CAB) Apache Reconnaissance Battalion. This will provide Aviation Brigades with Manned-Unmanned-Teaming (MUM-T) and enhanced Aerial Scout capabilities. The RQ-7B Shadow has logged over 975,000 flight hours, most of which were flown in support of Overseas Contingency Operations (OCO).

The full Shadow system consists of four air vehicles with payload, two Universal Ground Control stations, two Universal Ground Data Terminals, one Portable Ground Control Station with Portable Ground Data Terminal, Ground Support Equipment, two launchers, ten High Mobility Multipurpose Wheeled Vehicles (HMMWVs) with trailer(s), and a Light Medium Tactical Vehicle. Each system is equipped with one Maintenance Section Multifunctional (MSM) and is supported at the division level by a Mobile Maintenance Facility (MMF). The baseline fielded payload was the electro-optic infrared (EO/IR), but half of those were replaced with a Laser Designator (LD) payload. All 104 systems required by the Army Procurement Objective (APO) have been procured. In 2010 the Army G8 established an RQ-7B Unmanned Aerial Vehicle (UAV) MODs program. This budget line procures modifications including the Shadow v2, System Modifications, Mission Simulators, and One System Remote Video Terminal (OSRVT) upgrades.

Implements Shadow RQ-7BV2: Tactical Common Data Link with Type 1 Encryption and North Atlantic Treaty Organization (NATO) interoperability; solves obsolescence associated with legacy computer hardware and the SOLARIS operating system. Government Furnished Equipment (GFE) and initial spares are also included.

Justification: Fiscal Year (FY) 2017 RQ-7 UAV Base funding of \$4.597 million will be used for capability and reliability improvements. Air Vehicle Improvements include the ability to operate in Global Positioning System (GPS) denied environments. Additionally, funds will be for system engineering and system test and evaluation support. Base funding will also be used to incorporate enhanced performance and interoperability into the OSRVT.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Air Vehicle Improvements	6.297	2.173	2.087	-	2.087
Description: Air Vehicle Improvements					
FY 2015 Accomplishments: Development of Manned Unmanned Teaming (MUM-T), software blocking, and Block III Engine development.					
FY 2016 Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305233A / RQ-7 UAV	Project (Number/Name) RQ7 / RQ-7 Shadow UAV			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continued development of MUM-T and software blocking. FY 2017 Base Plans: Continued development of the ability to operate in GPS denied environment.					
Title: Payload Improvements Description: Payload Improvements FY 2016 Plans: Continued development of TUAS EO/IR payloads.	-	2.000	-	-	-
Title: Ground Equipment Improvements Description: Ground Equipment Improvements FY 2015 Accomplishments: Funded Ground Equipment Improvements. Development of interoperability capabilities through use of Universal Ground Data Terminals and Universal Ground Control Stations, Network Security and System Vulnerability FY 2016 Plans: Continues to fund Ground Equipment Improvements. Continues development of interoperability capabilities through use of Universal Ground Data Terminals and Universal Ground Control Stations, Network Security and System Vulnerability.	3.682	3.491	-	-	-
Title: Test and Evaluation Description: Test and Evaluation FY 2015 Accomplishments: Test and evaluation of Air Vehicle and Ground Equipment Improvements. FY 2016 Plans: Continues to fund test and evaluation of Air Vehicle and Ground Equipment Improvements. FY 2017 Base Plans: Continues to fund test and evaluation of Air Vehicle and Ground Equipment Improvements.	1.711	0.927	0.513	-	0.513
Title: System Engineering/Program Management Description: System Engineering/Program Management	2.566	1.248	0.678	-	0.678

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305233A / RQ-7 UAV	Project (Number/Name) RQ7 / RQ-7 Shadow UAV

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Funded System Engineering/Program Management.</p> <p><i>FY 2016 Plans:</i> Continues to fund System Engineering/Program Management.</p> <p><i>FY 2017 Base Plans:</i> Continues to fund System Engineering/Program Management.</p>					
<p><i>Title:</i> One System Remote Video Terminal (OSRVT)</p> <p><i>Description:</i> OSRVT</p> <p><i>FY 2016 Plans:</i> Funds the performance and interoperability improvements to the OSRVT.</p> <p><i>FY 2017 Base Plans:</i> Continues to fund performance and interoperability improvements to the OSRVT.</p>	-	1.958	1.319	-	1.319
<p><i>Title:</i> One System Remote Video Terminal Test and Evaluation</p> <p><i>Description:</i> One System Remote Video Terminal Test and Evaluation</p> <p><i>FY 2015 Accomplishments:</i> Completed developmental testing of Increment II capabilities and conduct Initial Operational Test and Evaluation (IOT&E)</p>	2.133	-	-	-	-
Accomplishments/Planned Programs Subtotals	16.389	11.797	4.597	-	4.597

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
• RQ-7 UAV MODS: A00018	125.380	89.694	79.809	1.775	81.584	89.850	75.009	5.446	-	Continuing	Continuing
Remarks											

D. Acquisition Strategy

A System Capability Demonstration (SCD) was conducted with four contractors. The results from the SCD in conjunction with proposal evaluations resulted in the competitive down select of a Best Value TUAS. A successful Milestone II Army Systems Acquisition Review Council (ASARC) was conducted 21 Dec 1999 and

UNCLASSIFIED

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

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 7	PE 0305233A / RQ-7 UAV	RQ7 / RQ-7 Shadow UAV

a Milestone III Decision was reached on 25 Sep 2002. The full rate production contract was awarded 27 Dec 2002 and in FY2009 the last of the authorized 104 systems was placed on contract. Continued development of the selected Tactical Unmanned Aerial Vehicle (TUAV) system will be accomplished through a series of modifications and retrofits such as Shadow v2, Communications Relay, Laser Designator, Block III engine, and reliability upgrades. Development/integration of these improved capabilities will be through individual efforts on an engineering services contract with Shadow contractors. Development of the Block III engine is being accomplished through a competitive process.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305233A / RQ-7 UAV	Project (Number/Name) RQ7 / RQ-7 Shadow UAV
--	--	---

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			
Base: Program Management	RO	PM UAS : Redstone Arsenal, AL	2.718	0.570		0.167		0.137		-		0.137	Continuing	Continuing	Continuing
Subtotal			2.718	0.570		0.167		0.137		-		0.137	-	-	-

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			
OIF Improvements / Block Upgrades / Capability Improvements	SS/CPFF	AAI Corporation : Hunt Valley, MD	3.105	-		-		-		-		-	0	3.105	0
System Engineering / Reliability Solutions	SS/CPFF	AAI Corporation : Hunt Valley, MD	2.025	-		-		-		-		-	0	2.025	0
Ground Equipment Improvements	SS/CPFF	AAI Corporation, MD : AAI Corporation, MD	13.218	3.682	Jan 2015	3.491	Oct 2015	-		-		-	Continuing	Continuing	Continuing
Block III Engine Development	C/CPFF	LSF : Redstone Arsenal, AL	24.824	5.901	May 2015	-		-		-		-	0	30.725	0
Other Air Vehicle Improvements	SS/CPFF	AAI Corporation, MD : AAI Corporation, MD	15.981	0.396	May 2015	0.673	Oct 2015	-		-		-	Continuing	Continuing	Continuing
GPS Denied Development	SS/CPFF	AAI Corporation : Hunt Valley, MD	0.000	-		1.500	Oct 2015	2.087	May 2017	-		2.087	Continuing	Continuing	0
Payload Improvements	SS/CPFF	Various : Various	2.750	-		2.000	Feb 2016	-		-		-	0	4.750	0
One System Remote Video Terminal (OSRVT)	SS/CPFF	AAI Corporation, MD : AAI Corporation, MD	11.129	-		1.958	May 2016	1.319	Apr 2017	-		1.319	Continuing	Continuing	Continuing
Subtotal			73.032	9.979		9.622		3.406		-		3.406	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305233A / RQ-7 UAV	Project (Number/Name) RQ7 / RQ-7 Shadow UAV
--	--	---

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Engineering Support	Various	Various : Various	0.562	1.331	Dec 2014	0.722	Oct 2015	0.362	Dec 2016	-		0.362	Continuing	Continuing	Continuing
Base: Government Engineering and Logistic Support	MIPR	Various : Various	0.281	0.665	Nov 2014	0.359	Feb 2016	0.179	Nov 2016	-		0.179	Continuing	Continuing	Continuing
Subtotal			0.843	1.996		1.081		0.541		-		0.541	-	-	-

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			
RQ-7 Developmental Testing of Product Development	Various	Various : Various	3.237	1.611	Aug 2015	0.827	Oct 2015	0.413	Dec 2016	-		0.413	Continuing	Continuing	Continuing
RQ-7 Operational Testing of Product Developments	MIPR	Various : Various	0.200	0.100	Aug 2015	0.100	Oct 2015	0.100	Dec 2016	-		0.100	Continuing	Continuing	Continuing
OSRVT Developmental Testing	MIPR	Various : Various	0.000	0.100	May 2015	-		-		-		-	0	0.100	0
OSRVT - Operational Testing	MIPR	Various : Various	0.000	2.033	May 2015	-		-		-		-	0	2.033	0
Subtotal			3.437	3.844		0.927		0.513		-		0.513	-	-	-

	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	80.030	16.389	11.797	4.597	-	4.597	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305233A / RQ-7 UAV	Project (Number/Name) RQ7 / RQ-7 Shadow UAV
--	--	---

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
	Block III Engine Development	Block III ED																										
GPS Denied Development									GPS Denied																			
Interoperability Upgrades									IU																			
Software Block Upgrades									SBU																			
Reliability Improvements																	RI											
OSRVT Increment II Interoperability Improvements									OSRVT																			
(1) OSRVT IOT&E	OSRVT IOT&E																											

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305233A / RQ-7 UAV	Project (Number/Name) RQ7 / RQ-7 Shadow UAV
--	--	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Block III Engine Development	1	2015	3	2016
GPS Denied Development	1	2017	4	2018
Interoperability Upgrades	1	2015	4	2020
Software Block Upgrades	1	2015	4	2020
Reliability Improvements	1	2019	4	2021
OSRVT Increment II Interoperability Improvements	1	2013	4	2021
OSRVT IOT&E	3	2015	3	2015

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0307665A / Biometrics Enabled Intelligence							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	1.973	0.000	0.000	7.104	7.104	0.000	0.000	0.000	0.000	76.260	85.337
B17: BIOMETRICS ENABLED INTELLIGENCE - MIP	-	1.973	0.000	0.000	7.104	7.104	0.000	0.000	0.000	0.000	76.260	85.337

A. Mission Description and Budget Item Justification

The Army has two biometric tactical collection devices, the Biometric Automated Toolset-Army (BAT-A) Kit and BAT-A Handheld (HH). These two devices support the Army Force Protection Mission and Identity Dominance Mission. Product Manager (PM) Joint Personnel Identification (JPI) supports the Biometric Enterprise database system which delivers these innovative and emergent biometric solutions. The BAT-A system is the Army's biometric tactical collection devices which collect, match, store and share biometric and contextual information on Known & Suspected Terrorists, potential adversaries, host nation personnel, and third country nationals. Recipients of collected information include DoD organizations, other U.S. government agencies, and Coalition Partners. The BAT-A devices are also used by non-Military Intelligence personnel (Infantry and Military Police). The capability was originally deployed as a Quick Reaction Capability (QRC) and has been deployed in a combat zone and other OCONUS contingency operations for the past decade. The original acquisition strategy for JPIv2 was to incorporate lessons learned through the QRC program; however, the Army refined the program acquisition strategy. In accordance with the current guidance from the Vice Chief of Staff of the Army, the current BAT-A systems will serve as the Army biometrics enduring capability through FY22. The Army Acquisition Executive approved the BAT-A Materiel Development Decision. All research and development efforts are now concluded for JPIv2. PM JPI will continue to serve as the Office of Primary Responsibility as the BAT-A is now a program of record in sustainment.

The additional FY17 RDT&E OCO funding supports developmental activities to create vehicle-independent and tailorable Multi-INT Collection, Processing, Exploitation, and Dissemination capability packages that can be installed and removed in a matter of minutes on any vehicle type to meet specific mission needs. In addition, the funds will enable development and testing of software code integrating new voice matching algorithms to deliver improved technical capabilities of stand-off voice biometric collection and speaker identification within the Voice Identity Biometrics Exploitation System (VIBES) QRC in order counter ever-changing threats facing deployed operational forces. Lastly, the funds affords the development of new software code and associated testing necessary to deliver an instance of the Biometric Intelligence Information Repository (BI2R-the unique software-based analytic production system used by NGIC specifically to create the Biometric Enabled Watchlist for OFS and other worldwide missions) on the Intelligence Community Information Technology Environment (IC ITE) C2S cloud.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0307665A / <i>Biometrics Enabled Intelligence</i>
---	--

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	1.973	0.000	0.000	-	0.000
Current President's Budget	1.973	0.000	0.000	7.104	7.104
Total Adjustments	0.000	0.000	0.000	7.104	7.104
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	0.000	7.104	7.104

Change Summary Explanation

FY17 RDTE OCO for \$7.104M provided to support the Five Vigilant Pursuit System Sets (10 vehicles total plus equipment) which are currently deployed in support of OFS and OIR. The Vigilant Pursuit System currently consists of 2 vehicles with integrated Multi-INT Collection, Processing, Exploitation, and Dissemination capability packages installed on MATVs. Funding (\$3.744M) supports developmental activities to create vehicle-independent and tailorable Multi-INT Collection, Processing, Exploitation, and Dissemination capability packages that can be installed and removed in a matter of minutes on any vehicle type to meet specific mission needs. Specific activities include hardware development for several small but critical hardware components that cannot be commercially procured necessary to refactor the Multi-INT capability packages to work on any vehicle platform and software development necessary to replace/upgrade open source code that is no longer current/viable and is therefore more difficult and expensive to maintain or completely unusable.

In addition, FY17 RDT&E OCO Funding (\$1,210K) supports development & testing of software code integrating new voice matching algorithms to deliver improved technical capabilities of stand-off voice biometric collection & speaker identification within the Voice Identity Biometrics Exploitation System (VIBES) QRC to counter ever-changing threats facing deployed operational forces. The VIBES software program provides a stand-off speaker identification capability that supports operations in OFS and OIR. Software development is necessary for the program to remain current & compliant with enterprise standards; will improve the data flow & efficiency of the system enabling faster response times, increased automation, & tighter integration with existing biometrics and intelligence systems.

Lastly, the FY17 RDT&E OCO Funding (\$2,150K) supports the development of new software code & associated testing necessary to deliver an instance of the Biometric Intelligence Information Repository (BI2R-the unique software-based analytic production system used by NGIC specifically to create the Biometric Enabled Watchlist.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0307665A / <i>Biometrics Enabled Intelligence</i>				Project (Number/Name) B17 / <i>BIOMETRICS ENABLED INTELLIGENCE - MIP</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
B17: <i>BIOMETRICS ENABLED INTELLIGENCE - MIP</i>	-	1.973	0.000	0.000	7.104	7.104	0.000	0.000	0.000	0.000	76.260	85.337
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Army has two biometric tactical collection devices, the Biometric Automated Toolset-Army (BAT-A) Kit and BAT-A Handheld (HH). These two devices support the Army Force Protection Mission and Identity Dominance Mission. Product Manager (PM) Joint Personnel Identification (JPI) supports the Biometric Enterprise database system which delivers these innovative and emergent biometric solutions. The BAT-A system is the Army's biometric tactical collection devices which collect, match, store and share biometric and contextual information on Known & Suspected Terrorists, potential adversaries, host nation personnel, and third country nationals. Recipients of collected information include DoD organizations, other U.S. government agencies, and Coalition Partners. The BAT-A devices are also used by non-Military Intelligence personnel (Infantry and Military Police). The capability was originally deployed as a Quick Reaction Capability (QRC) and has been deployed in a combat zone and other OCONUS contingency operations for the past decade. The original acquisition strategy for JPIv2 was to incorporate lessons learned through the QRC program; however, the Army refined the program acquisition strategy. In accordance with the current guidance from the Vice Chief of Staff of the Army, the current BAT-A systems will serve as the Army biometrics enduring capability through FY22. The Army Acquisition Executive approved the BAT-A Materiel Development Decision. All research and development efforts are now concluded for JPIv2. PM JPI will continue to serve as the Office of Primary Responsibility as the BAT-A is now a program of record in sustainment.

The FY17 RDT&E OCO funds support the Five Vigilant Pursuit System Sets (10 vehicles total plus equipment) which are currently deployed in support of OFS and OIR. The Vigilant Pursuit System currently consists of 2 vehicles with integrated Multi-INT Collection, Processing, Exploitation, and Dissemination capability packages installed on MATVs. Funding (\$3.744M) supports developmental activities to create vehicle-independent and tailorable Multi-INT Collection, Processing, Exploitation, and Dissemination capability packages that can be installed and removed in a matter of minutes on any vehicle type to meet specific mission needs. Specific activities include hardware development for several small but critical hardware components that cannot be commercially procured necessary to refactor the Multi-INT capability packages to work on any vehicle platform and software development necessary to replace/upgrade open source code that is no longer current/viable and is therefore more difficult and expensive to maintain or completely unusable.

In addition, FY17 RDT&E OCO Funding (\$1,210K) supports development & testing of software code integrating new voice matching algorithms to deliver improved technical capabilities of stand-off voice biometric collection & speaker identification within the Voice Identity Biometrics Exploitation System (VIBES) QRC to counter ever-changing threats facing deployed operational forces. The VIBES software program provides a stand-off speaker identification capability that supports operations in OFS and OIR. Software development is necessary for the program to remain current & compliant with enterprise standards; will improve the data flow & efficiency of the system enabling faster response times, increased automation, & tighter integration with existing biometrics and intelligence systems.

Lastly, the FY17 RDT&E OCO Funding (\$2,150K) supports the development of new software code & associated testing necessary to deliver an instance of the Biometric Intelligence Information Repository (BI2R)-the unique software-based analytic production system used by NGIC specifically to create the Biometric Enabled Watchlist

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0307665A / <i>Biometrics Enabled Intelligence</i>	Project (Number/Name) B17 / <i>BIOMETRICS ENABLED INTELLIGENCE - MIP</i>
--	--	--

for OFS and other worldwide missions) on the Intelligence Community Information Technology Environment (IC ITE) C2S cloud. The new, more capable software will facilitate automated information exchange with complimentary community programs resident on the IC ITE C2S cloud to support the production of a Biometrically Enabled Watchlist (BEWL) containing all available IC Biometrics and Identity Intelligence. There are identified contract vehicles at I2WD that have appropriate scope and option years to execute this funding in FY17 and deliver capabilities within 12 months.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Joint Personnel Identification (JPI)v2</p> <p>Description: JPI supports the Biometric Enterprise database system which delivers the Army Force Protection Mission and Identity Dominance Mission.</p> <p>FY 2015 Accomplishments: FY2015 funding supports 10 FTE Civilian Positions to accomplish program management activities to support the Army's tactical collection acquisition strategy. It provided programmatic oversight, engineering, cost estimating, resource and acquisition management. Funds also provide infrastructure, facility costs and communication requirements (desktop support & network connectivity).</p> <p>FY 2017 Base Plans: This project only has OCO dollars for FY17</p> <p>FY 2017 OCO Plans: Five Vigilant Pursuit System Sets (10 vehicles total plus equipment) are currently deployed in support of OFS and OIR. The Vigilant Pursuit System currently consists of 2 vehicles with integrated Multi-INT Collection, Processing, Exploitation, and Dissemination capability packages installed on MATVs. Funding (\$3.744M) supports developmental activities to create vehicle-independent and tailorable Multi-INT Collection, Processing, Exploitation, and Dissemination capability packages that can be installed and removed in a matter of minutes on any vehicle type to meet specific mission needs. Specific activities include hardware development for several small but critical hardware components that cannot be commercially procured necessary to refactor the Multi-INT capability packages to work on any vehicle platform and software development necessary to replace/upgrade open source code that is no longer current/viable and is therefore more difficult and expensive to maintain or completely unusable.</p> <p>Funding (\$1,210K) supports development & testing of software code integrating new voice matching algorithms to deliver improved technical capabilities of stand-off voice biometric collection & speaker identification within the Voice Identity Biometrics Exploitation System (VIBES) QRC to counter ever-changing threats facing deployed operational forces. The VIBES software program provides a stand-off speaker identification capability that</p>	1.973	-	0.000	7.104	7.104

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0307665A / <i>Biometrics Enabled Intelligence</i>	Project (Number/Name) B17 / <i>BIOMETRICS ENABLED INTELLIGENCE - MIP</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>supports operations in OFS and OIR. Software development is necessary for the program to remain current & compliant with enterprise standards; will improve the data flow & efficiency of the system enabling faster response times, increased automation, & tighter integration with existing biometrics and intelligence systems.</p> <p>Funding (\$2,150K) supports the development of new software code & associated testing necessary to deliver an instance of the Biometric Intelligence Information Repository (BI2R-the unique software-based analytic production system used by NGIC specifically to create the Biometric Enabled Watchlist for OFS and other worldwide missions) on the Intelligence Community Information Technology Environment (IC ITE) C2S cloud. The new, more capable software will facilitate automated information exchange with complimentary community programs resident on the IC ITE C2S cloud to support the production of a Biometrically Enabled Watchlist (BEWL) containing all available IC Biometrics and Identity Intelligence. There are identified contract vehicles at I2WD that have appropriate scope and option years to execute this funding in FY17 and deliver capabilities within 12 months.</p>					
Accomplishments/Planned Programs Subtotals	1.973	-	0.000	7.104	7.104

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

N/A

Remarks

D. Acquisition Strategy

Army refined the acquisition strategy for the JPIv2 program in FY14. The current program strategy has changed from an investment to a sustainment strategy for currently fielded Biometric Tactical Collection Devices which eliminated JPIv2 in FY16. In accordance with the Vice Chief of Staff of the Army direction, the current BAT-A configuration will enter the sustainment phase as the Army's biometric enduring capability. The current FY15 base RDT&E dollars of \$1.973 million supports 10 Government full time equivalents which provide program management activities for the current biometric tactical collection capability.

The FY17 RDT&E OCO acquisition strategy will solicit a contractor to develop activities to create vehicle-independent and tailorable Multi-INT Collection, Processing, Exploitation, and Dissemination capability packages. Also, a contractor will be selected to develop & test software code integrating new voice matching algorithms to deliver improved technical capabilities of stand-off voice biometric collection & speaker identification within the Voice Identity Biometrics Exploitation System (VIBES) QRC to counter ever-changing threats facing deployed operational forces. Lastly, a contractor will develop new software code and accomplish associated testing necessary to deliver an instance of the Biometric Intelligence Information Repository (BI2R-the unique software-based analytic production system used by NGIC specifically to create the Biometric Enabled Watchlist for OFS and other worldwide missions) on the Intelligence Community Information Technology Environment (IC ITE) C2S cloud.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0307665A / <i>Biometrics Enabled Intelligence</i>	Project (Number/Name) B17 / <i>BIOMETRICS ENABLED INTELLIGENCE - MIP</i>

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0307665A / Biometrics Enabled Intelligence				B17 / BIOMETRICS ENABLED INTELLIGENCE - MIP							
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
PM Management Services	Various	Various : Various	12.921	-		-		-		-		-	0.000	12.921	0
Subtotal			12.921	-		-		-		-		-	0.000	12.921	0.000
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
Base Products Development	C/IDIQ	Various : TBD	44.293	-		-		0.000		3.744		3.744	0	48.037	0
Subtotal			44.293	-		-		0.000		3.744		3.744	0.000	48.037	0.000
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Civilian Personnel and Other Support Costs	Various	Various : Various	18.129	1.973		-		-		-		-	0	20.102	0
Subtotal			18.129	1.973		-		-		-		-	0.000	20.102	0.000
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
IA, T&E, Threat Assessment, Interoperability Certifications	Various	Various : TBD	0.917	-		-		0.000		3.360		3.360	0	4.277	0
Subtotal			0.917	-		-		0.000		3.360		3.360	0.000	4.277	0.000

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016			
Appropriation/Budget Activity 2040 / 7			R-1 Program Element (Number/Name) PE 0307665A / <i>Biometrics Enabled Intelligence</i>				Project (Number/Name) B17 / <i>BIOMETRICS ENABLED INTELLIGENCE - MIP</i>				
	Prior Years	FY 2015	FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	76.260	1.973	0.000		0.000	7.104	7.104	0.000	85.337	0.000	

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0307665A / <i>Biometrics Enabled Intelligence</i>	Project (Number/Name) B17 / <i>BIOMETRICS ENABLED INTELLIGENCE - MIP</i>
--	--	--

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
Operational Assessment (Technical Report)	OA																											
Contract Closeout					KTC																							
PM JPlv2 Closeout					PMO																							
Product Development									PD																			
Systems Test & Evaluation									ST&E																			
Operational Test & Evaluation													OT&E															

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0307665A / <i>Biometrics Enabled Intelligence</i>	Project (Number/Name) B17 / <i>BIOMETRICS ENABLED INTELLIGENCE - MIP</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Operational Assessment (Technical Report)	1	2015	1	2015
Contract Closeout	2	2015	2	2015
PM JPiv2 Closeout	2	2015	1	2016
Product Development	1	2017	3	2017
Systems Test & Evaluation	2	2017	4	2017
Operational Test & Evaluation	4	2017	1	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0300349A / <i>Win-T Increment 2 - Initial Networking</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	3.123	3.800	4.867	-	4.867	6.046	4.833	5.104	13.505	0.000	41.278
EE7: <i>WIN-T Increment 2 - Initial Networking</i>	-	3.123	3.800	4.867	-	4.867	6.046	4.833	5.104	13.505	0.000	41.278

A. Mission Description and Budget Item Justification

Warfighter Information Network - Tactical Increment 2 (WIN-T Inc 2) provides the Army with On-The-Move (OTM) networking capability. The WIN-T Inc 2 network retains capabilities delivered by WIN-T Inc 1 and by leveraging proven Government and commercial technologies, adds greater network throughput and automated network management to optimize planning (to include spectrum use), initialization, monitoring and troubleshooting. WIN-T Inc 2 employs Satellite Communications OTM to extend the network in maneuver Brigade Combat Teams to Company-level through FY2018. Using equipment mounted on combat platforms, WIN-T Inc 2 delivers a mobile capability that reduces reliance on fixed infrastructure and allows Commanders to move on the battlefield while retaining situational awareness and mission command capabilities. Using the Highband Networking Radio, with the Highband Networking Waveform and high performance antennas, the WIN-T Inc 2 Line-of-Sight network offers an adaptive 30-Megabit per second aggregate throughput to Commanders in their Command Post or in their vehicle. The WIN-T Inc 2 network is self-forming, which means it automatically creates transmission paths based on terrain and environmental conditions; and self-healing, meaning that transmission paths will automatically re-route traffic to complete network transactions and calls even if one or more nodes break down or lose connectivity. This capability offers greater network reliability and better end-to-end connectivity than traditional point-to-point networks. WIN-T Inc 2 introduces the network management capability needed to keep mobile and dispersed forces networked through automated planning, initialization, monitoring, and troubleshooting. Finally, WIN-T Inc 2 adopts "Colorless Core" technology that encrypts both classified and unclassified user information in the network and minimizes the number of users on the "core" of the network. The Colorless Core allows commanders to utilize the tactical network without fear of the enemy intercepting information. Colorless Core is a technical insertion in the WIN-T Inc 1b network which enables information sharing between WIN-T Inc 1b and WIN-T Inc 2.

Inc 3 developed NetOps software and NetCentric Waveform (NCW) updates will be inserted into Inc 2 equipped units.

FY17 funds support Operational Testing (NIE 17.2) and continues tech insertion of NetOps Build 5 and upgrade to NCW 10.x.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0300349A / <i>Win-T Increment 2 - Initial Networking</i>
---	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	3.247	3.800	0.000	-	0.000
Current President's Budget	3.123	3.800	4.867	-	4.867
Total Adjustments	-0.124	0.000	4.867	-	4.867
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.124	-			
• Other Adjustments 1	-	-	4.867	-	4.867

Change Summary Explanation

FY 2017 funds support Operational Testing (NIE 17.2) and continues tech insertion of NetOps Build 5 and upgrades to NetCentric Waveform (NCW) 10.x.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0300349A / Win-T Increment 2 - Initial Networking				Project (Number/Name) EE7 / WIN-T Increment 2 - Initial Networking			
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
EE7: WIN-T Increment 2 - Initial Networking	-	3.123	3.800	4.867	-	4.867	6.046	4.833	5.104	13.505	0.000	41.278
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Warfighter Information Network - Tactical Increment 2 (WIN-T Inc 2) provides the Army with On-The-Move (OTM) networking capability. The WIN-T Inc 2 network retains capabilities delivered by WIN-T Inc 1 and by leveraging proven Government and commercial technologies, adds greater network throughput and automated network management to optimize planning (to include spectrum use), initialization, monitoring and troubleshooting. WIN-T Inc 2 employs Satellite Communications OTM to extend the network in maneuver Brigade Combat Teams to Company-level through FY2018. Using equipment mounted on combat platforms, WIN-T Inc 2 delivers a mobile capability that reduces reliance on fixed infrastructure and allows Commanders to move on the battlefield while retaining situational awareness and mission command capabilities. Using the Highband Networking Radio, with the Highband Networking Waveform and high performance antennas, the WIN-T Inc 2 Line-of-Sight network offers an adaptive 30-Megabit per second aggregate throughput to Commanders in their Command Post or in their vehicle. The WIN-T Inc 2 network is self-forming, which means it automatically creates transmission paths based on terrain and environmental conditions; and self-healing, meaning that transmission paths will automatically re-route traffic to complete network transactions and calls even if one or more nodes break down or lose connectivity. This capability offers greater network reliability and better end-to-end connectivity than traditional point-to-point networks. WIN-T Inc 2 introduces the network management capability needed to keep mobile and dispersed forces networked through automated planning, initialization, monitoring, and troubleshooting. Finally, WIN-T Inc 2 adopts "Colorless Core" technology that encrypts both classified and unclassified user information in the network and minimizes the number of users on the "core" of the network. The Colorless Core allows commanders to utilize the tactical network without fear of the enemy intercepting information. Colorless Core is a technical insertion in the WIN-T Inc 1b network which enables information sharing between WIN-T Inc 1b and WIN-T Inc 2.

Inc 3 developed NetOps software and NetCentric Waveform (NCW) updates will be inserted into Inc 2 equipped units.

FY17 funds the development efforts for the Distributed Embedded SATCOM On-The-Move (OTM) Standard Terminal Architecture (DESSTA) for ABCTs.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	0.396	0.222	3.970	-	3.970
Description: Product Development					
FY 2015 Accomplishments: Development efforts for Technical Insertions.					
FY 2016 Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0300349A / Win-T Increment 2 - Initial Networking	Project (Number/Name) EE7 / WIN-T Increment 2 - Initial Networking

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Development efforts for Technical Insertions. FY 2017 Base Plans: Development efforts for the Distributed Embedded SATCOM On-The-Move (OTM) Standard Terminal Architecture (DESSTA) for ABCTs.					
Title: Test and Evaluation Description: Test and Evaluation FY 2015 Accomplishments: FY15 funding will be used for the second FOT&E activities, including test report required for Full Rate Production Defense Acquisition Board (DAB) and NIE 15.1 which will test Stryker Platform flat bottom variant. FY 2016 Plans: FY16 funds support Operational Testing (NIE 16.2) and tech insertion of NetOps Build 5 and upgrade to NetCentric Waveform (NCW) 10.x. FY 2017 Base Plans: FY17 funds support Operational Testing (NIE 17.2) and continues tech insertion of NetOps Build 5 and upgrade to NetCentric Waveform (NCW) 10.x.	2.714	3.558	0.473	-	0.473
Title: Management Services Description: Provides system engineering and program management support FY 2015 Accomplishments: Continues system engineering and program management support. FY 2016 Plans: Continues system engineering and program management support. FY 2017 Base Plans: Continues system engineering and program management support.	0.013	0.020	0.424	-	0.424
Accomplishments/Planned Programs Subtotals	3.123	3.800	4.867	-	4.867

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0300349A / Win-T Increment 2 - Initial Networking	Project (Number/Name) EE7 / WIN-T Increment 2 - Initial Networking

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• WIN-T Inc 2: WIN-T Inc 2 Procurement	361.709	416.463	291.933	-	291.933	601.523	588.988	688.926	653.884	Continuing	Continuing
• WINT Inc 2 OCO: WIN-T Inc 2 OCO	-	-	0.000	1.288	1.288	-	-	-	-	0	1.288
• Inc 2 Spares: WIN-T Inc 2 Procurement Spares	26.100	39.532	19.808	-	19.808	23.935	23.932	23.930	25.419	Continuing	Continuing

Remarks

D. Acquisition Strategy

The current Initial Production contract awarded in 2010 for procurement of Low Rate Initial Production Lots. Lots 1-3 were procured prior to the Full Rate Production (FRP) decision review. Approval for full rate production was granted at the Defense Acquisition Board on May 11, 2015. Lots 4-6 have been procured since the FRP decision review. Lot 7 will be procured in 2Q FY 2016. A Follow-On Production contract is currently under negotiation and will be used for Lots 8 and 9 with additional follow-on contracts awarded to support the remaining program procurement requirements.

Inc 3 developed NetOps software and NetCentric Waveform will tested at Network Integration Evaluation (NIE) 16.2 events and will be inserted into Inc 2 equipped units.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0300349A / Win-T Increment 2 - Initial Networking	Project (Number/Name) EE7 / WIN-T Increment 2 - Initial Networking
--	--	--

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			
Management Services	C/ FFPLOE	Various : Various	0.000	0.013		0.020		0.424		-		0.424	0	0.457	0
Subtotal			0.000	0.013		0.020		0.424		-		0.424	0.000	0.457	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			
Product Development	MIPR	CERDEC : Various	0.000	0.396		0.222		3.970		-		3.970	0	4.588	0
Subtotal			0.000	0.396		0.222		3.970		-		3.970	0.000	4.588	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test	Various	Various : Various	0.000	2.714		3.558		0.473		-		0.473	0	6.745	0
Subtotal			0.000	2.714		3.558		0.473		-		0.473	0.000	6.745	0.000

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	3.123	3.800	4.867	-	4.867	0.000	11.790	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0300349A / Win-T Increment 2 - Initial Networking	Project (Number/Name) EE7 / WIN-T Increment 2 - Initial Networking
--	--	--

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
LRIP Production	LRIP																											
Network Integrated Evaluation 15.1 (FOT&E) (Stryker)																												
Log Verification	Log Verification																											
(1) Army Material Release	Army MR																											
(2) Full Rate Production Decision Review	FRP DR																											
(3) Delivery Order Award 2	DO (Lot 6)																											
Full Rate Production/Fielding									FRP/Fielding																			
(4) Delivery Order Award 3					DO (LOT 7)																							
(5) Follow-on Production Award									Follow-on Production Award																			
NIE 16.2 NetOps/NCW					NIE 16.2 NetOps/NCW																							
(6) Delivery Order Award 4									DO (Lot 8)																			
Logistics Demonstration									Log Demo																			
(7) NIE 17.2													NIE 17.2															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0300349A / Win-T Increment 2 - Initial Networking	Project (Number/Name) EE7 / WIN-T Increment 2 - Initial Networking
--	--	--

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) Delivery Order Award 5									DO (Lot 9)				▲ ¹																								
(2) NIE 18.2																					▲ ²																
(3) Contract Award & Delivery Order Award 6																					Contract Award & DO (Lot 10)				▲ ³												
(4) NIE 19.2																									▲ ⁴												
(5) Delivery Order Award 7																									DO (Lot 11)				▲ ⁵								
(6) NIE 20.2																													NIE 20.2				▲ ⁶				
(7) Delivery Order Award 8																																	DO (Lot 12)				▲ ⁷

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0300349A / Win-T Increment 2 - Initial Networking	Project (Number/Name) EE7 / WIN-T Increment 2 - Initial Networking

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
LRIP Production	2	2010	3	2015
Network Integrated Evaluation 15.1 (FOT&E) (Stryker)	1	2015	1	2015
Log Verification	1	2016	1	2016
Army Material Release	3	2015	3	2015
Full Rate Production Decision Review	3	2015	3	2015
Delivery Order Award 2	3	2015	3	2015
Full Rate Production/Fielding	3	2015	4	2020
Delivery Order Award 3	2	2016	2	2016
Follow-on Production Award	3	2016	3	2016
NIE 16.2 NetOps/NCW	3	2016	3	2016
Delivery Order Award 4	1	2017	1	2017
Logistics Demonstration	1	2017	1	2017
NIE 17.2	3	2017	3	2017
Delivery Order Award 5	1	2018	1	2018
NIE 18.2	3	2018	3	2018
Contract Award & Delivery Order Award 6	1	2019	1	2019
NIE 19.2	3	2019	3	2019
Delivery Order Award 7	1	2020	1	2020
NIE 20.2	3	2020	3	2020
Delivery Order Award 8	1	2021	1	2021

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0708045A / End Item Industrial Preparedness Activities							
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	-	73.419	60.422	62.287	-	62.287	61.300	59.480	62.102	63.344	Continuing	Continuing
E25: Mfg Science & Tech	-	73.419	48.422	62.287	-	62.287	61.300	59.480	62.102	63.344	Continuing	Continuing
EA2: MANTECH INITIATIVES (CA)	-	0.000	12.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	12.000

A. Mission Description and Budget Item Justification

This program element (PE) develops and demonstrates manufacturing processes that enable improvements in producibility and affordability of emerging and enabling components and subsystems of Army air, ground, Soldier, medical, and command/control/communications systems. Initiatives within the PE result in cost savings and reduced risk of transitioning military-unique manufacturing processes into production. Project E25 fosters the transfer of new/improved manufacturing technologies to the industrial base, including manufacturing efforts that have potential for high payoff across the spectrum of Army systems.

Work in this PE is related to, and fully coordinated with, PE 0603710A (Night Vision Advanced Technology), PE 0602303A (Missile Technology), PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE 0602601A (Combat Vehicle and Automotive Technology), and PE 0603005A (Combat Vehicle and Automotive Advanced Technology) and PE 0602705A (Electronics and Electronic Devices).

The cited work is consistent with the Assistant Secretary of Defense, Research and Engineering Science and Technology focus areas and the Army Modernization Strategy.

Work in this PE is performed by the Army Research, Development, and Engineering Command (RDECOM) and efforts are executed by the Army Research Laboratory (ARL) and appropriate Army Research, Development, and Engineering Centers (RDECs).

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	76.187	48.442	63.327	-	63.327
Current President's Budget	73.419	60.422	62.287	-	62.287
Total Adjustments	-2.768	11.980	-1.040	-	-1.040
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	12.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.038	-			
• SBIR/STTR Transfer	-2.730	-			
• Adjustments to Budget Years	-	-0.020	-1.040	-	-1.040

UNCLASSIFIED

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>
---	--

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

Project: EA2: *MANTECH INITIATIVES (CA)*

Congressional Add: *Congressional Interest Item funding for Mantech Initiatives.*

Congressional Add Subtotals for Project: EA2

Congressional Add Totals for all Projects

	FY 2015	FY 2016
	-	12.000
Congressional Add Subtotals for Project: EA2	-	12.000
Congressional Add Totals for all Projects	-	12.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0708045A / End Item Industrial Preparedness Activities				Project (Number/Name) E25 / Mfg Science & Tech			
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
E25: Mfg Science & Tech	-	73.419	48.422	62.287	-	62.287	61.300	59.480	62.102	63.344	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops and demonstrates manufacturing processes that enable improvements in producibility and affordability of emerging and enabling components and subsystems of Army air, ground, lethality, Soldier, medical and command/control/communications/intelligence systems. Focus is on components and subsystems such as advanced armor, power and energy devices, rotors, sensors, displays, propellants and gun tubes. In addition, work is conducted to advance the state of the art in processing and fabrication techniques for coatings, multifunctional materials and structural elements for Army specific applications.

Work supports all Army S&T portfolios. Work in this PE is related to and fully coordinated with PE 0602105A (Materials Technology), PE 0602211A (Aviation Technology), PE 0602303A (Missile Technology), PE 0602601A (Combat Vehicle and Automotive Technology), PE 0602618A (Ballistics Technology), PE 0602705A (Electronics and Electronic Devices), PE 0603003 (Aviation Advanced Technology), PE 0603005A (Combat Vehicle and Automotive Advanced Technology) and PE 0603710A (Night Vision Advanced Technology).

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering S&T focus areas and the Army Modernization Strategy.

Work in this project is performed by the Army Research, Development and Engineering Command (RDECOM) and efforts are executed by the Army Research Laboratory (ARL) and appropriate Army Research, Development and Engineering Centers (RDECs).

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

	FY 2015	FY 2016	FY 2017
Title: Air Systems	3.425	2.846	5.401
Description: This effort funds manufacturing technology advances needed for more affordable manned and unmanned aircraft components and subsystems. Work focuses on addressing challenges in areas such as engine performance and life, rotor and blade durability, reliable component integration/attachment, structural durability at low weight, and reduced corrosion.			
FY 2015 Accomplishments: Developed and demonstrated an automated parts preparation line for advanced nanocomposite coatings; developed manufacturing techniques and tooling for ballistically tolerant fuel bladders; developed direct digital manufacturing for use in aviation propulsion and power generation gas turbine engines allowing for enhanced component designs optimized for performance and weight savings.			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) E25 / <i>Mfg Science & Tech</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Continuing the development and demonstration of manufacturing techniques and tooling for ballistically tolerant fuel bladders; developing direct digital manufacturing for use in aviation propulsion and power generation gas turbine engines allowing for enhanced component designs optimized for performance and weight savings; developing AH-64 composite sump manufacturing improvements.</p> <p>FY 2017 Plans: Will complete component and engine testing of additively manufactured articles resulting in increased performance and reduced weight of the T700 platform; will transition three prototype AH-64 composite sumps of reduced weight and cost to PM Apache along with associated manufacturing metrics; will complete the demonstration of manufacturing techniques and tooling for ballistically tolerant fuel bladders including fit check, drop testing , pressure test, slosh & vibe tests on full scale article.</p>				
<p>Title: Ground Maneuver</p> <p>Description: This effort funds manufacturing technology advances needed for more affordable components and subsystems for tactical and combat vehicles and weapons systems. Work focuses on addressing challenges in areas such as advanced armor, gun barrel life, insensitive propellants, precision munitions and vehicle power devices.</p> <p>FY 2015 Accomplishments: Demonstrated machining and post-processing techniques to drastically improve the yield and decrease the cost of tungsten-based penetrators; demonstrated low-cost, mature manufacturing processes by conducting limited production runs and prototype builds of advanced armor systems using low-cost ceramics, cast and forged steel and aluminum alloys and hybridized 3D woven composites; developed equipment for automated assembly of ceramic tile-based armors, mature automated material consolidation techniques for vehicle armor solutions; developed gear machining and finishing processes and optimized assembly processes to increase throughput and yield while decreasing the cost for power-take-off systems; demonstrated automated assembly process resulting in improved quality control, reduced assembly times and re-work issues, increased throughput and reduced cost of fuel cells for ground vehicle and soldier-borne applications; matured batch manufacturing of granular IMX-104 to demonstrate scaled-up manufacturing process that reduces production costs and increases throughput and yield of IMX-104; developed novel packaging and processing techniques to enable weight and cost reductions in ground-based systems; continued development of mature Wide-Band Gallium Nitride MMIC (Monolithic Microwave Integrated Circuit) manufacturing process in the application of weapon system arrays; developed a limited manufacturing capability in addressing solutions to make magnesium more affordable for lightweight weapon components; identified and developed an economical mass production process for 7.62mm Advanced Armor Piercing (ADVAP) tungsten carbide penetrators with complex geometry systems; developed processing parameters for loading new ALIMX-101 reduced-sensitivity melt-pour and auxiliary charge explosive systems; developed a manufacturing process for producing low cost infrared signature management solutions.</p> <p>FY 2016 Plans:</p>		24.904	16.938	16.221

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) E25 / <i>Mfg Science & Tech</i>

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

	FY 2015	FY 2016	FY 2017
<p>Demonstrating machining and post-processing techniques to improve the yield and decrease the cost of tungsten-based warhead penetrators; transitioning a multi-threat armor manufacturing capability to TRADOC Maneuver Centers of Excellence to inform requirements and to TARDEC to support Combat Vehicle Prototyping and Future Fighting Vehicle; developing equipment for automated assembly of ceramic tile-based armors, maturing automated material consolidation techniques for vehicle armor solutions; developing and demonstrating gear machining and finishing processes and optimized assembly processes to increase throughput and yield while decreasing the cost for power-take-off systems; demonstrating automated assembly process resulting in improved quality control, reduced assembly times and re-work issues, increased throughput and reduced cost of fuel cells for ground vehicle and soldier-borne applications; demonstrating mature Wide-Band Gallium Nitride MMIC (Monolithic Microwave Integrated Circuit) manufacturing process in the application of weapon system arrays; continuing development of a manufacturing capability in addressing solutions to make magnesium more affordable for lightweight weapon components; developing an economical mass production process for 7.62mm Advanced Armor Piercing (ADVAP) tungsten carbide penetrators with complex geometry systems; developing processing parameters for loading new ALIMX-101 reduced-sensitivity melt-pour and auxiliary charge explosive systems; developing a manufacturing process for producing low cost infrared signature management solutions; initiating development of a scaled up process to produce high energy density safe 5 volt lithium-ion batteries; initiating development of a manufacturing pilot line capability for adaptive armor modules.</p> <p>FY 2017 Plans: Will conduct pilot line fabrication of ceramic tile-based armors utilizing automated material consolidation techniques for vehicle armor solutions; will demonstrate and transition a gear machining pilot line capability at MRL 8 associated with cost-effective power-take-off systems to PM-ABCT; will demonstrate magnesium alloy manufacturing processes, to include additive manufacturing, on novel vehicle and small arms components; will demonstrate, validate and implement an instrumented bullet assembly process for producing XM1158 projectiles; will mature final formulations, confirm batch productions, and perform validations of paint products used for infrared management solutions; will mature a cathode coating process and enhance electrolyte optimization in the production of high energy density safe 5 volt lithium-ion batteries; will continue maturation of a manufacturing line and associated processes for adaptive protection modules; will demonstrate an automated, optimized and flexible process for manufacturing light weight, longer lasting aluminum Metal Matrix Composites (MMC); will demonstrate an agile manufacturing cell capable of efficiently welding thicker plate materials for improved protection for armored multi-purpose vehicle and other vehicles; will mature a lithium-ion battery assembly line leveraging multiple battery form factors leading to reduced cost and increased throughput; will complete the manufacturing process and demonstration maturity of Wide-Band Gallium Nitride MMIC's for non-lethal weapon systems arrays.</p>			
<p>Title: Lethality (Formerly Precision Munitions and Armament Systems)</p> <p>Description: The Lethality Systems focus area consists of Advanced Weapon Systems, Fire Control, Logistics, Emerging Technologies and Advanced Energetics and Warheads.</p>	7.826	1.600	6.235

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) E25 / <i>Mfg Science & Tech</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Validated the manufacturing process to reduce the cost and time associated with applying Ta-10W liners for medium and small caliber chromium-free cannon gun barrels; demonstrated high volume, cost effective, manufacturing processes for micro-electro-mechanical systems (MEMS) scale components; began development of lower cost material fabrication processes and superior material performance as insulation for rocket nozzles.</p> <p><i>FY 2016 Plans:</i> Validating the manufacturing process to reduce the cost and time associated with applying Ta-10W liners for 7.62mm and 50 caliber chromium-free gun barrels; demonstrating selected high volume, cost effective, manufacturing processes for micro-electro-mechanical systems (MEMS) scale safe-and-arms components; beginning development of affordable manufacturing solutions for complex missile seeker components that will shape the missile industry towards cost effective all weather seekers; developing lower cost material fabrication processes and superior material performance as insulation for rocket nozzles.</p> <p><i>FY 2017 Plans:</i> Will define manufacturing methods for new imaging technologies associated with the development of affordable multi-mode, all weather missile seekers; will characterize thermal and mechanical pre-impregnated material properties of rocket nozzle insulation; will mature an automated, scaled-up manufacturing process for programmable initiators addressing requirements for Family of Scatterable Munitions (FASCAM); will demonstrate a cost-effective, high throughput, Spark Plasma Sintering process to reduce cost and lead-times for large caliber cannon broaches and ordnance metal cutting tools; will demonstrate an additive manufacturing process capable of printing energetic inks for next generation hand grenades and small munitions.</p>				
<p><i>Title:</i> Command, Control, Communications and Intelligence Systems</p> <p><i>Description:</i> This effort funds manufacturing technology advances needed for more affordable components and subsystems for intelligence, surveillance, reconnaissance and targeting systems, mission command systems, electronic warfare and improved explosive device detect/defeat systems. Work focuses on addressing challenges in areas such as large format multi-color focal plane arrays, flexible displays, night vision sensors, target detectors, advanced antennas and sensors.</p> <p><i>FY 2015 Accomplishments:</i> Transitioned growth processing with improved yield for high operating temperature focal plane arrays to ground and airborne platforms; developed processes, tooling and automation techniques to increase yield, decrease fabrication and assembly times and reduce cost of miniaturized short-wave infrared cameras; developed manufacturing processes to fabricate low-defect flexible digital radiography panels; demonstrated techniques for integrating flexible sensors and electronics into circuits for system demonstration; developed cost-effective manufacturing techniques of high definition class cameras for sniper weapon sights and ground vehicles; developed packaging improvements of a millimeter wave device used in radio frequency threat warning</p>		18.849	8.350	15.159

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) E25 / <i>Mfg Science & Tech</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>applications in air combat platforms; developed optimized process improvements in the manufacturing of large format long-wave, dual -band infrared focal plane arrays for vision systems.</p> <p>FY 2016 Plans: Executing pilot line runs and refining manufacturing process to reduce cost and power of miniaturized short-wave infrared cameras; demonstrating manufacturing processes to fabricate low-defect, flexible digital radiography panels and electronics for system demonstration; investigating design revisions for cost-effective manufacturing techniques of high definition cameras for sniper weapon sights and ground vehicles; developing packaging improvements of a millimeter wave devices used in radio frequency threat warning applications in air combat platforms; developing optimized process improvements in the manufacturing of large format longwave, dual -band infrared focal plane arrays for vision systems.</p> <p>FY 2017 Plans: Will refine manufacturing process and conduct qualification lot runs in the fabrication of infrared sensors used in the application of low-cost, miniaturized short-wave infrared cameras; will complete yield improvement processes and production qualifications of focal plane arrays applicable to high definition cameras for sniper weapon sights and ground vehicles; will mature millimeter wave packaging improvements to include module development and antenna/module interface advancements of devices used in radio frequency threat warning applications in air combat platforms; will transition a production-ready, high yield manufacturing process for large format longwave, dual -band infrared focal plane arrays for vision systems; will mature a manufacturing process to produce ultra-thin, lightweight, wide-band conformal antennas; will conduct optimization for 3D, read-only integrated circuit manufacturing process resulting in sensors with improved sensitivity and dynamic range.</p>				
<p>Title: Soldier Systems</p> <p>Description: This effort funds manufacturing technology advances needed for more affordable components and subsystems for combat feeding, aerial delivery of supplies, expeditionary basing, Soldier-borne sensors, clothing and protective equipment. Work focuses on addressing challenges in areas such as multifunctional fabrics for shelters, uniforms and portage equipment; affordable, non-contaminating packaging for rations; and lightweight materials for body armor.</p> <p>FY 2015 Accomplishments: Developed process control techniques based on unique thermal and mechanical properties of polyethylene films; developed a scaled manufacturing process to lower costs and achieve high volume production of the lower-cost flame retardant materials with biocidal modular insulation panels; established a domestic manufacturing base for high efficiency, lightweight and foldable solar panel production in order to reduce unit cost with higher throughput production.</p> <p>FY 2016 Plans:</p>		4.270	1.980	4.370

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) E25 / <i>Mfg Science & Tech</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Developing process control techniques based on unique thermal and mechanical properties of polyethylene films; developing a scaled manufacturing process to lower costs and achieve high volume production of the lower-cost flame retardant materials with biocidal modular insulation panels.</p> <p>FY 2017 Plans: Will develop and demonstrate a full scale manufacturing pilot along with test articles (flat panels, helmets, and torso plate prototypes) developed from polyethylene films; will optimize and transition a high-volume pilot manufacturing process for lower-cost flame retardant materials with biocidal modular insulation panels to PM Force Sustainment Systems; will mature a scaled-up, low cost , high yield, high throughput manufacturing process of gallium arsenide based solar cells enabling light weight, portable Soldier power sources; will mature a manufacturing process for low cost augmented reality eyepieces that provide the Soldier with high resolution imagery across a wide field of view for increased situational awareness.</p>				
<p>Title: Innovation Enablers (Formerly Advanced Manufacturing Initiatives)</p> <p>Description: This effort funds manufacturing technology advances needed for affordable model based manufacturing, network centric manufacturing data environments, collaborative manufacturing modeling and simulation, and advanced manufacturing technologies. Work focuses on addressing challenges in areas such as 3D technical data packages for armor systems; providing digital manufacturing capabilities to depots and laboratories, processes and models for data transfer and prototype production; and advanced laser manufacturing techniques for repairing components.</p> <p>FY 2015 Accomplishments: Demonstrated digital data driven manufacturing of prototype systems; deployed the use of standard machine language and protocols to monitor machine performance to predict quality issues and optimize production rates for high-volume items; established and demonstrating the use of a common machine tool library for cross-Army utilization; developed additive manufacturing techniques to establish a validated repair procedure for high value aviation components; developed a flexible and agile common fuze manufacturing process utilizing 2D and 3D printing and additive manufacturing technologies as applied to energetic materials with integrated electronics; developed and qualified additive fabrication and reclamation processes for use on Army components.</p> <p>FY 2016 Plans: Demonstrating digital data driven manufacturing of prototype systems, deploying the use of standard machine language and protocols to monitor machine performance to predict quality issues and optimize production rates for high-volume items, and establishing and demonstrating the use of a common machine tool library for cross-Army utilization; developing additive manufacturing techniques to establish a validated repair procedure for high value aviation components; developing a flexible and agile common fuze manufacturing process utilizing 2D and 3D printing and additive manufacturing technologies as applied to energetic materials with integrated electronics; developing and qualifying additive fabrication and reclamation processes for use</p>		14.145	16.708	14.301

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) E25 / <i>Mfg Science & Tech</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>on Army components; expanding existing MBE efforts in techniques to capture, standardize and reuse tech data across weapon system product life cycles.</p> <p>FY 2017 Plans: Will mature application of dissimilar metals for repaired aviation components, integrating in-process quality assurance methods and procedures to maximize reliability of high-value aviation components; will demonstrate and deliver processes and tooling requirements of 2D and 3D additively manufactured energetics and electronics for use in 40mm grenades; will begin the transfer of a laser enhanced net shaping (LENS) repair process to Anniston Army Depot in the qualification and reclamation of Army components; will mature Model Based Enterprise tools which include legacy technical data package updating, forensic manufacturing, and integration of DoD/Army requirements; will demonstrate a software based module capable of aiding production engineers across the organic industrial base and S&T community to verify and implement best value part manufacturing programs.</p>			
<p>Title: Medical</p> <p>Description: This effort funds manufacturing technology advances needed for more affordable process methods in addressing manufacturing of lighter weight multi-functional materials, biotechnology, vaccines, medical equipment power sources, and component ruggedization that directly address Soldier rehabilitation.</p> <p>FY 2017 Plans: Will demonstrate a modernized, scaled-up production process addressing spray drying and encapsulation methods of the Adenovirus vaccine.</p>	-	-	0.600
Accomplishments/Planned Programs Subtotals	73.419	48.422	62.287

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

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) E25 / <i>Mfg Science & Tech</i>
--	--	---

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
N/A																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) E25 / <i>Mfg Science & Tech</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
N/A	1	2016	4	2016

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / End Item Industrial Preparedness Activities	Project (Number/Name) EA2 / MANTECH INITIATIVES (CA)
--	--	--

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
EA2: MANTECH INITIATIVES (CA)	-	0.000	12.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	12.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Mantech Initiatives.

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

	FY 2015	FY 2016
Congressional Add: Congressional Interest Item funding for Mantech Initiatives.	-	12.000
FY 2016 Plans: Program Increase		
Congressional Adds Subtotals	-	12.000

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) EA2 / <i>MANTECH INITIATIVES (CA)</i>
--	--	---

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
N/A																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / <i>End Item Industrial Preparedness Activities</i>	Project (Number/Name) EA2 / <i>MANTECH INITIATIVES (CA)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
N/A	1	2016	4	2016