

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 II, Budget Activity 4

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

Page A-5

xiii

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	Sec
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	Sec
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)..... xxv
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
54	04	0603305A	Army Missile Defense Systems Integration.....	1
55	04	0603308A	Army Space Systems Integration.....	12
56	04	0603619A	Landmine Warfare and Barrier - Adv Dev.....	28
57	04	0603627A	Smoke, Obscurant and Target Defeating Sys-Adv Dev.....	43
58	04	0603639A	Tank and Medium Caliber Ammunition.....	55
59	04	0603747A	Soldier Support and Survivability.....	130
60	04	0603766A	Tactical Electronic Surveillance System - Adv Dev.....	162
61	04	0603774A	Night Vision Systems Advanced Development.....	170
62	04	0603779A	Environmental Quality Technology - Dem/Val.....	178
63	04	0603790A	NATO Research and Development.....	194
64	04	0603801A	Aviation - Adv Dev.....	212
65	04	0603804A	Logistics and Engineer Equipment - Adv Dev.....	219
66	04	0603807A	Medical Systems - Adv Dev.....	269
67	04	0603827A	Soldier Systems - Advanced Development.....	299
68	04	0604100A	Analysis Of Alternatives.....	338
69	04	0604114A	Lower Tier Missile Defense (LTAMD) Capability.....	344

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
70	04	0604115A	TECHNOLOGY MATURATION INITIATIVES.....	350
71	04	0604120A	Assured Positioning, Navigation and Timing (PNT).....	361
72	04	0604319A	Indirect Fire Protection Capability Increment 2-Intercept (IFPC2).....	389
73	04	0305251A	Cyberspace Operations Forces and Force Support.....	397

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
Analysis Of Alternatives	0604100A	68	04.....	338
Army Missile Defense Systems Integration	0603305A	54	04.....	1
Army Space Systems Integration	0603308A	55	04.....	12
Assured Positioning, Navigation and Timing (PNT)	0604120A	71	04.....	361
Aviation - Adv Dev	0603801A	64	04.....	212
Cyberspace Operations Forces and Force Support	0305251A	73	04.....	397
Environmental Quality Technology - Dem/Val	0603779A	62	04.....	178
Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)	0604319A	72	04.....	389
Landmine Warfare and Barrier - Adv Dev	0603619A	56	04.....	28
Logistics and Engineer Equipment - Adv Dev	0603804A	65	04.....	219
Lower Tier Missile Defense (LTAMD) Capability	0604114A	69	04.....	344
Medical Systems - Adv Dev	0603807A	66	04.....	269
NATO Research and Development	0603790A	63	04.....	194
Night Vision Systems Advanced Development	0603774A	61	04.....	170
Smoke, Obscurant and Target Defeating Sys-Adv Dev	0603627A	57	04.....	43
Soldier Support and Survivability	0603747A	59	04.....	130
Soldier Systems - Advanced Development	0603827A	67	04.....	299

UNCLASSIFIED

UNCLASSIFIED

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

Program Element Title	Program Element Number	Line #	BA	Page
TECHNOLOGY MATURATION INITIATIVES	0604115A	70	04.....	350
Tactical Electronic Surveillance System - Adv Dev	0603766A	60	04.....	162
Tank and Medium Caliber Ammunition	0603639A	58	04.....	55

UNCLASSIFIED

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603305A / <i>Army Missile Defense Systems 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
Total Program Element	-	25.672	29.347	9.433	-	9.433	9.491	10.912	12.179	12.276	Continuing	Continuing
TR5: <i>Missile Defense Battlelab</i>	-	25.672	29.347	9.433	-	9.433	9.491	10.912	12.179	12.276	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element funds missile defense systems integration efforts for both the US Army Space and Missile Defense Command/Army Forces Strategic Command (USASMDC/ARSTRAT).

USASMDC/ARSTRAT: Headquarters, Department of the Army General Order 37, dated 16 October 2006, designated USASMDC/ARSTRAT as the Army proponent for space and ground-based midcourse defense (GMD), the Army integrator for global missile defense, and the Army Service Component Command (ASCC) of the U.S. Strategic Command (USSTRATCOM). Army Regulation (AR) 10-87 Army Commands, Army Service Component Commands, and Direct Reporting Units, dated 4 September 2007 and AR 5-22 The Army Force Modernization Proponent System dated 19 August 2009 designates USASMDC/ARSTRAT as the Army specified proponent for Global Missile Defense and Space/High Altitude capabilities. As the Army proponent for space, high altitude and GMD, USASMDC/ARSTRAT is responsible for developing warfighting concepts, conduct warfighting experiments to validate those concepts, identify capabilities needed to implement the validated concepts, and develop Doctrine, Organizations, Training, Material, Leadership & Education, Personnel, Facilities and Policy (DOTMLPF-P) solutions to realize the GMD capabilities. As the Army integrator for global missile defense, USASMDC/ARSTRAT is responsible for reviewing programs managed by the Army, other Services, Defense agencies and National agencies to ensure that they are correctly synchronized and will ultimately provide the capabilities required by USSTRATCOM to execute its global missile defense responsibilities.

Project TR5 funds United States Army Space and Missile Defense Command/ Army Strategic Command (USASMDC/ARSTRAT) efforts to develop the associated operational prototyping, experimentation, operational analysis, and modeling and simulation in support of current and future Forces.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	25.795	10.347	9.725	-	9.725
Current President's Budget	25.672	29.347	9.433	-	9.433
Total Adjustments	-0.123	19.000	-0.292	-	-0.292
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	19.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustment to the execution year	-0.123	-			

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603305A / <i>Army Missile Defense Systems Integration</i>
---	---

• Other Adjustments 2	-	-	-0.292	-	-0.292
-----------------------	---	---	--------	---	--------

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

Project: TR5: *Missile Defense Battlelab*

Congressional Add: *Thermal Management Systems Prototypes*

	FY 2015	FY 2016
	12.877	19.000
Congressional Add Subtotals for Project: TR5	12.877	19.000
Congressional Add Totals for all Projects	12.877	19.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration				Project (Number/Name) TR5 / Missile Defense Battlelab			
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
TR5: <i>Missile Defense Battlelab</i>	-	25.672	29.347	9.433	-	9.433	9.491	10.912	12.179	12.276	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element funds missile defense systems integration efforts for both the US Army Space and Missile Defense Command/Army Forces Strategic Command (USASMDC/ARSTRAT).

USASMDC/ARSTRAT: Headquarters, Department of the Army General Order 37, dated 16 October 2006, designated USASMDC/ARSTRAT as the Army proponent for space and ground-based midcourse defense (GMD), the Army integrator for global missile defense, and the Army Service Component Command (ASCC) of the U.S. Strategic Command (USSTRATCOM). Army Regulation (AR) 10-87 Army Commands, Army Service Component Commands, and Direct Reporting Units, dated 4 September 2007 and AR 5-22 The Army Force Modernization Proponent System dated 19 August 2009 designates USASMDC/ARSTRAT as the Army specified proponent for Global Missile Defense and Space/High Altitude capabilities. As the Army proponent for space, high altitude and GMD, USASMDC/ARSTRAT is responsible for developing warfighting concepts, conduct warfighting experiments to validate those concepts, identify capabilities needed to implement the validated concepts, and develop Doctrine, Organizations, Training, Material, Leadership & Education, Personnel, Facilities and Policy (DOTMLPF-P) solutions to realize the GMD capabilities. As the Army integrator for global missile defense, USASMDC/ARSTRAT is responsible for reviewing programs managed by the Army, other Services, Defense agencies and National agencies to ensure that they are correctly synchronized and will ultimately provide the capabilities required by USSTRATCOM to execute its global missile defense responsibilities.

Project TR5 funds United States Army Space and Missile Defense Command/ Army Strategic Command (USASMDC/ARSTRAT) efforts to develop the associated operational prototyping, experimentation, operational analysis, and modeling and simulation in support of current and future Forces.

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

	FY 2015	FY 2016	FY 2017
Title: Prototypes	7.626	6.200	5.635
Description: Funding is provided for the following efforts			
FY 2015 Accomplishments:			
Took the lessons learned from the FY14 efforts to continue to evaluate new technologies in realistic operating environments. This was accomplished by participating in and providing support to Unified Quest wargames and experiments to analyze and integrate technology to identify the feasibility integration into Army space, missile defense, and high altitude systems. The Space and Missile Defense Command participated and supported biennial rewrites of Army Capstone, Operational and Functional Concepts. Continued to provide operational manager support to STRATCOM, NORTHCOM and SOCOM Joint Technical Capability Demonstrations to ensure Army space, missile defense, and high altitude equities are represented in advanced			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration	Project (Number/Name) TR5 / Missile Defense Battlelab

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

	FY 2015	FY 2016	FY 2017
<p>technology developments by demonstrating military utility when applied to military equipment and techniques. Examples include: supporting multi service experiments and capability development of the national-directed Phased Adaptive Approach (PAA) for Ballistic Missile Defense (BMD) as it is applied to each of the regional COCOMs; and experimenting with operationally responsive space, space control, and high altitude capabilities to ensure the broader Army enterprises can leverage the advantages of these platforms for communications, Intelligence Surveillance and Reconnaissance (ISR), position navigation, missile warning and command and control. Continued to develop mitigation strategies for Army forces to operate effectively in contested space, missile defense and cyber environments. Developed effective Integrated Missile Defense concepts for Army support to the Phased Adaptive Approach (PAA) being implemented within each regional COCOM. Supported TRADOC proponents with their responsibilities relative to doctrine, organization, training, material, leader development and education, personnel, and facilities plus related matters to continue leveraging space, missile defense, and high altitude proponent input to Joint Capabilities Integration and Development System, Science and Technology, Concept Development, Capability Development for Rapid Transition, and Capability Gap Analysis Army We sustained our core prototyping platforms, as outlined above. Battlespace Command and Control Center (BC3) was upgraded to more realistically address information flows related to Close Air Support. Support MDA to Army BMDS element transition and transfer efforts including BMDS sensor deployments. Develop/defend Army requirements development / documentation to MDA spiral/block development.</p> <p>FY 2016 Plans: Take the lessons learned from the FY15 efforts to continue to evaluate new technologies in realistic operating environments. This is accomplished by participating in and providing support to Unified Quest wargames and experiments to analyze and integrate technology to identify the feasibility integration into Army space, missile defense, and high altitude systems. The Space and Missile Defense Command will participate and support biennial rewrites of Army Capstone, Operational and Functional Concepts. Continue to provide operational manager support to STRATCOM, NORTHCOM and SOCOM Joint Technical Capability Demonstrations to ensure Army space, missile defense, and high altitude equities are represented in advanced technology developments by demonstrating military utility when applied to military equipment and techniques. Examples include: supporting multi service experiments and capability development of the national-directed Phased Adaptive Approach (PAA) for Ballistic Missile Defense (BMD) as it is applied to each of the regional COCOMs; and experimenting with operationally responsive space, space control, and high altitude capabilities to ensure the broader Army enterprises can leverage the advantages of these platforms for communications, Intelligence Surveillance and Reconnaissance (ISR), position navigation, missile warning and command and control. Continue to develop mitigation strategies for Army forces to operate effectively in contested space, missile defense and cyber environments. Developing effective Integrated Missile Defense concepts for Army support to the Phased Adaptive Approach (PAA) being implemented within each regional COCOM. Will support TRADOC proponents with their responsibilities relative to doctrine, organization, training, material, leader development and education, personnel, and facilities plus related matters to continue leveraging space, missile defense, and high altitude proponent input to Joint Capabilities Integration and Development System, Science and Technology, Concept Development, Capability Development for Rapid</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration	Project (Number/Name) TR5 / Missile Defense Battlelab

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

	FY 2015	FY 2016	FY 2017
<p>Transition, and Capability Gap Analysis Army We will sustain our core prototyping platforms, as outlined above. Battlespace Command and Control Center (BC3) will be upgraded to more realistically address information flows related to Close Air Support. Support MDA to Army BMDS element transition and transfer efforts including BMDS sensor deployments. Develop/defend Army requirements development / documentation to MDA spiral/block development.</p> <p>FY 2017 Plans: Take the lessons learned from the FY16 efforts to continue to evaluate new technologies in realistic operating environments. This is accomplished by participating in and providing support to Unified Quest wargames and experiments to analyze and integrate technology to identify the feasibility integration into Army space, missile defense, and high altitude systems. The Space and Missile Defense Command will participate and support biennial rewrites of Army Capstone, Operational and Functional Concepts. Continue to provide operational manager support to STRATCOM, NORTHCOM and SOCOM Joint Technical Capability Demonstrations to ensure Army space, missile defense, and high altitude equities are represented in advanced technology developments by demonstrating military utility when applied to military equipment and techniques. Examples include: supporting multi service experiments and capability development of the national-directed Phased Adaptive Approach (PAA) for Ballistic Missile Defense (BMD) as it is applied to each of the regional COCOMs; and experimenting with operationally responsive space, space control, and high altitude capabilities to ensure the broader Army enterprises can leverage the advantages of these platforms for communications, Intelligence Surveillance and Reconnaissance (ISR), position navigation, missile warning and command and control. Continue to develop mitigation strategies for Army forces to operate effectively in contested space, missile defense and cyber environments. Developing effective Integrated Missile Defense concepts for Army support to the Phased Adaptive Approach (PAA) being implemented within each regional COCOM. Will support TRADOC proponents with their responsibilities relative to doctrine, organization, training, material, leader development and education, personnel, and facilities plus related matters to continue leveraging space, missile defense, and high altitude proponent input to Joint Capabilities Integration and Development System, Science and Technology, Concept Development, Capability Development for Rapid Transition, and Capability Gap Analysis Army We will sustain our core prototyping platforms, as outlined above. Battlespace Command and Control Center (BC3) will be upgraded to more realistically address information flows related to Close Air Support. Support MDA to Army BMDS element transition and transfer efforts including BMDS sensor deployments. Develop/defend Army requirements development / documentation to MDA spiral/block development.</p>			
<p>Title: Analysis, and Models and Simulations (M&S)</p> <p>Description: Funding is provided for the following efforts</p> <p>FY 2015 Accomplishments: : Take the lessons learned from the FY14 efforts to continue to evaluate new technologies in realistic operating environments. This will be accomplished by supporting ongoing efforts that provide the most realistic operating environment available to perform technology gap and cost reduction analysis of space, missile defense, and high altitude systems. Realistic operating</p>	5.169	4.147	3.798

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / <i>Army Missile Defense Systems Integration</i>	Project (Number/Name) TR5 / <i>Missile Defense Battlelab</i>

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

	FY 2015	FY 2016	FY 2017
<p>environments will be available to determine the ability of the specific technologies to fill capability gaps in terms of utility to the warfighter. Support of technology demonstrations, Analysis and Demonstration Tools/Test Beds for evolving space superiority and operationally responsive space concepts will address emerging needs and continue to be expanded to ensure that advanced technology development can adequately enhance space, missile defense and high altitude systems. The FWC will continue to provide program management for maintenance, sustainment, and development for EADSIM delivering the required high fidelity synthetic operating environment to provide the capability to perform system and cost benefit analysis, operational planning, and exercise/ experimentation support.</p> <p>FY 2016 Plans: Take the lessons learned from the FY15 efforts to continue to evaluate new technologies in realistic operating environments. This will be accomplished by supporting ongoing efforts that provide the most realistic operating environment available to perform technology gap and cost reduction analysis of space, missile defense, and high altitude systems. Realistic operating environments will be available to determine the ability of the specific technologies to fill capability gaps in terms of utility to the warfighter. Support of technology demonstrations, Analysis and Demonstration Tools/Test Beds for evolving space superiority and operationally responsive space concepts will address emerging needs and continue to be expanded to ensure that advanced technology development can adequately enhance space, missile defense and high altitude systems. The Future War Center (FWC) will continue to provide program management for maintenance, sustainment, and development for Extended Air Defense Simulation (EADSIM) delivering the required high fidelity synthetic operating environment to provide the capability to perform system and cost benefit analysis, operational planning, and exercise/ experimentation support. The FWC will continue to provide program management for maintenance, sustainment, and development for Reconfigurable Tactical Operations Simulator (RTOS) delivering operator in the loop capability for air and missile defense simulation in distributed exercises and experiments.</p> <p>FY 2017 Plans: Force Design Assessment of Army Forces TAA 20-24 (APR 2016-MAR 2017) will introduce missile defense capabilities into the force. In order to bring those capabilities into the force development of new force design updates (FDUs) for FDU cycles 16-1, 16-2, 17-1 will be required. Additionally during the TAA cycle new Rules of Allocation (ROA) will be developed to ensure missile defense units are properly accounted for in the future. Take the lessons learned from the FY16 efforts to continue to evaluate new technologies in realistic operating environments. This will be accomplished by supporting ongoing efforts that provide the most realistic operating environment available to perform technology gap and cost reduction analysis of space, missile defense, and high altitude systems. Realistic operating environments will be available to determine the ability of the specific technologies to fill capability gaps in terms of utility to the warfighter. Support of technology demonstrations, Analysis and Demonstration Tools/Test Beds for evolving space superiority, high altitude and operationally responsive space concepts will address emerging needs and continue to be expanded to ensure that advanced technology development can adequately enhance missile defense capabilities. The Future War Center (FWC) will continue to provide program management for maintenance, sustainment, and development for Extended Air Defense Simulation (EADSIM) delivering the required high fidelity synthetic operating environment to provide the</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration	Project (Number/Name) TR5 / Missile Defense Battlelab		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
capability to perform system and cost benefit analysis, operational planning, and exercise/ experimentation support. The FWC will continue to provide program management for maintenance, sustainment, and development for Reconfigurable Tactical Operations Simulator (RTOS) delivering operator in the loop capability for air and missile defense simulation in distributed exercises and experiments.				
Accomplishments/Planned Programs Subtotals		12.795	10.347	9.433
		FY 2015	FY 2016	
Congressional Add: Thermal Management Systems Prototypes		12.877	19.000	
<p>FY 2015 Accomplishments: Continued development of operational prototypes of several thermal management systems for the Army users. Development includes a rack cooling system for electronics for PATRIOT and the High Energy Laser Mobile Demonstrator (HEL MD); an environmental cooling unit to support field shelters; and a prototype of a directed energy thermal management system, initially designed to support HEL MD applications. Continued development of prototype system to test thermal management systems in a relevant environment prior to delivery to users.</p> <p>FY 2016 Plans: To perform the following Thermal Management activities in FY16: For continuous thermal loads: Improve packaging of Environmental Control Units (ECU) and testing addressing both reliability and certification. Additional ECU types & generator package designs and builds will address larger systems. Improved packaging of electronics for enhanced endurance and reliability in adverse conditions. For burst thermal loads: Prototype of second generation fuel fired 100KW burst cooling for HELMD.</p>				
Congressional Adds Subtotals		12.877	19.000	
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
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 / 4	R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration	Project (Number/Name) TR5 / Missile Defense Battlelab
--	---	---

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
Experiments & technology enhancements of prototypes/tools and analy	Eval integration of tech identified in Wargame Campaign Plan and Analysis 12-14																											
Release of Extended Air Defense Simulation Updates																												
Release of RTOS																												
Offensive/Defensive Integration																												
Operational Analysis in Support of Joint Functional Component Commar																												
High Energy Laser for AMD																												
ENBAD Analysis																												
Force Design Assessment of Army Forces																												
AN/TPY-2 FBM Transition from MDA to Army																												
Enhanced Thermal Management Testbed																												
Missile Defense Simulation Suppt to TRADOC ARCIC Experimentation																												
Joint Capabilities Mix Study (JCM4)																												
Military Value of Air&Missile Defense against a Robust Air/Missile Def. T																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration	Project (Number/Name) TR5 / Missile Defense Battlelab
--	---	---

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				
Allied and Partner Modeling to Inform Integration Efforts to Meet Objectiv																																
Pacific Focused-Adversary Centric Bundled																																
Inert Debris Analysis																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration	Project (Number/Name) TR5 / Missile Defense Battlelab

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Experiments & technology enhancements of prototypes/tools and analysis.	1	2015	4	2022
Release of Extended Air Defense Simulation Updates	1	2015	4	2022
Release of RTOS	1	2015	4	2022
Offensive/Defensive Integration	1	2015	4	2015
Operational Analysis in Support of Joint Functional Component Command for IMD	1	2015	4	2022
High Energy Laser for AMD	1	2015	4	2016
ENBAD Analysis	1	2015	2	2016
Force Design Assessment of Army Forces	3	2016	3	2017
AN/TPY-2 FBM Transition from MDA to Army	1	2015	4	2017
Enhanced Thermal Management Testbed	1	2015	1	2016
Missile Defense Simulation Suppt to TRADOC ARCIC Experimentation	1	2015	4	2022
Joint Capabilities Mix Study (JCM4)	1	2015	4	2017
Military Value of Air&Missile Defense against a Robust Air/Missile Def. Threat	3	2016	2	2017
Allied and Partner Modeling to Inform Integration Efforts to Meet Objectives	3	2016	2	2017
Pacific Focused-Adversary Centric Bundled	3	2016	2	2017
Inert Debris Analysis	3	2016	2	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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603308A / <i>Army Space Systems 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
Total Program Element	-	13.804	25.061	23.056	9.375	32.431	36.772	53.515	71.035	64.591	Continuing	Continuing
990: <i>Space And Missile Defense Integration</i>	-	10.495	7.238	12.791	-	12.791	15.887	18.103	17.480	20.640	Continuing	Continuing
EB7: <i>Army Space System Enhancement/Integration</i>	-	3.309	17.823	10.265	9.375	19.640	20.885	35.412	53.555	43.951	Continuing	Continuing

Note
Project EB7 starting in FY2017 will be a shared line between USASMDC/ARSTRAT and PEO IEW&S.

A. Mission Description and Budget Item Justification

The program element funds space systems integration efforts performed by the US Army Space and Missile Defense Command/ Army Forces Strategic Command (USASMDC/ARSTRAT) and the Program Executive Office for Intelligence, Electronic Warfare (PEO IEW&S).

Project EB7 - PEO IEW&S: Details of this program are reported in accordance with Title 10, United States Code, Section 119 (a)(1).

Project EB 7 - USASMDC/ARSTRAT: Headquarters, Department of the Army General Order Number 37, dated 16 October 2006, designated USASMDC/ARSTRAT as the Army proponent for space and the Army Service Component Command of U.S. Strategic Command (USSTRATCOM). As such, USASMDC/ARSTRAT is responsible to develop warfighting concepts, conduct warfighting experiments to validate those concepts, identify capabilities needed to implement the validated concepts, and develop Doctrine, Organization, Training, Material, Leadership & Education, Personnel and Facilities (DOTMLPF) solutions to realize those space related capabilities. Army Regulation (AR) 10-87 Army Commands, Army Service Component Commands, and the Direct Reporting Units, dated 4 September 2007 and AR 5-22 The Army Force Modernization Proponent System dated 19 August 2009 designates USASMDC/ARSTRAT as the Army Force Modernization proponent for Space and High Altitude Capabilities.

Project 990 funds USASMDC/ARSTRAT to integrate warfighting concepts and technologies, validate concepts, and identify capabilities needed to implement the validated concepts, and develop DOTMLPF solutions to realize those space and high altitude related capabilities. Provide engineering support to the Joint Friendly Force Tracking (J-FFT) Mission Management Center (MMC) through an associated test-bed for both operational and developmental injection and integration of real-time J-FFT information into the Common Operating Picture (COP) for Combatant Commanders (COCOMs), Joint Task Forces (JTFs), and Coalition Partners. The MMC injects real-time J-FFT information into the COP for COCOMs, JTFs and Coalition partners. USSTRATCOM, in accordance with CJCSI 3910.01 (reference V.4.) is designated one of three coordinating agencies for J-FFT within DoD. CJCSI 3910.01 directs eight Force Modernization tasks to USSTRATCOM. USSTRATCOM SI 534-5 (reference V.6.) and annually published USSTRATCOM operations orders have designated USASMDC/ARSTRAT as the lead USSTRATCOM component command for Friendly Force Tracking (FFT).

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603308A / <i>Army Space Systems Integration</i>
---	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	13.996	25.061	25.296	-	25.296
Current President's Budget	13.804	25.061	23.056	9.375	32.431
Total Adjustments	-0.192	0.000	-2.240	9.375	7.135
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.192	-			
• Adjustments to Budget Years	-	-	-2.240	9.375	7.135

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems Integration				Project (Number/Name) 990 / Space And Missile Defense Integration			
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
990: Space And Missile Defense Integration	-	10.495	7.238	12.791	-	12.791	15.887	18.103	17.480	20.640	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 990 funds United States Army Space and Missile Command/Army Strategic Command (USASMDC/ARSTRAT) efforts to develop, analyze and mature warfighting concepts, and conduct warfighting experiments for space and high altitude capabilities. The program also funds development and integration of new data sources and data services into the Joint Friendly Force Tracking Mission Management Center. The Mission Management Center (MMC) injects real-time Joint Friendly Force Tracking (J-FFT) information into the Common Operating Picture for Combatant Commands (COCOMs), Joint Task Forces (JTFs) and Coalition partners. USASMDC/ARSTRAT is the proponent for space / high altitude capabilities and is responsible for determining and integrating Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF-P) for the Army.

USSTRATCOM, in accordance with CJCSI 3910.01 (reference V.4.) is designated one of three coordinating agencies for J-FFT within DOD. CJCSI 3910.01 directs eight Force Modernization tasks to USSTRATCOM. USSTRATCOM SI 534-5 (reference V.6.) and annually published USSTRATCOM operations orders have designated USASMDC/ARSTRAT as the lead USSTRATCOM component command for J-FFT.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Architecture Development, Wargames and Demonstrations	6.205	6.174	8.716	-	8.716
Description: Funding is provided for the following efforts					
FY 2015 Accomplishments: Planned, developed, and executed architectures and combat development solutions for Army integration of space systems, space control capabilities, missile defense and high altitude systems. Represented Army positions and defended Army equities relative in Joint/DoD and inter-Service activities; e.g., Executive Agent for Space Program Assessments, etc. Participated and provided support to wargames and experiments where space and high altitude capabilities and technologies can be integrated and evaluated in the most realistic operating environment possible. This is necessary to ensure that space, high altitude and cyber capability gaps are identified and capabilities are correctly represented so that the Army's use of these capabilities is explored and where possible, exploited. Developed and maintained One Semi-Automated Force (OneSAF) simulation space updates and provided to PEO STRI to be included in OneSAF baseline. Developed space modernization strategies and sponsored exploration of future space and high altitude warfighting concepts. USASMDC/					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems Integration	Project (Number/Name) 990 / Space And Missile Defense Integration

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>ARSTRAT continued efforts to enhance the resiliency and effectiveness of critical space-based assets and JCIDS capability development activities for space superiority, high altitude persistent platforms, nano-satellites and tactical launch systems. Products scheduled to be delivered in FY15 include Overhead Persistence Infrared (OPIR) Analysis of Alternatives; Jericho Thunder Analysis Support; Nanosat Program Capability Development Document; Space Superiority Capability Production Document; Army Cyberspace Analysis; Kestrel Eye Military Utility Analysis; Space Superiority Joint Architecture Analysis, and Phase I Space Superiority Program Analysis of Alternatives and Cost-Benefit Analysis.</p> <p>FY 2016 Plans: Will plan, develop, and execute architectures and combat development solutions for Army integration of space systems, space control capabilities, missile defense and high altitude systems. Represent Army positions and defend Army equities relative in Joint/DoD and inter-Service activities; e.g., Executive Agent for Space Program Assessments, etc. Will plan and execute wargames to evaluate emerging concepts within the space and high altitude domains as well as participate and provide support to Army and Joint wargames and experiments where space and high altitude capabilities and technologies can be integrated and evaluated in the most realistic operating environment possible. This is necessary to ensure that space, high altitude and cyber capability gaps are identified and capabilities are correctly represented so that the Army's use of these capabilities is explored and where possible, exploited. Will develop and maintain One Semi-Automated Force (OneSAF) simulation space updates and provide to PEO STRI to be included in OneSAF baseline. Will develop space modernization strategies and sponsor exploration of future space and high altitude warfighting concepts. USASMDC/ARSTRAT will continue efforts to enhance the resiliency and effectiveness of critical space-based assets and JCIDS capability development activities for space superiority, high altitude persistent platforms, nano-satellites and tactical launch systems. Products scheduled to be delivered in FY16 include Army Cyberspace Analysis; Space Superiority Analysis of Alternatives and Cost-Benefit Analysis updates: Overhead Persistence Infrared (OPIR) Analysis; Assessment of Hostile use of Space Force Enhancement; and Position Navigation Timing (PNT) analysis.</p> <p>FY 2017 Base Plans: Will plan, develop, and execute architectures and combat development solutions for Army integration of space systems, space control capabilities, missile defense and high altitude systems. Represent Army positions and defend Army equities relative in Joint/DoD and inter-Service activities; e.g., Executive Agent for Space Program Assessments, etc. Will plan and execute wargames to evaluate emerging concepts within the space and high altitude domains as well as participate and provide support to Army and Joint wargames and experiments where space and high altitude capabilities and technologies can be integrated and evaluated in the most realistic</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems Integration	Project (Number/Name) 990 / Space And Missile Defense Integration

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
operating environment possible. This is necessary to ensure that space, high altitude and cyber capability gaps are identified and capabilities are correctly represented so that the Army's use of these capabilities is explored and where possible, exploited. Will develop and maintain One Semi-Automated Force (OneSAF) simulation space updates and provide to PEO STRI to be included in OneSAF baseline. Will develop space modernization strategies and sponsor exploration of future space and high altitude warfighting concepts. USASMDC/ARSTRAT will continue efforts to enhance the resiliency and effectiveness of critical space-based assets and JCIDS capability development activities for space superiority, high altitude persistent platforms, nano-satellites and tactical launch systems. Products scheduled to be delivered in FY17 include Army Cyberspace Analysis; Space Superiority Analysis of Alternatives and Cost -Benefit Analysis updates: Overhead Persistence Infrared (OPIR) Analysis; Assessment of Hostile use of Space Force Enhancement; and Position Navigation Timing (PNT) analysis. TAA 20-24 (APR 2016-MAR 2017) will introduce new space capabilities into the force. In order to bring those capabilities into the force development of new force design updates (FDUs) for FDU cycles 16-1, 16-2, 17-1 will be required. Additionally during the TAA cycle new Rules of Allocation (ROA) will be developed to ensure SRC40 units are properly accounted for in the future POM force.					
<p>Title: High Energy Laser Technolgy Program Support</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2015 Accomplishments: Supported the efficient rugged laser program as it goes into the fabrication phase of a 60kW laser system for installation into the HELMD mobile platform; attended efficient rugged laser reviews and technical interchange meetings; conducted trade analysis studies on current and future high power laser concepts; conducted technical assessments of advanced laser technologies; supported power and thermal subsystems interface requirements definition and system engineering between the 60 kW class laser, power and thermal subsystem, and the HELMD platform/beam control system; support SSLT operations at High Energy Laser Systems Test Facility (HELSTF) to evaluate 1.06um SSL propagation and lethality experiments; supported the development of tactics, techniques, and procedures (TTPs) of future fielding of HEL weapon system.</p> <p>FY 2016 Plans: Will support the efficient rugged laser program as it goes into the completion phase of a 60kW laser system for installation into the HELMD mobile platform; support efficient rugged laser reviews and technical interchange meetings; support safety and security assessments and analysis of a potential future laser weapon system; conduct trade analysis studies on current and future high power laser concepts; support conduct of technical assessments of advanced laser technologies and help assess the diode pumped gas laser research effort;</p>	0.750	0.516	0.072	-	0.072

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems Integration	Project (Number/Name) 990 / Space And Missile Defense Integration

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>support power and thermal subsystems development and system engineering between the 60 kW class laser, power and thermal subsystem, and the HELMD platform/beam control system; support Solids state Laser Testbed (SSLT) operations at the High Energy Laser Systems Test Facility (HELSTF) to evaluate 1.06um SSL propagation and lethality experiments; support the development of tactics, techniques, and procedures (TTPs) of future fielding of HEL weapon system.</p> <p>FY 2017 Base Plans: Will support the High Energy Laser Mobile Demonstrator (HELMD) as it goes into the integration phase of the electrical power subsystem (EPS), thermal management subsystem (TMS), and 60 kW Laser Subsystem (LSS) into the HELMD mobile platform; support reviews and technical interchange meetings, Technical Review Boards (TRB), and Risk and Opportunity Management Boards (ROMB) for subsystems; support safety and security assessments and analysis of a potential future laser weapon system; conduct trade analysis studies on current and future high power laser concept; support Solid State Laser Testbed (SSLT) operations at the High Energy Laser Systems Test Facility (HELSTF) to evaluate 1.06um SSL propagation and lethality experiments; support the development of tactics, techniques, and procedures (TTPs) of future fielding of HEL weapon system.</p>					
<p>Title: Joint Friendly Force Tracking (J-FFT) Testbed</p> <p>Description: Funding is provided for the following efforts</p> <p>FY 2015 Accomplishments: As enhancements are made to network-enabled command and control systems and other systems including KeyMaker that will be fully integrated into Combat Commanders friendly force tracking requirements the J-FFT Testbed will be used to integrate hardware and software prior to its deployment to the field. USASMDC/ARSTRAT continued to support development of FFT capabilities for deployed and coalition forces. The Joint Friendly Force Tracking Division coordinated and executed USSTRATCOM-directed FFT tasks in order to assure continuous 24/7 FFT data services support to authorized users to include the Combatant Commands, the Services, agencies, allies, and coalition partners in order to improve their situational awareness (SA), enhance command and control (C2) to reduce fratricide in combat, homeland defense, civil and contingency operations. Completed transition Force Tracking Advanced Management System (FTAMS) to FFT-MMC.</p> <p>FY 2016 Plans: As enhancements are made to network-enabled command and control systems and other systems including KeyMaker will be fully integrated into Combat Commanders friendly force tracking requirements the J-FFT Testbed will be used to integrate hardware and software prior to its deployment to the field. USASMDC/</p>	3.540	0.548	4.003	-	4.003

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems Integration	Project (Number/Name) 990 / Space And Missile Defense Integration

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>ARSTRAT will continue to support development of FFT capabilities for deployed and coalition forces. The Joint Friendly Force Tracking Division coordinates and executes USSTRATCOM-directed FFT tasks in order to assure continuous 24/7 FFT data services support to authorized users to include the Combatant Commands, the Services, agencies, allies, and coalition partners in order to improve their situational awareness (SA), enhance command and control (C2) to reduce fratricide in combat, homeland defense, civil and contingency operations. Will complete transition Force Tracking Advanced Management System (FTAMS) to FFT-MMC.</p> <p>FY 2017 Base Plans: As enhancements are made to network-enabled command and control systems, including KeyMaker, Joint Friendly Force Tracking (J-FFT) will be fully integrated into Combat Commanders' friendly force tracking requirements and the J-FFT Testbed will be used to integrate hardware and software prior to its deployment to the field. USASMDC/ARSTRAT will continue to support development of Friendly Force Tracking (FFT) capabilities for deployed and coalition forces. The J-FFT Division coordinates and executes USSTRATCOM-directed FFT tasks in order to assure continuous 24/7 FFT data services support to authorized users to include the Combatant Commands, the Services, agencies, allies, and coalition partners in order to improve their situational awareness (SA), enhance command and control (C2) to reduce fratricide in combat, homeland defense, civil and contingency operations. Will complete transition Force Tracking Advanced Management System (FTAMS) to FFT-Mission Management Center (MMC).</p>					
Accomplishments/Planned Programs Subtotals	10.495	7.238	12.791	-	12.791

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks
D. Acquisition Strategy Not applicable for this effort.
E. Performance Metrics N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army											Date: February 2016		
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems Integration				Project (Number/Name) 990 / Space And Missile Defense Integration					

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			
Enhancement of J-FFT	C/CPFF	Colorado Springs : Colorado	28.366	2.500		-		3.975		-		3.975	Continuing	Continuing	Continuing
Subtotal			28.366	2.500		-		3.975		-		3.975	-	-	-

Remarks
The prime contractor was awarded a task order contract in September 2006. Multiple follow-on task orders have been awarded under this contract since award of the basic contract. All current task orders are scheduled to expire by the end of FY16.

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			
GOVT SUPPORT & SUPPORT CONTRACTS	C/CPFF	Various in Colorado Springs CO, Washington DC, and Huntsville AL : Various	111.712	7.995		7.238		8.816		-		8.816	Continuing	Continuing	Continuing
Subtotal			111.712	7.995		7.238		8.816		-		8.816	-	-	-

Remarks
The prime contractor was awarded a task order contract in September 2006. Multiple follow-on task orders have been awarded under this contract since award of the basic contract. All current task orders are scheduled to expire by the end of FY16.

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
	140.078	10.495	7.238	12.791	-	12.791	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems Integration	Project (Number/Name) 990 / Space And Missile Defense Integration
--	--	---

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/synchronization of Army space and BMD DOTMLPF solutions																												
Provide 24/7 support to Friendly Force Tracking.																												
Integrate KeyMaker into FFT																												
Jericho Thunder Analysis Support																												
SMDC NanoSat Analysis (SNAP, KE)																												
Cyber Impacts on Space Capabilities																												
Space Superiority Joint Architecture Analysis																												
Force Design Assessment of Army Forces																												
Overhead Persistent Infrared Sensor Study																												
Army Cyberspace Analysis																												
JCIDS work on JTAGS Transition ORD into a CPD																												
Space Superiority Capability Production Document																												
Nanosat Program Capability Development Document																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems Integration	Project (Number/Name) 990 / Space And Missile Defense Integration
--	--	---

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
Kestral Eye Capability Development Document																												
Space Simulation Support to TRADOC ARCIC Experimentation																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / <i>Army Space Systems Integration</i>	Project (Number/Name) 990 / <i>Space And Missile Defense Integration</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Development/synchronization of Army space and BMD DOTMLPF solutions.	1	2015	4	2022
Provide 24/7 support to Friendly Force Tracking.	1	2016	4	2022
Integrate KeyMaker into FFT	1	2016	4	2016
Jericho Thunder Analysis Support	1	2015	4	2022
SMDC NanoSat Analysis (SNAP, KE)	1	2015	4	2022
Cyber Impacts on Space Capabilities	3	2016	2	2017
Space Superiority Joint Architecture Analysis	1	2015	4	2018
Force Design Assessment of Army Forces	3	2016	3	2017
Overhead Persistent Infrared Sensor Study	1	2015	1	2015
Army Cyberspace Analysis	1	2015	4	2015
JCIDS work on JTAGS Transition ORD into a CPD	3	2016	4	2017
Space Superiority Capability Production Document	4	2015	2	2017
Nanosat Program Capability Development Document	4	2015	2	2017
Kestral Eye Capability Development Document	1	2017	2	2018
Space Simulation Support to TRADOC ARCIC Experimentation	1	2015	4	2022

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems Integration			Project (Number/Name) EB7 / Army Space System Enhancement/ Integration				
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
EB7: Army Space System Enhancement/Integration	-	3.309	17.823	10.265	9.375	19.640	20.885	35.412	53.555	43.951	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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). Funding line is shared between USA Space and Missile Defense Command (SMDC) and Program Executive Office Intelligence, Electronic Warfare and Sensors (PEO IEW&S) starting in FY2017.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: USA SMDC	3.309	17.823	2.562	9.375	11.937
Description: The details of this program are reported in accordance with Title 10, USC Section 119 (a)(1).					
FY 2015 Accomplishments: The details of this program are reported in accordance with Title 10, USC Section 119 (a)(1).					
FY 2016 Plans: The details of this program are reported in accordance with Title 10, USC Section 119 (a)(1).					
FY 2017 Base Plans: The details of this program are reported in accordance with Title 10, USC Section 119 (a)(1).					
FY 2017 OCO Plans: The details of this program are reported in accordance with Title 10, USC Section 119 (a)(1).					
Title: PEO IEW&S	-	-	7.703	-	7.703
Description: The details of this program are reported in accordance with Title 10, USC 119(a)(1)					
FY 2017 Base Plans: The details of this program are reported in accordance with Title 10, USC 119(a)(1)					
Accomplishments/Planned Programs Subtotals	3.309	17.823	10.265	9.375	19.640

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / <i>Army Space Systems Integration</i>	Project (Number/Name) EB7 / <i>Army Space System Enhancement/ Integration</i>

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

N/A

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / Army Space Systems <i>Integration</i>	Project (Number/Name) EB7 / Army Space System Enhancement/ <i>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
PEO IEW&S hardware and software development																												
SMDC Classified prototype hardware and software																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603308A / <i>Army Space Systems Integration</i>	Project (Number/Name) EB7 / <i>Army Space System Enhancement/ Integration</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
PEO IEW&S hardware and software development	1	2017	4	2021
SMDC Classified prototype hardware and software	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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv 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	-	0.000	45.757	72.117	-	72.117	73.095	77.094	86.394	92.076	Continuing	Continuing
606: <i>Cntrmn/Barrier Adv Dev</i>	-	0.000	0.000	3.757	-	3.757	3.809	2.820	12.114	15.825	0.000	38.325
EK7: <i>Area Denial Capability Development</i>	-	0.000	45.757	68.360	-	68.360	69.286	74.274	74.280	76.251	Continuing	Continuing

Note

Project EK7, Area Denial Capability Development is a new start in FY 2016.

Project 606, Cntrmn/Barrier Adv Dev is a new start in FY 2017.

A. Mission Description and Budget Item Justification

This Program Element (PE) provides for the Concept Exploration and Refinement of a Deep-Range employed Networked Obstacle. This PE develops alternatives to the aging inventory of the Family of Scatterable Mines systems.

Project 606 enables component development of a new detection capability for explosive hazards, improvised explosive devices (IED), and components in support of route clearance operations. These capabilities will enhance the effectiveness of the Route Clearance Platoon within the Engineer Company, the Brigade Combat Team as well as other related Army missions.

Project EK7 Area Denial Capability Development will evaluate integrated technologies and prototype systems in a realistic operating environment to expedite technology transition for a Deep-Range employed Networked Obstacle that denies the enemy terrain and freedom of action while allowing friendly forces to maneuver freely within the same battlespace. Area Denial Capability Development provides Man-in-the-Loop (MITL) controlled scalable effects against mounted and dismounted enemy forces that disrupt, turn, fix or block their ability to maneuver. Area Denial Capability Development enables the Combatant Commander to establish early Situational Awareness of an area without exposing friendly forces to enemy engagement, and to actively detect, identify, discriminate, and engage the enemy in order to shape the battlespace at deep operational ranges. Area Denial Capability Development will utilize an open system, modular architecture to facilitate future development, maintenance, repair, and product improvements.

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv 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	0.000	49.636	69.477	-	69.477
Current President's Budget	0.000	45.757	72.117	-	72.117
Total Adjustments	0.000	-3.879	2.640	-	2.640
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.879			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	2.640	-	2.640

Change Summary Explanation

FY 2016: Budget supports Project EK7, Area Denial Capability Development.

FY 2017: Budget supports Project 606, Cntrmn/Barrier Adv Dev, and Project EK7, Area Denial Capability Development.

PB 2016 Base Request for FY 2017 was \$69.477 million. Total adjustment for Base FY 2017 is \$2.640 million.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>				Project (Number/Name) 606 / <i>Cntrmn/Barrier Adv 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
606: <i>Cntrmn/Barrier Adv Dev</i>	-	0.000	0.000	3.757	-	3.757	3.809	2.820	12.114	15.825	0.000	38.325
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This project is a new start in FY 2017.

A. Mission Description and Budget Item Justification

This project evaluates integrated technology for detection of explosive hazard in support of route clearance operations.

The FY 2017 Base RDTE dollars in the amount of \$3.757 million supports Explosive Hazard Detection technology analysis, system analysis, test design and evaluation. It also funds system engineering and program management.

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

	FY 2015	FY 2016	FY 2017
Title: System Engineering and Program Management	-	-	0.400
Description: Supports System Engineering and Program Management			
FY 2017 Plans: Supports System Engineering and Program Management			
Title: Explosive Hazard Detection Technology Analysis	-	-	2.850
Description: Explosive Hazard Detection Technology Analysis			
FY 2017 Plans: Explosive Hazard Detection technology analysis, system analysis, and test design.			
Title: Explosive Hazard Detection Test and Evaluation	-	-	0.507
Description: Explosive Hazard Detection Test and Evaluation			
FY 2017 Plans: Explosive Hazard Detection Test and Evaluation			
Accomplishments/Planned Programs Subtotals	-	-	3.757

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) 606 / <i>Cntrmn/Barrier Adv Dev</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 0604808A Proj 415 RDTE: <i>PE 0604808A Proj 415</i> <i>Mine Neutralization/Detection</i>	43.314	49.296	36.858	-	36.858	31.464	32.025	46.636	41.533	Continuing	Continuing
• R64001 OPA: <i>R64001 OPA Husky</i> <i>Mounted Detection System (HMDS)</i>	18.545	13.565	0.274	-	0.274	26.578	51.645	67.044	71.133	Continuing	Continuing

Remarks

PE 0604808 Project 415 Mine Neutralization and Detection is the engineering development follow-on to this funding line. The above profile represents the total line, not only the follow on tasks within this program.

D. Acquisition Strategy

The Acquisition Strategy for Route Clearance Operations will be developed in conjunction with program initiation.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) 606 / <i>Cntrmn/Barrier Adv Dev</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			
Program Management	MIPR	PM CCS : Picatinny Arsenal, NJ	0.000	-		-		0.400	Jan 2017	-		0.400	Continuing	Continuing	0
Subtotal			0.000	-		-		0.400		-		0.400	-	-	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			
Explosive Hazard Detection - Technology Analysis	MIPR	TRADOC : Ft. Eustis, VA	0.000	-		-		2.000	Jan 2017	-		2.000	Continuing	Continuing	0
Explosive Hazard Detection - Engineering Support	MIPR	CERDEC NVESD : Ft. Belvoir, VA	0.000	-		-		0.600	Jan 2017	-		0.600	Continuing	Continuing	0
Explosive Hazard Detection - System Analysis and Test Design	FFRDC	IDA : Alexandria, VA	0.000	-		-		0.250	Jan 2017	-		0.250	Continuing	Continuing	0
Subtotal			0.000	-		-		2.850		-		2.850	-	-	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			
Explosive Hazard Detection	MIPR	A TEC : Alexandria, VA	0.000	-		-		0.507	Jan 2017	-		0.507	Continuing	Continuing	0
Subtotal			0.000	-		-		0.507		-		0.507	-	-	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		3.757		-		3.757	-	-	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) 606 / <i>Cntrmn/Barrier Adv Dev</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
--	-------------	---------	---------	--------------	-------------	---------------	------------------	------------	--------------------------

Remarks	
----------------	--

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) 606 / <i>Cntrmn/Barrier Adv Dev</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) Explosive Hazard Detection - MDD Approval									MDD Approval																			
Explosive Hazard Detection - Analysis of Alternatives (AOA)													AOA Approval															
Explosive Hazard Detection - System Characterization																	System Characterization											
(2) Explosive Hazard Detection - Milestone B (MS B)																					MS B							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) 606 / <i>Cntrmn/Barrier Adv Dev</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Explosive Hazard Detection - MDD Approval	4	2017	4	2017
Explosive Hazard Detection - Analysis of Alternatives (AOA)	2	2018	4	2018
Explosive Hazard Detection - System Characterization	4	2018	4	2019
Explosive Hazard Detection - Milestone B (MS B)	4	2019	4	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>				Project (Number/Name) EK7 / <i>Area Denial Capability 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
<i>EK7: Area Denial Capability Development</i>	-	0.000	45.757	68.360	-	68.360	69.286	74.274	74.280	76.251	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This project is a new start in FY16.

A. Mission Description and Budget Item Justification

This project provides for the Development of a Deep-Range employed Networked Obstacle. This project develops alternatives to the aging inventory of the Family of Scatterable Mines systems.

Area Denial Capability Development will evaluate integrated technologies and prototype systems in a realistic operating environment to expedite technology transition for a Deep-Range employed Networked Obstacle that denies the enemy terrain and freedom of action while allowing friendly forces to maneuver freely within the same battlespace. Area Denial Capability Development provides Man-in-the-Loop (MITL) controlled scalable effects against mounted and dismounted enemy forces that disrupt, turn, fix or block their ability to maneuver. Area Denial Capability Development enables the Combatant Commander to establish early Situational Awareness of an area without exposing friendly forces to enemy engagement, and to actively detect, identify, discriminate, and engage the enemy in order to shape the battlespace at deep operational ranges. Area Denial Capability Development will utilize an open system, modular architecture to facilitate future development, maintenance, repair, and product improvements.

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

	FY 2015	FY 2016	FY 2017
Title: Area Denial Capability Development	-	26.643	52.254
Description: Develop and build system and sub-system level concepts that will be evaluated for affordability, feasibility, and technical maturity. Complete competitive development of systems and perform initiatives to mature technical feasibility and reduce risk.			
FY 2016 Plans: Award up to 5 contract agreements to build prototypes that represent system and sub-system level concepts. The prototypes will be evaluated for technical maturity and potential operational effectiveness, suitability, and affordability			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) EK7 / <i>Area Denial Capability Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Award two Technology Maturation and Risk Reduction contracts/agreements to develop competing system prototypes, perform technical/engineering analysis of preferred materiel solution, inform the Capability Development Document (CDD) requirements, reduce program technical risk, and program cost risk.				
<p>Title: Engineering Support</p> <p>Description: Provide Engineering Support.</p> <p>FY 2016 Plans: Engineering support for Analysis of Alternatives, Concept Prototype Contract/Agreement Award, initial development of Models and Simulations, Milestone A Documentation, and Technology Readiness Assessment of Concept Prototypes.</p> <p>FY 2017 Plans: Engineering support for Technology Maturation and Risk Reduction contracts/agreements and execution. Develop models and simulations, develop Milestone A documentation, conduct technology readiness assessment, and support requirements development.</p>		-	12.556	9.660
<p>Title: Test and Evaluation</p> <p>Description: Provide support to Contractor/Government test Activities.</p> <p>FY 2016 Plans: Technical Demonstration and Evaluation of system and sub-system level prototypes.</p>		-	1.500	-
<p>Title: Program Management and Oversight</p> <p>Description: Program Management and Support</p> <p>FY 2016 Plans: Program Management support for Analysis of Alternatives, Test and Evaluation, Modeling and Simulation, Milestone A planning, and Concept Prototype contracts/agreements.</p> <p>FY 2017 Plans: Program Management support for technical/engineering analysis of materiel solution, Modeling and Simulation, Capability Development Document requirements development, competitive prototype contracts/agreements, and Milestone A preparation.</p>		-	5.058	6.446
Accomplishments/Planned Programs Subtotals		-	45.757	68.360
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 / 4	R-1 Program Element (Number/Name) PE 0603619A / Landmine Warfare and Barrier - Adv Dev	Project (Number/Name) EK7 / Area Denial Capability Development

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

Remarks

D. Acquisition Strategy

An Analysis of Alternatives (AoA) was initiated in September 2015 and the study will assess the technical feasibility, operational feasibility, technical risk, and affordability of various potential materiel solutions. The AoA will be informed by previously executed studies and input from Government, Industry and Academia. In parallel to the AoA, up to 5 Concept Prototype contracts/agreements will be provided to industry to develop representative prototypes (hardware and/or models) that will be used to assess the technology risks and costs associated with multiple system level concepts. The results of the AoA and evaluation of representative prototypes will support a Milestone A Decision. The Army will award two Technology Maturation and Risk Reduction (TMRR) contracts/agreements to develop competing prototypes of the selected materiel solution. Technologies that support the selected system level concepts will be matured during TMRR, and a Capability Development Document (CDD) will be developed. At the end of TMRR, and after a successful Milestone B Decision, the Army will competitively award an Engineering and Manufacturing Development (EMD) contract to complete development of the system, complete system integration, develop manufacturing processes, and conduct testing before entering the Production and Deployment phase.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / Landmine Warfare and Barrier - Adv Dev	Project (Number/Name) EK7 / Area Denial Capability Development
--	--	--

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 Mgmt	MIPR	PM-CCS : Picatinny Arsenal, NJ	0.000	-		3.290		4.700		-		4.700	Continuing	Continuing	0
SBIR/STTR/FFRDC	TBD	PM CCS : Picatinny Arsenal, NJ	0.000	-		1.769		1.746		-		1.746	Continuing	Continuing	0
Subtotal			0.000	-		5.059		6.446		-		6.446	-	-	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			
Prototype Development A	SS/TBD	TBD : TBD	0.000	-		7.214	Mar 2016	-		-		-	0.000	7.214	0
Prototype Development B	SS/TBD	TBD : TBD	0.000	-		7.214	Mar 2016	-		-		-	0.000	7.214	0
Prototype Development C	SS/TBD	TBD : TBD	0.000	-		7.214	Mar 2016	-		-		-	0.000	7.214	0
Prototype Development D	SS/TBD	TBD : TBD	0.000	-		2.500	Mar 2016	-		-		-	0.000	2.500	0
Prototype Development E	SS/TBD	TBD : TBD	0.000	-		2.500		-		-		-	0.000	2.500	0
Technology Maturation Risk Reduction (TMRR) Development A	SS/TBD	TBD : TBD	0.000	-		-		26.127	Jun 2017	-		26.127	Continuing	Continuing	0
Technology Maturation Risk Reduction (TMRR) Development B	SS/TBD	TBD : TBD	0.000	-		-		26.127	Jun 2017	-		26.127	Continuing	Continuing	0
Subtotal			0.000	-		26.642		52.254		-		52.254	-	-	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			
ARDEC Engineering Support	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		5.682		5.284		-		5.284	Continuing	Continuing	0
CERDEC Engineering Support	MIPR	CERDEC : Fort Belvoir, VA	0.000	-		0.450		1.168		-		1.168	Continuing	Continuing	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) EK7 / <i>Area Denial Capability Development</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			
Mitre Engineering Support (C4)	FFRDC	Mitre : McLean, VA	0.000	-		0.586		0.440		-		0.440	Continuing	Continuing	0
NVESD Engineering Support	MIPR	NVESD : Fort Belvoir, VA	0.000	-		0.440		0.800		-		0.800	Continuing	Continuing	0
Millenium Program Support	C/FFP	Millennium : Arlington, VA	0.000	-		0.450		0.500	Mar 2017	-		0.500	Continuing	Continuing	0
ARL Engineering Support	MIPR	ARL : Adelphi, MD	0.000	-		0.633		0.850		-		0.850	Continuing	Continuing	0
AMSAA Engineering Support	MIPR	AMSAA : Aberdeen, MD	0.000	-		0.663		0.206		-		0.206	Continuing	Continuing	0
TRAC Analysis Support	MIPR	TRAC : White Sands, NM	0.000	-		3.240		-		-		-	0.000	3.240	0
USAF Engineering and Integration Support	MIPR	TBD : TBD	0.000	-		0.206		0.206		-		0.206	Continuing	Continuing	0
USN Engineering and Integration Support	MIPR	TBD : TBD	0.000	-		0.206		0.206		-		0.206	Continuing	Continuing	0
Subtotal			0.000	-		12.556		9.660		-		9.660	-	-	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			
Support Government Test Activities	MIPR	AMSAA, ATEC, ARDEC : Various	0.000	-		1.500		-		-		-	Continuing	Continuing	0
Subtotal			0.000	-		1.500		-		-		-	-	-	0.000

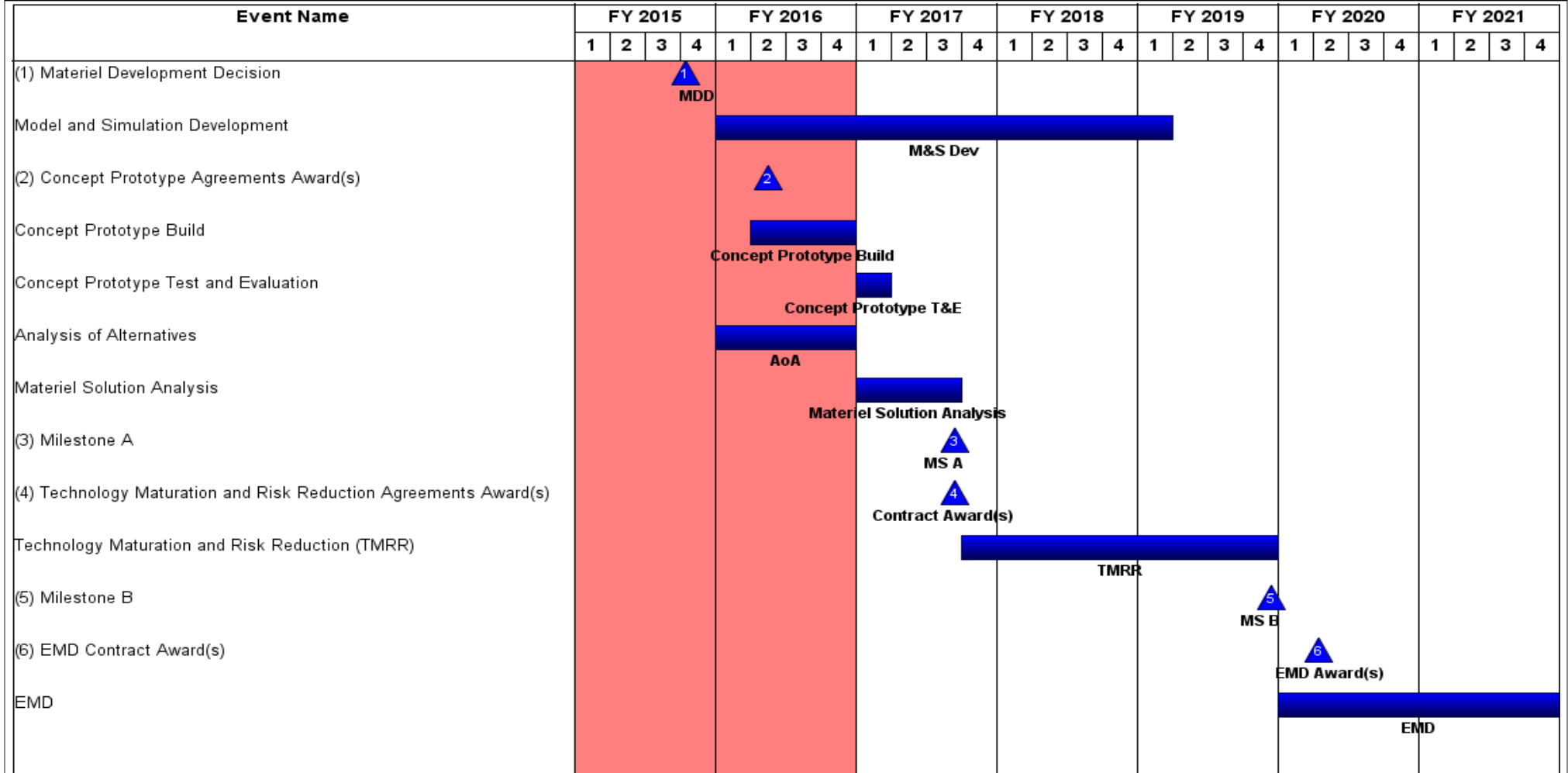
			Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		45.757		68.360		-		68.360	-	-	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) EK7 / <i>Area Denial Capability Development</i>
--	---	---



UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) EK7 / <i>Area Denial Capability Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Matériel Development Decision	4	2015	4	2015
Model and Simulation Development	1	2016	1	2019
Concept Prototype Agreements Award(s)	2	2016	2	2016
Concept Prototype Build	2	2016	4	2016
Concept Prototype Test and Evaluation	1	2017	1	2017
Analysis of Alternatives	1	2016	4	2016
Matériel Solution Analysis	1	2017	3	2017
Milestone A	3	2017	3	2017
Technology Maturation and Risk Reduction Agreements Award(s)	3	2017	3	2017
Technology Maturation and Risk Reduction (TMRR)	4	2017	4	2019
Milestone B	4	2019	4	2019
EMD Contract Award(s)	2	2020	2	2020
EMD	1	2020	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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603627A / <i>Smoke, Obscurant and Target Defeating Sys-Adv 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	-	0.000	13.426	28.244	-	28.244	7.137	1.714	0.000	0.000	0.000	50.521
E79: <i>SMOKE/OBSCURANT SYSTEM</i>	-	0.000	13.426	28.244	-	28.244	7.137	1.714	0.000	0.000	0.000	50.521

Note

Nuclear Biological Chemical Radiological Vehicle Sensor Suite (NBCRVSS) funding is expected to move to a separate Program Element during the FY16 President's Budget cycle. It will be reflected under PE 655038, Project Code EQ7.

A. Mission Description and Budget Item Justification

SOM: US Forces must be able to effectively neutralize and degrade energy weapon systems and electro-optical systems/smart weapons that operate in the full range of the electromagnetic spectrum to improve platform survivability and soldier protection levels of maneuver forces on the battlefield. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection using sustained generated obscuration technology. SOM will be man portable and modular to facilitate quick mounting on manned/unmanned platforms and dismounted operations.

NBCRV: This program upgrades the Stryker Nuclear Biological Chemical Radiological Vehicle Sensor Suite (NBCRVSS) for increased sensitivity, chemical detection at increased maneuver speeds, and increased reliability. The NBCRVSS consists of a chemical point detector for solid, liquid, and vapor Chemical Warfare Agents, a biological point detection system, a Chemical Vapor Sampling System, a Training Aids, Devices, and Simulation System, and the Sensor Processing Group. The NBCRVSS provides the Stryker NBCRV the ability to detect, identify, collect, report, and mark NBC hazards. NBCRVSS funding is expected to move to a separate Program Element during the FY16 President's Budget cycle. It will be reflected under PE 655038, Project Code EQ7.

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	13.426	13.400	-	13.400
Current President's Budget	0.000	13.426	28.244	-	28.244
Total Adjustments	0.000	0.000	14.844	-	14.844
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	14.844	-	14.844

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 4: Advanced Component Development & Prototypes (ACD&P)*

R-1 Program Element (Number/Name)
PE 0603627A / *Smoke, Obscurant and Target Defeating Sys-Adv Dev*

Change Summary Explanation

The FY 2016 funding request was reduced for \$4.517 million 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 / 4					R-1 Program Element (Number/Name) PE 0603627A / <i>Smoke, Obscurant and Target Defeating Sys-Adv Dev</i>				Project (Number/Name) E79 / <i>SMOKE/OBSCURANT 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
E79: <i>SMOKE/OBSCURANT SYSTEM</i>	-	0.000	13.426	28.244	-	28.244	7.137	1.714	0.000	0.000	0.000	50.521
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Screening Obscuration Module (SOM): US Forces must be able to effectively neutralize and degrade enemy weapon systems and electro-optical systems/smart weapons that operate in the full range of the electromagnetic spectrum to improve platform survivability and soldier protection levels of maneuver forces on the battlefield. SOM provides visual through near-infrared screening of the electromagnetic spectrum. SOM will be man-portable and modular to facilitate quick mounting on manned/unmanned platforms and dismounted operations. The SOM replaces out-dated 1930s technology Combat smoke pots that are safety hazards containing potential carcinogenic constituents and are fire hazards. Combat smoke pots lack a turn on/off ability, are unsafe to mount on combat vehicles and produce a smoke cloud that is too small, and too short in duration to meet current requirements, SOM addresses these issues.

NBCRV: This program upgrades the Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite (NBCRVSS). The NBCRVSS is the Mission Equipment Package for the Stryker Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) and consists of chemical point detectors, a standoff chemical vapor detector, a biological point detector, a Chemical Vapor Sampling System, and a Sensor Processing group. The NBCRVSS provides the Stryker NBCRV the ability to detect, identify, collect, report, and mark Nuclear Biological Chemical (NBC) Hazards. Starting in FY16, a Chemical Surface Detector will be developed to replace the Dual Wheel Sampling System to increase maneuverability of the Stryker NBCRV and increase reliability. Starting in FY17, a Chemical Mass Spectrometer will be developed to replace the Chemical Biological Mass Spectrometer Block II to increase reliability, sensitivity, and the number of chemicals detected. Also in FY17 an update to the Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD) will be developed to increase range and probability of detection by reducing its field of view.

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

	FY 2015	FY 2016	FY 2017
Title: SOM: Product Development	-	1.700	5.100
Description: Provide SOM Development			
FY 2016 Plans: SOM:Initiate design and development of the SOM system.			
FY 2017 Plans: SOM: Continue design and development of the SOM system.			
Title: SOM: Test and Evaluation of SOM systems	-	0.286	0.800
Description: Provide Test and Evaluation of SOM systems			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603627A / <i>Smoke, Obscurant and Target Defeating Sys-Adv Dev</i>	Project (Number/Name) E79 / <i>SMOKE/OBSCURANT SYSTEM</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
FY 2016 Plans: SOM: Initiate test and evaluation planning				
FY 2017 Plans: SOM: Continue test and evaluation planning.				
Title: SOM: Project Management Description: Provide Project Management		-	0.600	1.125
FY 2016 Plans: SOM: Initiate Government program management, systems engineering, and Integrated Product Team (IPT) support.				
FY 2017 Plans: SOM: Continue Government program management, systems engineering, and Integrated Product Team (IPT) support.				
Title: NBCRV: Sensor Suite Upgrade Development Description: Provide Sensor suite upgrade development		-	8.140	17.019
FY 2016 Plans: NBCRV: Initiate task orders for sensor suite development.				
FY 2017 Plans: NBCRV: Continue sensor suite upgrade development				
Title: NBCRV Integration Support Description: Provide ILS and Integration support to the sensor suite upgrades		-	0.700	0.700
FY 2016 Plans: NBCRV: Initiate ILS and Integration support to the sensor suite upgrades				
FY 2017 Plans: NBCRV: Continue ILS and Integration support to the sensor suite upgrades				
Title: NBCRV: Test & Evaluation Description: Provide NBCRV testing of prototypes		-	0.500	1.500
FY 2016 Plans:				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603627A / <i>Smoke, Obscurant and Target Defeating Sys-Adv Dev</i>	Project (Number/Name) E79 / <i>SMOKE/OBSCURANT SYSTEM</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
NBCRV: Initiate test and evaluation planning and support for sensor suite upgrade prototypes.			
FY 2017 Plans: NBCRV: Continue test and evaluation planning and support for sensor suite upgrade prototypes			
Title: NBCRV: Project Management Description: Provide NBCRV Project Management Labor	-	1.500	1.800
FY 2016 Plans: NBCRV: Initiate government program management, systems engineering, and Integrated Product Team (IPT) support.			
FY 2017 Plans: NBCRV: Continue government program management, systems engineering, and Integrated Product Team (IPT) support.			
Title: CRESS: Engineering Studies Description: Chemical Reconnaissance and Explosives Screening Set (CRESS)	-	-	0.200
FY 2017 Plans: CRESS: Initiate engineering studies			
Accomplishments/Planned Programs Subtotals	-	13.426	28.244

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
• SMOKE/OBSCURANT SYSTEM: <i>Project 200 Smoke, Obscurant and Target Defeating Sys - Eng Dev</i>	-	-	-	-	-	-	-	-	-	0.000	0.000
• Target Defeating System: <i>Project 198 Smoke, Obscurant and Target Defeating Sys - Eng Dev</i>	-	-	-	-	-	-	-	-	-	0.000	0.000

Remarks

D. Acquisition Strategy

Acquisition Strategy:

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603627A / <i>Smoke, Obscurant and Target Defeating Sys-Adv Dev</i>	Project (Number/Name) E79 / <i>SMOKE/OBSCURANT SYSTEM</i>
--	--	---

SOM: The Screening Obscuration Module (SOM) acquisition strategy is a single-step Technology Maturation and Risk Reduction (TMRR) phase leading to a Milestone B/C production decision. The path forward for the TMRR phase will include the release of a formal request for proposal (RFP) to develop and test a SOM system capable of obscuring the Visual through Near IR wavelengths of the electromagnetic spectrum. The SOM RFP will utilize a Full and Open Competitive cost plus best value contract approach to execute the TMRR phase and a fixed price contract option for production. This acquisition strategy includes system development and demonstration, full system integration, design for producibility and a demonstration of interoperability, safety, utility and reliability.

NBCRV: The Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite (NBCRVSS) Upgrade is a single-step in the evolutionary acquisition strategy for the Stryker Nuclear Biological Chemical Reconnaissance Vehicle. The contract approach of the Chemical Surface Detector (CSD) will be a Full and Open cost plus fixed fee competitive prototyping contract. The contract approach of the Chemical Mass Spectrometer (CMS) will be a Full and Open cost plus fixed fee competitive prototyping contract. The contract approach for the update of the Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD) will be a Sole Source cost plus fixed fee Indefinite Delivery Indefinite Quantity with firm fixed price production task orders.

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 / 4				PE 0603627A / Smoke, Obscurant and Target Defeating Sys-Adv Dev				E79 / SMOKE/OBSCURANT SYSTEM								
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	
SOM-Project Management Personnel	MIPR	JPM NBC CA : Edgewood, MD	5.630	-		0.600		1.125		-		1.125	Continuing	Continuing	Continuing	
NBCRV-Project Management Personnel	MIPR	JPM NBC CA & JPEO CBD : Edgewood, MD	0.000	-		1.500		1.800		-		1.800	Continuing	Continuing	Continuing	
Subtotal			5.630	-		2.100		2.925		-		2.925	-	-	-	
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	
SOM Product Development	C/CPFF	TBD : TBD	21.551	-		1.700	Jan 2016	5.100		-		5.100	Continuing	Continuing	Continuing	
NBCRV Product Development (CSD)	C/CPFF	TBD : TBD	0.000	-		8.140	Mar 2016	7.673	Nov 2016	-		7.673	Continuing	Continuing	Continuing	
NBCRV: Product Development (CMS)	C/CPFF	TBD : TBD	0.000	-		-		6.573	Nov 2016	-		6.573	Continuing	Continuing	Continuing	
NBCRV: Product Development (JSLSCAD RFOV)	SS/CPFF	Chemring Detection Systems : Charlotte, NC	0.000	-		-		2.773	Nov 2016	-		2.773	Continuing	Continuing	Continuing	
Subtotal			21.551	-		9.840		22.119		-		22.119	-	-	-	
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	
NBCRV ILS	MIPR	ECBC : Edgewood, MD	0.000	-		0.700		0.700		-		0.700	Continuing	Continuing	Continuing	
Subtotal			0.000	-		0.700		0.700		-		0.700	-	-	-	

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603627A / <i>Smoke, Obscurant and Target Defeating Sys-Adv Dev</i>	Project (Number/Name) E79 / <i>SMOKE/OBSCURANT 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				
SOM Design and Fabrication																																
SOM Developmental Testing #1																																
SOM Developmental Testing #2																																
SOM User Testing																																
SOM MS B/C/FRP																																
SOM Production Award																																
SOM FAT																																
NBCRV: Chemical Surface Detector (CSD) Award (TMRR)																																
NBCRV: CSD Design and Fabrication																																
NBCRV: CSD Developmental Testing																																
NBCRV: CMS Award																																
NBCRV: CMS Design and Fabrication																																
NBCRV: JSLSCAD RFOV Task Order Award																																

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603627A / <i>Smoke, Obscurant and Target Defeating Sys-Adv Dev</i>	Project (Number/Name) E79 / <i>SMOKE/OBSCURANT 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
NBCRV: JSLSCAD RFOV Desgin and Fabrication																												
NBCRV: Sensor Suite Milestone B																												
NBCRV: CSD Maturation																												
NBCRV: CMS Maturation																												
NBCRV: JSLSCAD RFOV Maturation																												
NBCRV: Production Qualification Testing (PQT)																												
NBCRV: Operational Test																												
NBCRV: CSD Low Rate Initial Production (LRIP)																												
NBCRV: CMS LRIP																												
NBCRV: JSLSCAD LRIP																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603627A / <i>Smoke, Obscurant and Target Defeating Sys-Adv Dev</i>	Project (Number/Name) E79 / <i>SMOKE/OBSCURANT SYSTEM</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SOM Design and Fabrication	2	2016	1	2018
SOM Developmental Testing #1	4	2017	4	2017
SOM Developmental Testing #2	2	2018	2	2019
SOM User Testing	2	2019	2	2019
SOM MS B/C/FRP	1	2020	1	2020
SOM Production Award	1	2020	1	2020
SOM FAT	4	2020	4	2020
NBCRV: Chemical Surface Detector (CSD) Award (TMRR)	2	2016	2	2016
NBCRV: CSD Design and Fabrication	2	2016	3	2017
NBCRV: CSD Developmental Testing	3	2016	1	2018
NBCRV: CMS Award	1	2017	1	2017
NBCRV: CMS Design and Fabrication	1	2017	1	2018
NBCRV: JSLSCAD RFOV Task Order Award	1	2017	1	2017
NBCRV: JSLSCAD RFOV Desgin and Fabrication	1	2017	1	2018
NBCRV: Sensor Suite Milestone B	1	2018	1	2018
NBCRV: CSD Maturation	1	2018	1	2019
NBCRV: CMS Maturation	1	2018	1	2019
NBCRV: JSLSCAD RFOV Maturation	1	2018	1	2019
NBCRV: Production Qualification Testing (PQT)	4	2018	2	2019
NBCRV: Operational Test	3	2020	4	2020
NBCRV: CSD Low Rate Initial Production (LRIP)	4	2019	3	2020
NBCRV: CMS LRIP	4	2019	3	2020

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army			Date: February 2016	
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603627A / <i>Smoke, Obscurant and Target Defeating Sys-Adv Dev</i>	Project (Number/Name) E79 / <i>SMOKE/OBSCURANT SYSTEM</i>		

Events	Start		End	
	Quarter	Year	Quarter	Year
NBCRV: JSLSCAD LRIP	4	2019	3	2020

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: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603639A / Tank and Medium Caliber Ammunition							
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	-	24.402	46.749	40.096	-	40.096	46.663	50.914	29.886	17.711	Continuing	Continuing
656: 120mm Cartridge (Advanced Multipurpose-AMP)	-	14.179	27.578	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	41.757
694: Medium Caliber Ammunition	-	0.000	0.000	2.170	-	2.170	0.000	0.000	0.000	0.000	Continuing	Continuing
EB8: OWL for Small Caliber Ammunition	-	2.391	2.500	2.166	-	2.166	4.400	4.400	0.000	0.000	Continuing	Continuing
EB9: Tunable Pyrotechnic Aircraft Countermeasure Flares	-	0.850	3.000	2.368	-	2.368	0.000	0.000	0.000	0.000	0.000	6.218
EC2: Adv Armor-Piercing (ADVAP) for Small Cal Ammo	-	5.280	7.700	0.000	-	0.000	3.800	6.900	0.000	0.000	Continuing	Continuing
EC3: Ammunition Logistics Prototyping	-	1.702	3.571	2.017	-	2.017	2.258	2.825	2.478	1.826	0.000	16.677
EL6: Individual Assault Munition (IAM)	-	0.000	0.000	0.000	-	0.000	1.896	8.469	10.980	0.000	0.000	21.345
EL7: Reduced Range Small Caliber Training Ammunition	-	0.000	0.000	2.166	-	2.166	9.000	13.500	0.000	0.000	Continuing	Continuing
EL8: LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER	-	0.000	2.400	1.280	-	1.280	2.500	0.000	0.000	0.000	Continuing	Continuing
EU1: Enhanced Lethality Cannon Munitions	-	0.000	0.000	9.866	-	9.866	10.000	0.000	0.000	0.000	0.000	19.866
EU2: Improved Multi-Option Fuze (iMOFA/iMOFM)	-	0.000	0.000	7.892	-	7.892	0.000	0.000	0.000	0.000	0.000	7.892
EU3: .50 Caliber All-Purpose Tactical Cartridge (APTC)	-	0.000	0.000	0.000	-	0.000	0.000	0.000	4.600	8.060	0.000	12.660
FA5: Assured Precision Weapons and Munitions	-	0.000	0.000	10.171	-	10.171	12.809	14.820	11.828	7.825	0.000	57.453

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	
Note In FY 2017, PE 0603639A projects 694, EL7, EU1, EU2 and FA5 are new start programs.		
A. Mission Description and Budget Item Justification Title changed from Tank and Medium Caliber Ammunition to Weapons and Munitions Advanced Development. The Weapons and Munitions Advanced Development Program Element (PE) encompasses a comprehensive program to develop, rapidly transition to production, and field advanced weapons and munitions. These programs will ensure continued battlefield overmatch and lethality of U.S. maneuver forces against the full range of modern battlefield threats. To achieve this, Weapons and Munitions Engineering Development Program will identify and develop promising technologies through competitive development and streamlined acquisition procedures. Project 652: The M829E4 cartridge is an Abrams delivered Line of Sight (LOS) munition that will provide capability for the current force Armored Brigade Combat Team's (ABCT) commander to conduct decisive operations and destroy current and future enemy Main Battle Tanks (MBTs) equipped with Explosive Reactive Armor (ERA) and Active Protective System (APS) at ranges from 0-2km (T) and 0-4km (O). The M829E4 equips ABCT commanders with a unique capability which will increase the ABCT's lethality and ability to seize the initiative during unified land operations. After an Engineering and Manufacturing Development (EMD) Phase I competitive shoot off in FY 2011, Alliant Techsystems (ATK) was awarded the option to continue with Phase II until its conclusion in FY 2015. FY 2012 supported the continuation of Phase II of the M829E4 cartridge. FY 2013 funding supported design finalization, design verification, fabrication and initial testing of Developmental Test and Evaluation (DT&E) hardware. The full performance of the M829E4 is obtained with an Abrams equipped with an Ammunition Data Link breach modification. FY 2014 supported hardware and performance testing, mandated Live Fire Test & Evaluation (LFT&E) and completion of Milestone C. FY 2015 supported qualifying a second source for the composite sabot material. The current single source supplier for this material had significantly increased the cost for this material, more than doubled in cost, and expressed intentions of possibly getting out of this business. Qualification of this second source has occurred and has resulted in competitive pricing thus driving down the unit price cost. The aforementioned selection has mitigated the risk of the current supplier exiting as a supplier of this material. Project 656: The Advanced Multi Purpose (AMP) program is a direct fire line of sight 120mm large caliber munition under development for the Abrams Main Battle Tank. It has three modes of operation including point detonate, point detonate delay and airburst. AMP is the material solution for breaching double reinforced concrete walls and defeating Anti Tank Guided Missile (ATGM) teams from 50m to 2000m (T) and 50m to 4500m (O), a validated gap that cannot currently be met with existing stockpiled ammunition. In addition to added capability, AMP will also consolidate the capabilities of four existing stockpiled 120mm munitions, thereby addressing the users' battlecary dilemma by allowing them to load a single munition that is capable of defeating multiple targets including ATGM teams, reinforced walls, personnel, light armor, bunkers, and obstacles. The full performance of the AMP is obtained with an Abrams equipped Ammunition Data Link breach modification, the same required by the 120mm M829E4 cartridge that achieved Milestone C in FY 2014. FY 2016 supports multiple contracts with competing prototypes in Phase 1 of 2 for Engineering and Manufacturing Development (EMD). Project 694: The 40mm Low Velocity (LV) Increased Range Anti-Personnel (IRAP) tactical cartridge allows the warfighter to effectively engage multiple targets, at increased ranges using the 40mm M203 and M320 Grenade Launchers. The IRAP cartridge provides the grenadier with a higher probability of achieving a first shot kill against enemy personnel, coupled with the ability to defeat personnel targets in defilade positions at increased ranges with greater accuracy and lethality. When		

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>
---	---

deployed against point and area targets, the cartridge inflicts incapacitating effects against personnel or achieve a mobility kill against unarmored vehicles at increased ranges beyond those offered by the current M433 High Explosive Dual Purpose (HEDP) cartridge. IRAP is a new capability identified as a Warfighter requirement in the Capability Development Document, 40mm, Low Velocity Family of Ammunition Annex A1, Increased Range Anti-Personnel Cartridge. The cartridge provides lethal effects against targets with improved accuracy and greater standoff ranges increasing Soldier Survivability. FY 2017 supports Milestone B approval, Request for Proposal (RFP) preparation, Source Selection Planning, Government Technical Development and Cooperative Research and Development Agreement (CRADA) Testing. Engineering, Manufacturing Development will commence in FY 2017.

Project EB8: The One Way Luminescence (OWL) program is a critical technology development in response to the 7.62mm, 5.56mm, and .50 Caliber Family of Ammunition Capabilities Development Documents (CDD). Current small caliber ammunition tracer rounds are a pyrotechnic tracer mix allowing enemy forces to see the trace round and track its trajectory back to the shooter. The OWL program objective develops and fields a full day/night tracer round, replace the current pyrotechnic cartridges with trace cartridges that are only visible to the shooter and soldiers in close proximity, increasing soldier survivability. 7.62mm is the immediate focus followed by 5.56mm and .50 caliber OWL cartridges. FY 2017 funding supports maturation and downselect of the 7.62mm OWL technology, procurement of bullet components, "tracer" material and testing evaluation in order to attain a Technology Readiness Level (TRL) of 6. FY 2017 funding further supports EMD contract development necessary for a FY 2018 Milestone B.

Project EB9: This project is essential to support the advanced development activities and technology demonstrations of the Aviation Airborne Expendable Countermeasure (AAECM) components and prototype munition decoys necessary to address emerging threat deficiencies in Army aircraft protection and the safety of its aircrews against advanced Man-Portable Air Defense Systems (MANPADS) and shoulder launched Surface-to-Air Missiles (SAM) systems. These efforts will evaluate integrated technologies and countermeasure prototype systems in realistic operating test environments to help expedite technology transition from the laboratory to operational use to demonstrate component and subsystem maturity prior to integration into major and complex Army aircraft platforms. These expendable countermeasures systems are an essential part of survivability equipment for Army aircraft. Army RDT&E efforts are coordinated with the PEO Aviation and its platform PMs with PM Aircraft Survivability Equipment (ASE) to address emerging JUONS from theatre.

Project EC2: The Advanced Armor-Piercing (ADVAP) program is a critical technology development in response to the 7.62mm and 5.56mm Family of Ammunition Capabilities Development Documents (CDD). The nomenclature for the 7.62mm ADVAP is now XM1158 and the companion trace is XM1159. The overall objective of the ADVAP program is to develop and Full Materiel Release (FMR) a 7.62mm XM1158 cartridge linked 4:1 with a trace cartridge (XM1159) followed by a 5.56mm cartridge variant that will provide overmatch capability to defeat advanced light armored threats within typical machine gun ranges. The 7.62mm XM1158 and XM1159 cartridge will be optimized for use in the M240 Machine Gun.

Project EC3: The Ammunition Logistics Prototyping project supports the future force by improving the distribution, management, reliability and survivability of ammunition through the advanced development, integration, and demonstration of logistics system enablers. These enablers will improve the efficiency and effectiveness of ammunition operations, to include retrograde, while reducing the logistics footprint on the battlefield. Technology areas addressed include handling, distribution, and management (strategic and tactical), prognostics, diagnostics, and asset visibility, explosives safety, and adaptive and environmentally friendly packaging and palletization. The efficient deployment and sustainment of reliable ammunition is vital to success on the battlefield. This project enhances the operational effectiveness of the ammunition logistics system to ensure the distribution of reliable ammunition to the warfighter.

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	
<p>Project EL7: The Reduced Range Small Caliber Training Ammunition (RRTA) program is a critical technology development in response to the 7.62mm and .50 Caliber Capabilities Development Documents (CDD). The overall objective of the RRTA program is to develop and field 7.62mm RRTA cartridges that will provide a ballistic match to M80A1 and M62A1 cartridges to standard training ranges, while reducing the maximum range of the ammunition. This will allow soldiers to train with 7.62mm weapons on restricted ranges. The RRTA cartridge will be designed to be compatible with all Army 7.62mm weapons, but specifically optimized to work in the M240 Machine Gun. After the 7.62mm cartridge is matured. FY 2017 dollars support Technology Maturation and Risk Reduction in preparation for a TRL 6 demonstration and preparation for Milestone B.</p> <p>Project EL8: The Lightweight Small Caliber Ammunition (LSCA) program is a critical technology development in response to the 7.62mm and .50 Caliber Capabilities Development Documents (CDD). The goal of the LSCA Program is to reduce the Soldier load through reduction in ammunition weight. The LSCA Program will develop and field 7.62mm LSCA cartridges that will provide the same capabilities as the M80A1 and M62A1 cartridges. The LSCA cartridge will be designed to be compatible with all Army 7.62mm weapon systems, but specifically optimized to work in the M240 Machine Gun. After the 7.62mm cartridge is matured a .50 Caliber variant will be developed. FY 2017 funding will support 7.62mm TRL 6 evaluation of the 7.62mm Phase II Defense Ordnance Technology Consortium (DOTC) efforts, solicitation release, preliminary design review, and milestone B preparation for the LSCA Program.</p> <p>Project EU1: The Enhanced Lethality Cannon Munitions program will identify, develop, prototype, and demonstrate new enhanced lethality technologies, components, and subsystems maturity for Cannon munitions to enable fact-based analysis of enhanced lethality alternatives, quantify their effectiveness in mitigating evolving and derived capability gaps, reduce integration risk, and support transition into existing/new Cannon munitions. This program will evaluate and analyze the effectiveness, efficiency, producibility, affordability, safety, and compatibility of these prototype potential materiel solutions in high fidelity simulations and representative realistic performance-related developmental tests.</p> <p>Project EU2: The Improved Multi-Option Fuze will identify, develop, prototype, and demonstrate new improved multi-option fuze technologies, components, and subsystems based on Next Generation Proximity Sensor (NGPS) capabilities with built-in exportability attributes previously matured via OSD-sponsored Science and Technology efforts under the Joint Fuze Technology Program and Defense Exportability Features (DEF) Congressional Pilot Program. This program will evaluate and analyze the effectiveness, efficiency, producibility, affordability, safety, and compatibility of these prototype potential materiel solutions in representative realistic performance-related developmental tests.</p> <p>Project FA5: The objective of this advanced component development and prototyping effort is to identify, evaluate, mature, test, and demonstrate various assured precision prototype technologies in weapons and munitions systems to prove component and subsystem maturity in a system-of-systems environment and to reduce subsequent Program of Record (PoR) integration risk. Assured Precision Weapons and Munitions are an integral part of US military strategy and continue to enable combat overmatch and dominance across the Land Component battlespace. Unhindered access to trusted Positioning, Navigation, and Timing (PNT) information under conditions where existing space based PNT (i.e. P(Y)-Code Global Positioning System (GPS)) may be limited or denied has created the need to develop, prototype, and evaluate new/emerging Assured PNT capabilities (including M-Code GPS and Pseudolites) into both PGMs and Weapons operating in a complex system-of-systems environment. This imperative is reinforced by Public Law 111-383 Section 913 which mandates the use of Air Force-developed M-Code GPS capabilities in all systems fielded FY 2018 and beyond unless a waiver is obtained from the Secretary of Defense. As such, both precision weapon and munition PoRs must coordinate with the</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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>
---	---

development and technology delivery activities of the Air Force's Military GPS User Equipment (MGUE) program as well as the Army's Assured PNT program to protect and insure critical precision-based Joint warfighting capabilities as well as maximizing effectiveness and efficiency of US taxpayer investments across multiple Lethality portfolios.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	29.318	46.749	42.240	-	42.240
Current President's Budget	24.402	46.749	40.096	-	40.096
Total Adjustments	-4.916	0.000	-2.144	-	-2.144
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-4.916	-	-2.144	-	-2.144

Change Summary Explanation

In FY 2017, PE 0603639A projects 694, EU1, EU2, and FA5 are new start programs.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition				Project (Number/Name) 656 / 120mm Cartridge (Advanced Multipurpose-AMP)			
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
656: 120mm Cartridge (Advanced Multipurpose-AMP)	-	14.179	27.578	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	41.757
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017 the program will transition to 0604802A ED7, 120mm Advanced Multipurpose (AMP) Cartridge. The 0604802A ED7, 120mm Advanced Multipurpose (AMP) Cartridge, program is not a new start. Funds in the 0604802A ED7, 120mm Advanced Multipurpose (AMP) Cartridge, program in FY 2017 are a realignment of funds from program 0603639A 656, 120mm Cartridge (Advanced Multipurpose-AMP), for more efficient, effective program management.

A. Mission Description and Budget Item Justification

The Advanced Multi Purpose (AMP) program is a direct fire line of sight 120mm large caliber munition under development for the Abrams Main Battle Tank. It has three modes of operation including point detonate, point detonate delay and airburst. AMP is the material solution for breaching double reinforced concrete walls and defeating Anti Tank Guided Missile (ATGM) teams from 50m to 2000m (T) and 50m to 4500m (O), a validated gap that cannot currently be met with existing stockpiled ammunition. In addition to added capability, AMP will also consolidate the capabilities of four existing stockpiled 120mm munitions, thereby addressing the users' battlecarry dilemma by allowing them to load a single munition that is capable of defeating multiple targets including ATGM teams, reinforced walls, personnel, light armor, bunkers, and obstacles. The full performance of the AMP is obtained with an Abrams equipped Ammunition Data Link breach modification, the same required by the 120mm M829E4 cartridge that achieved Milestone C in FY 2014. FY 2016 supports multiple contracts with competing prototypes in Phase 1 of 2 for Engineering and Manufacturing Development (EMD).

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

	FY 2015	FY 2016	FY 2017
Title: Phase I Engineering and Manufacturing Development (EMD)	14.179	27.578	-
Description: Funding is provided for the following effort.			
FY 2015 Accomplishments: Initiated EMD Phase 1 with two contract awards for competing prototypes. Contractors conducted engineering efforts focused on demonstrating cartridge performance requirements. This required hardware design and procurement along with initial component and cartridge level testing.			
FY 2016 Plans: Continue EMD Phase 1 with competing prototypes. Preliminary Design Review occurs in 2Q FY 2016. Design, build and deliver prototype hardware for cartridge demonstration and initiate shoot off testing.			
Accomplishments/Planned Programs Subtotals	14.179	27.578	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) 656 / 120mm Cartridge (Advanced Multipurpose-AMP)
--	--	---

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>
• AMP (PE / Project: 0604802A / ED7): 120mm Cartridge (Advanced Multipurpose-AMP)	-	-	31.215	-	31.215	31.655	28.018	-	-	0	90.888
• AMP (SSN: E88105): 120mm Cartridge (Advanced Multipurpose-AMP)	-	-	-	-	-	-	25.000	36.000	41.950	0.000	102.950

Remarks

D. Acquisition Strategy

The Advanced Multi Purpose Program (AMP) achieved Milestone B and entered Engineering and Manufacturing Development (EMD) in FY 2015. EMD consists of two phases; Phase 1 awarded two contracts to competitively prototype in FY 2015. A cartridge demonstration test will be conducted and used to support downselect to a single contractor for EMD Phase 2, followed by two Low Rate Initial Productions in FY 2019 and FY 2020 and one optional year of procurement in FY 2021.

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 / 4				PE 0603639A / Tank and Medium Caliber Ammunition				656 / 120mm Cartridge (Advanced Multipurpose-AMP)							
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
Alliant Techsystems Operations LLC (ATK)	C/CPFF	Plymouth : Mn	0.000	5.345		10.900		-		-		-	Continuing	Continuing	Continuing
General Dynamics Ordnance and Tactical Systems, Inc (GDOTS)	C/CPFF	Saint Petersburg : Fl	0.000	5.345		10.900		-		-		-	Continuing	Continuing	Continuing
Program Manager Maneuver Ammunition Systems (PM-MAS) Labor and Travel	MIPR	Picatinny : NJ	0.009	0.422		0.998		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.009	11.112		22.798		-		-		-	-	-	-
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
Army Research, Development and Engineering Center (ARDEC)	MIPR	Picatinny Arsenal : NJ	0.000	1.817		1.611		-		-		-	Continuing	Continuing	Continuing
Army Research Lab	MIPR	ARL Aberdeen : MD	0.000	-		0.700		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.000	1.817		2.311		-		-		-	-	-	-
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
Yuma Test Center	MIPR	Yuma Proving Ground : AZ	0.000	0.750		0.750		-		-		-	Continuing	Continuing	Continuing
Aberdeen Test Center (ATC)	MIPR	Aberdeen Proving Ground : MD	0.000	0.500		1.719		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.000	1.250		2.469		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016			
Appropriation/Budget Activity 2040 / 4			R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>				Project (Number/Name) 656 / <i>120mm Cartridge (Advanced Multipurpose-AMP)</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	0.009	14.179		27.578		-	-	-	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) 656 / 120mm Cartridge (Advanced Multipurpose-AMP)
--	--	---

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	▲1				▲2				▲3				▲4				▲5				▲6				▲7				▲8			
(2) EMD Contract Phase I Awards																																
Engineering and Manufacturing Development (EMD) Phase I	EMD Phase I				EMD Phase I				EMD Phase I				EMD Phase I				EMD Phase I				EMD Phase I				EMD Phase I							
(3) Preliminary Design Review (PDR)	EMD Phase I				EMD Phase I				EMD Phase I				EMD Phase I				EMD Phase I				EMD Phase I				EMD Phase I				EMD Phase I			
(4) EMD Contract Phase II Award/Down-Select																																
Engineering and Manufacturing Development (EMD) Phase II	EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II							
(5) Critical Design Review	EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II			
Developmental Test & Evaluation (DT&E)																																
(6) Milestone C	EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II			
Low Rate Initial Production 1																																
Live Fire Test and Evaluation	EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II			
Independent Operational Test and Evaluation																																
Low Rate Initial Production 2	EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II				EMD Phase II			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) 656 / <i>120mm Cartridge (Advanced Multipurpose-AMP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B	1	2015	1	2015
EMD Contract Phase I Awards	4	2015	4	2015
Engineering and Manufacturing Development (EMD) Phase I	4	2015	1	2017
Preliminary Design Review (PDR)	3	2016	3	2016
EMD Contract Phase II Award/Down-Select	2	2017	2	2017
Engineering and Manufacturing Development (EMD) Phase II	2	2017	3	2019
Critical Design Review	3	2018	3	2018
Developmental Test & Evaluation (DT&E)	1	2019	3	2019
Milestone C	4	2019	4	2019
Low Rate Initial Production 1	4	2019	4	2020
Live Fire Test and Evaluation	2	2020	2	2020
Independent Operational Test and Evaluation	2	2020	2	2020
Low Rate Initial Production 2	4	2020	3	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition				Project (Number/Name) 694 / Medium Caliber Ammunition			
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
694: Medium Caliber Ammunition	-	0.000	0.000	2.170	-	2.170	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, the program will transition to 0604802A EW1, 40mm Increased Range Anti-Personnel Ammunition (IRAP). Funds in the 0604802A EW1 40mm IRAP program in FY 2017 are a realignment of funds from program 0603639A 694, Medium Caliber Ammunition, for more efficient, effective program management. In FY 2017, PE 0603639A 694, Medium Caliber Ammunition, 40mm Increased Range Anti-Personnel (IRAP), is a new start.

A. Mission Description and Budget Item Justification

The 40mm Low Velocity (LV) Increased Range Anti-Personnel (IRAP) tactical cartridge allows the warfighter to effectively engage multiple targets, at increased ranges using the 40mm M203 and M320 Grenade Launchers. The IRAP cartridge provides the grenadier with a higher probability of achieving a first shot kill against enemy personnel, coupled with the ability to defeat personnel targets in defilade positions at increased ranges with greater accuracy and lethality. When deployed against point and area targets, the cartridge inflicts incapacitating effects against personnel or achieve a mobility kill against unarmored vehicles at increased ranges beyond those offered by the current M433 High Explosive Dual Purpose (HEDP) cartridge. IRAP is a new capability identified as a Warfighter requirement in the Capability Development Document, 40mm, Low Velocity Family of Ammunition Annex A1, Increased Range Anti-Personnel Cartridge. The cartridge provides lethal effects against targets with improved accuracy and greater standoff ranges increasing Soldier Survivability. FY 2017 supports Milestone B approval, Request for Proposal (RFP) preparation, Source Selection Planning, Government Technical Development and Cooperative Research and Development Agreement (CRADA) Testing. Engineering, Manufacturing Development will commence in FY 2017.

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

	FY 2015	FY 2016	FY 2017
Title: Pre Engineering Manufacturing Development Activities	-	-	2.170
Description: After Milestone B approval but before the start of EMD, pre-award activities need to be accomplished.			
FY 2017 Plans: FY 2017 primary activities include Milestone B approval and Bid Sample Test competition. In preparation for contract award, Request for Proposal (RFP) preparation, release and review of proposals will occur along with source selection.			
Accomplishments/Planned Programs Subtotals	-	-	2.170

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) 694 / <i>Medium Caliber Ammunition</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 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>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• 0604802A EW1: 40mm <i>Increased Range Anti-Personnel Ammunition (IRAP) 0604802A EW1</i>	-	-	0.353	-	0.353	5.308	9.732	9.023	7.205	0	31.621

Remarks

D. Acquisition Strategy

The IRAP cartridge will be developed through a competitive Engineering and Manufacturing Development (EMD) program. As part of the pre-EMD activities, Government Technical Development Testing and Cooperative Research and Development Agreement (CRADA) Testing with contractors will occur to evaluate potential designs. Within funding constraints, one or more Cost Plus contracts will be awarded for EMD. The Government plans to downselect to one contractor for LRIP and full rate production.

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 / 4				PE 0603639A / Tank and Medium Caliber Ammunition				694 / Medium Caliber Ammunition							
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
Contractor 1 Low Velocity	C/CPFF	TBD : TBD	0.000	-		-		0.300		-		0.300	Continuing	Continuing	Continuing
Contractor 2 Low Velocity	C/CPFF	TBD : TBD	0.000	-		-		0.300		-		0.300	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.600		-		0.600	-	-	-
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	Picatinny Arsenal : NJ	0.000	-		-		0.570		-		0.570	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.570		-		0.570	-	-	-
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
Aberdeen Test Center (ATC)	MIPR	ATC : Aberdeen, MD	0.000	-		-		0.500		-		0.500	Continuing	Continuing	Continuing
Yuma Proving Grounds (YPG)	MIPR	YPG : Yuma, AZ	0.000	-		-		0.500		-		0.500	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		1.000		-		1.000	-	-	-
Project Cost Totals			0.000	-		0.000		2.170		-		2.170	-	-	-
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) 694 / Medium Caliber Ammunition
--	--	---

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				
Tech Demo/CRADA Testing					Testing																											
(1) Milestone B (IRAP)													MS-E																			
(2) Engineering Manufacturing Development Contract Award(s)													EMD Contract Award																			
Engineering Manufacturing Development																																
(3) Test Readiness Review DET I (IRAP)																					TRR DET											
Development Engineering Test Phase I																					DET 1											
(4) Test Readiness Review DET II (IRAP)																					TRR DET 2											
Development Engineering Test Phase II																					DET 2											
(5) Test Readiness Review DT&E (IRAP)																									TRR DT&E							
Developmental Test & Evaluation																																
(6) MS-C (IRAP)																									MS-C							
Production Contract (IRAP)																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) 694 / <i>Medium Caliber Ammunition</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Tech Demo/CRADA Testing	1	2017	2	2017
Milestone B (IRAP)	4	2017	4	2017
Engineering Manufacturing Development Contract Award(s)	2	2018	2	2018
Engineering Manufacturing Development	3	2018	3	2021
Test Readiness Review DET I (IRAP)	2	2019	2	2019
Development Engineering Test Phase I	2	2019	2	2019
Test Readiness Review DET II (IRAP)	1	2020	1	2020
Development Engineering Test Phase II	2	2020	2	2020
Test Readiness Review DT&E (IRAP)	1	2021	1	2021
Developmental Test & Evaluation	1	2021	2	2021
MS-C (IRAP)	3	2021	3	2021
Production Contract (IRAP)	4	2021	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition				Project (Number/Name) EB8 / OWL for Small Caliber Ammunition			
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
EB8: OWL for Small Caliber Ammunition	-	2.391	2.500	2.166	-	2.166	4.400	4.400	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

One Way Luminescence (OWL) develops a new tracer technology and applies it to multiple calibers. The initial focus was on 7.62mm ammunition in FY 2015 followed by 5.56mm in FY 2018 and .50 Caliber ammunition in FY 2019. As the technology matures it will be transitioned to Project 0654802A EP4 starting in FY 2018 for 7.62mm, and FY 2020 for 5.56mm and .50 Caliber. The OWL cartridge will be compatible with all Army Small Caliber weapon systems, but optimized for Machine Guns and will provide improved lethality/Target effects over the current tracer munition.

A. Mission Description and Budget Item Justification

The One Way Luminescence (OWL) program is a critical technology development in response to the 7.62mm, 5.56mm, and .50 Caliber Family of Ammunition Capabilities Development Documents (CDD). Current small caliber ammunition tracer rounds are a pyrotechnic tracer mix allowing enemy forces to see the trace round and track its trajectory back to the shooter. The OWL program objective develops and fields a full day/night tracer round, replace the current pyrotechnic cartridges with trace cartridges that are only visible to the shooter and soldiers in close proximity, increasing soldier survivability. 7.62mm is the immediate focus followed by 5.56mm and .50 caliber OWL cartridges. FY 2017 funding supports maturation and downselect of the 7.62mm OWL technology, procurement of bullet components, "tracer" material and testing evaluation in order to attain a Technology Readiness Level (TRL) of 6. FY 2017 funding further supports EMD contract development necessary for a FY 2018 Milestone B.

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

	FY 2015	FY 2016	FY 2017
Title: Technology Maturation and Risk Reduction (TMRR)	2.391	2.500	2.166
Description: One Way Luminescence (OWL) will develop and demonstrate a full day/night tracer technology that eliminates the shortcomings of current legacy tracers.			
FY 2015 Accomplishments: FY 2015 work included both Government and Contractor efforts to improve multiple 7.62mm prototype designs. Government and Contractor teams successfully demonstrated a Technology Readiness Level of 4. Government demonstrated trace visibility in a live fire event with full day/dusk and night conditions. The Government team conducted a static demonstration to 800 meters. Contractor effort's included a successful demonstration in a dynamic environment trace visibility in dusk and night conditions to a distance of 800 meters.			
FY 2016 Plans:			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EB8 / <i>OWL for Small Caliber Ammunition</i>
--	---	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
FY 2016 continues with concurrent Government and Contractor efforts to mature technology readiness level in 7.62mm. The efforts include development, procurement, and testing of multiple competing prototype solutions to reduce risk in meeting user requirements. TRL 5 is demonstrated.			
FY 2017 Plans: FY 2017 efforts will include prototype downselect to a final technology for 7.62mm in preparation for MS-B. EMD Full and Open Contract development will occur in preparation for FY 2018 contact award. TRL 6 will be demonstrated.			
Accomplishments/Planned Programs Subtotals	2.391	2.500	2.166

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 0604802A Project EP4: <i>OWL for Small Caliber Ammunition</i>	-	-	-	-	-	3.200	2.900	8.600	11.500	0	26.200

Remarks
The 0604802A EP4, OWL for Small Caliber Ammunition program will not be a new start. FY 2018 funds are realigned from program 0603639A EB8, OWL for Small Caliber Ammunition, for more efficient and effective program management. The 0604802A EP4 OWL funding line continues the development work of 7.62mm, 5.56mm, and .50 Caliber OWL cartridges into Engineering and Manufacturing Development (EMD).

D. Acquisition Strategy
The OWL concept will be developed through Government and Industry prototyping efforts. An annual Technology Readiness Assessment (TRA) was conducted in FY 2015 and will be conducted in FY 2016 and FY 2017 to measure the progress of the designs. In FY 2017, there will be a downselect between the industry and Government concepts in order to proceed with Engineering and Manufacturing Development (EMD). The Government will demonstrate TRL 6 for 7.62mm in FY 2017 to prepare for Milestone B. The 5.56mm and .50 Caliber cartridges will follow the 7.62mm schedule with Engineering and Manufacturing Development (EMD) starting at the end of FY 2020. These new tracer cartridges will replace legacy tracers in each of the various small caliber configurations.

E. Performance Metrics
N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EB8 / OWL for Small Caliber Ammunition
--	--	--

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 Manager Maneuver Ammunition Systems (PM MAS) - Labor & Travel	MIPR	Picatinny Arsenal : New Jersey	0.000	0.200		0.200		0.150		-		0.150	Continuing	Continuing	Continuing
Physical Optics Corporation	C/FFP	Torrance : California	0.000	0.500		0.500		-		-		-	0	1.000	0
Battelle	C/FFP	Columbus : Ohio	0.000	0.500		0.500		-		-		-	0	1.000	0
Subtotal			0.000	1.200		1.200		0.150		-		0.150	-	-	-

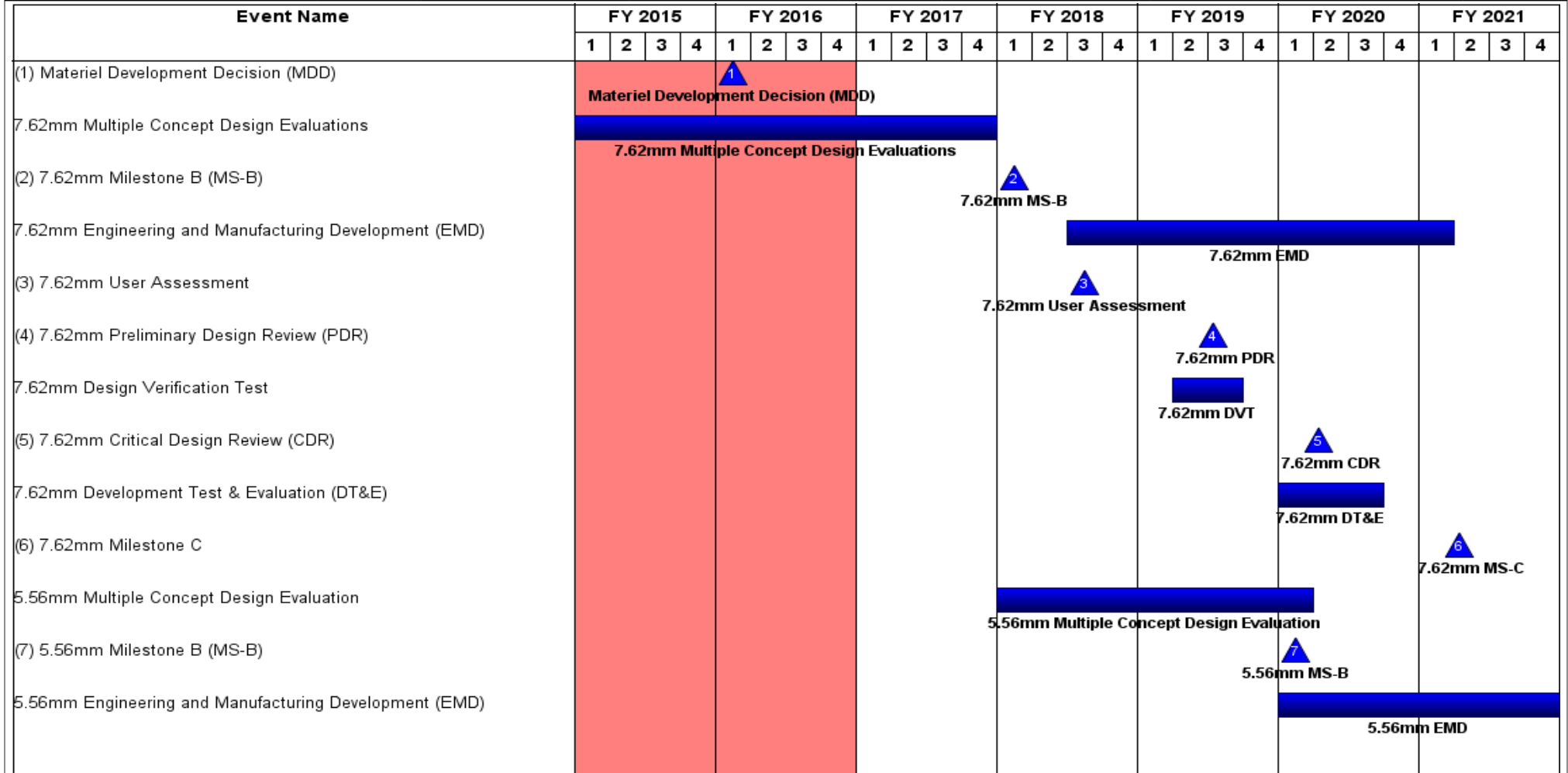
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Armament Research Development and Engineering Center (ARDEC)	MIPR	Picatinny Arsenal : New Jersey	0.000	0.791		0.900		1.391		-		1.391	Continuing	Continuing	Continuing
Subtotal			0.000	0.791		0.900		1.391		-		1.391	-	-	-

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 Research Lab (ARL)	MIPR	Aberdeen : Maryland	0.000	0.200		0.200		0.200		-		0.200	Continuing	Continuing	Continuing
Army Corps of Engineers	MIPR	Fort Belvoir : Virginia	0.000	0.200		0.200		0.275		-		0.275	Continuing	Continuing	Continuing
Night Vision Labs (NVL)	MIPR	Fort Belvoir : Virginia	0.000	-		-		0.050		-		0.050	Continuing	Continuing	Continuing
Army Test Center (ATC)	MIPR	Aberdeen Proving Grounds : Maryland	0.000	-		-		0.100		-		0.100	Continuing	Continuing	Continuing
Subtotal			0.000	0.400		0.400		0.625		-		0.625	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EB8 / OWL for Small Caliber Ammunition
--	--	--



UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EB8 / OWL for Small Caliber Ammunition
--	--	--

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				
5.56mm Design Verification Test																	5.56mm DVT															
(1) 5.56mm User Assessment																													▲ 1 5.56mm Caliber User Assessment			
(2) 5.56mm Preliminary Design Review (PDR)																													▲ 2 5.56mm PDR			
(3) 5.56mm Critical Design Review (CDR)																													▲ 3 5.56mm CDR			
(4) 5.56mm Development Test & Evaluation (DT&E)																	▲ 4 5.56mm DT&E															
.50 Caliber Multiple Concept Design Evaluation																	.50 Caliber Multiple Concept Design Evaluation															
(5) .50 Caliber Milestone B (MS-B)																													▲ 5 .50 Caliber MS-B			
.50 Caliber Engineering and Manufacturing Development (EMD)																	.50 Caliber EMD															
.50 Caliber Design Verification Test																													▲ 6 .50 Caliber DVT			
(6) .50 Caliber Preliminary Design Review (PDR)													▲ 7 .50 Caliber PDR																			
(7) .50 Caliber User Assessment													▲ 8 .50 Caliber User Assessment																			
(8) .50 Caliber Critical Design Review (CDR)													▲ 9 .50 Caliber CDR																			
.50 Caliber Development Test & Evaluation (DT&E)																	▲ 10 .50 Caliber DT&E															

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EB8 / <i>OWL for Small Caliber Ammunition</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Development Decision (MDD)	1	2016	1	2016
7.62mm Multiple Concept Design Evaluations	1	2015	4	2017
7.62mm Milestone B (MS-B)	1	2018	1	2018
7.62mm Engineering and Manufacturing Development (EMD)	3	2018	1	2021
7.62mm User Assessment	3	2018	3	2018
7.62mm Preliminary Design Review (PDR)	3	2019	3	2019
7.62mm Design Verification Test	2	2019	3	2019
7.62mm Critical Design Review (CDR)	2	2020	2	2020
7.62mm Development Test & Evaluation (DT&E)	1	2020	3	2020
7.62mm Milestone C	2	2021	2	2021
5.56mm Multiple Concept Design Evaluation	1	2018	1	2020
5.56mm Milestone B (MS-B)	1	2020	1	2020
5.56mm Engineering and Manufacturing Development (EMD)	1	2020	4	2021
5.56mm Design Verification Test	2	2020	3	2020
5.56mm User Assessment	3	2020	3	2020
5.56mm Preliminary Design Review (PDR)	4	2020	4	2020
5.56mm Critical Design Review (CDR)	3	2021	3	2021
5.56mm Development Test & Evaluation (DT&E)	4	2021	4	2021
.50 Caliber Multiple Concept Design Evaluation	1	2019	4	2019
.50 Caliber Milestone B (MS-B)	1	2020	1	2020
.50 Caliber Engineering and Manufacturing Development (EMD)	1	2020	4	2022
.50 Caliber Design Verification Test	2	2020	3	2020

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EB8 / <i>OWL for Small Caliber Ammunition</i>
--	---	---

Events	Start		End	
	Quarter	Year	Quarter	Year
.50 Caliber Preliminary Design Review (PDR)	4	2020	4	2020
.50 Caliber User Assessment	3	2020	3	2020
.50 Caliber Critical Design Review (CDR)	3	2021	3	2021
.50 Caliber Development Test & Evaluation (DT&E)	4	2021	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition				Project (Number/Name) EB9 / Tunable Pyrotechnic Aircraft Countermeasure Flares			
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
EB9: Tunable Pyrotechnic Aircraft Countermeasure Flares	-	0.850	3.000	2.368	-	2.368	0.000	0.000	0.000	0.000	0.000	6.218
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project is essential to support the advanced development activities and technology demonstrations of the Aviation Airborne Expendable Countermeasure (AAECM) components and prototype munition decoys necessary to address emerging threat deficiencies in Army aircraft protection and the safety of its aircrews against advanced Man-Portable Air Defense Systems (MANPADS) and shoulder launched Surface-to-Air Missiles (SAM) systems. These efforts will evaluate integrated technologies and countermeasure prototype systems in realistic operating test environments to help expedite technology transition from the laboratory to operational use to demonstrate component and subsystem maturity prior to integration into major and complex Army aircraft platforms. These expendable countermeasures systems are an essential part of survivability equipment for Army aircraft. Army RDT&E efforts are coordinated with the PEO Aviation and its platform PMs with PM Aircraft Survivability Equipment (ASE) to address emerging JUONS from theatre.

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

	FY 2015	FY 2016	FY 2017
Title: Expendable Countermeasures to Guided Missile Threats	0.850	3.000	2.368
Description: This program will develop expendable countermeasure decoys which will protect Army aircraft from surface-to-air missiles.			
FY 2015 Accomplishments: Developed and prepared documentation for Materiel Development Decision (MDD) approval for the Cloud Countermeasure (CM) decoy. This decoy is designed to defeat specific threat types. Details of their operation is classified.			
FY 2016 Plans: Prepare documentation (scope of work, drawings) to support contract award for Technology Development (TD) phase. TD phase results will down select best candidates for Milestone B decision for Cloud countermeasure and radar guided threat countermeasure.			
FY 2017 Plans: Develop and prepare documentation for Materiel Development Decision (MDD) approval for the Radar Guided CM and Radar Frequency (RF) decoyed. This decoy is designed to defeat specific threat types. Details of their operation is classified. Conduct initial DT/OT testing on Cloud CM.			
Accomplishments/Planned Programs Subtotals	0.850	3.000	2.368

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EB9 / <i>Tunable Pyrotechnic Aircraft Countermeasure Flares</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
• 0604802A - Weapons and Munitions -: <i>EP7 - Tunable Pyrotechnic Aircraft Countermeasure Flares</i>	-	1.000	1.450	-	1.450	4.400	2.500	-	-	0.000	9.350

Remarks

D. Acquisition Strategy

The Acquisition strategy is for a family of countermeasure flares that will be developed in incremental phases as funding and requirements are approved. Initial countermeasure flare is the Cloud CM followed by new increments that will defeat threats outlined in the requirements documents developed by TRADOC. MDD approval is in 3QFY16

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 / 4				PE 0603639A / Tank and Medium Caliber Ammunition				EB9 / Tunable Pyrotechnic Aircraft Countermeasure Flares							
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	PM Close Combat Systems : Picatinny Arsenal	0.000	0.243		0.193		0.168	Jan 2017	-		0.168	0	0.604	0
Subtotal			0.000	0.243		0.193		0.168		-		0.168	0.000	0.604	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
Contract Award	TBD	ACC : Picatinny Arsenal	0.000	-		1.300		-		-		-	0	1.300	0
Subtotal			0.000	-		1.300		-		-		-	0.000	1.300	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	ARDEC : Picatinny Arsenal	0.000	0.607		0.817		0.800	Jan 2017	-		0.800	0	2.224	0
Subtotal			0.000	0.607		0.817		0.800		-		0.800	0.000	2.224	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
Test and Evaluation	MIPR	AED : Redstone Arsenal	0.000	-		0.690		1.400	Jan 2017	-		1.400	0	2.090	0
Subtotal			0.000	-		0.690		1.400		-		1.400	0.000	2.090	0.000

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016			
Appropriation/Budget Activity 2040 / 4			R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>				Project (Number/Name) EB9 / <i>Tunable Pyrotechnic Aircraft Countermeasure Flares</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	0.850	3.000		2.368	-	2.368	0.000	6.218	0.000	

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EB9 / Tunable Pyrotechnic Aircraft Countermeasure Flares
--	--	--

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
Material Development Documentation and Decision for Cloud CM	██████████				██████████																							
Contract preparation Cloud CM	██████████				██████████																							
(1) Contract Award	██████████				██████████																							
Cloud CM prototyping and developmental testing	██████████				██████████																							
(2) Milestone A Radar Guided threat CM	██████████				██████████																							
Contract Preparation for Radar Guided CM	██████████				██████████																							
(3) Contract Award Radar Guided CM	██████████				██████████																							
Radar Guided CM Prototyping and Developmental Testing	██████████				██████████																							
(4) Milestone B Cloud CM	██████████				██████████																							
(5) Milestone B Radar Guided Threat CM	██████████				██████████																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EB9 / <i>Tunable Pyrotechnic Aircraft Countermeasure Flares</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Materiel Development Documentation and Decision for Cloud CM	2	2015	2	2016
Contract preparation Cloud CM	2	2016	3	2016
Contract Award	3	2016	3	2016
Cloud CM prototyping and developmental testing	3	2016	3	2017
Milestone A Radar Guided threat CM	1	2018	1	2018
Contract Preparation for Radar Guided CM	1	2018	4	2018
Contract Award Radar Guided CM	4	2018	4	2018
Radar Guided CM Prototyping and Developmental Testing	1	2019	3	2020
Milestone B Cloud CM	4	2017	4	2017
Milestone B Radar Guided Threat CM	1	2021	1	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition				Project (Number/Name) EC2 / Adv Armor-Piercing (ADVAP) for Small Cal Ammo			
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
EC2: Adv Armor-Piercing (ADVAP) for Small Cal Ammo	-	5.280	7.700	0.000	-	0.000	3.800	6.900	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017 the 7.62mm ADVAP program will transition to 0604802A EP5, Advanced Armor-Piercing (ADVAP) for Small Cal Ammunition. The 0604802A EP5, Advanced Armor-Piercing (ADVAP) for Small Cal Ammunition, program is not a new start. Funds in the 0604802A EP5 ADVAP program in FY 2017 are a realignment of funds from program 0603639A EC2, Advanced Armor-Piercing (ADVAP) for Small Cal Ammunition, for more efficient and effective program management. The 0604802A EP5 ADVAP funding line continues the development work of both 7.62mm and 5.56mm ADVAP cartridges into Engineering and Manufacturing Development (EMD).

A. Mission Description and Budget Item Justification

The Advanced Armor-Piercing (ADVAP) program is a critical technology development in response to the 7.62mm and 5.56mm Family of Ammunition Capabilities Development Documents (CDD). The nomenclature for the 7.62mm ADVAP is now XM1158 and the companion trace is XM1159. The overall objective of the ADVAP program is to develop and Full Materiel Release (FMR) a 7.62mm XM1158 cartridge linked 4:1 with a trace cartridge (XM1159) followed by a 5.56mm cartridge variant that will provide overmatch capability to defeat advanced light armored threats within typical machine gun ranges. The 7.62mm XM1158 and XM1159 cartridge will be optimized for use in the M240 Machine Gun.

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

	FY 2015	FY 2016	FY 2017
Title: Technology Maturation & Risk Reduction (TMRR)	5.280	7.700	-
Description: Develop, demonstrate, and qualify an XM1158 Small Caliber Ammo 7.62mm and 5.56mm ADVAP cartridges in order to defeat threat targets and provide overmatch capability versus a broad spectrum of hard targets.			
FY 2015 Accomplishments: FY 2015 work included optimization of the 7.62mm XM1158 projectile design through advanced modeling, simulation, and test iterations, along with alternate material studies, manufacturing studies and propellant requirement investigation.			
FY 2016 Plans: FY 2016 work includes optimization of the 7.62mm XM1158 cartridge design through advanced modeling, simulation, and test iterations, along with alternate material studies, manufacturing studies and propellant requirement investigation in order to demonstrate Technology Readiness Level (TRL) 6. Funding is also supporting preparation for MS-B.			
Accomplishments/Planned Programs Subtotals	5.280	7.700	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EC2 / <i>Adv Armor-Piercing (ADVAP) for Small Cal Ammo</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 0604802A Project EP5: <i>Advanced Armor-Piercing (ADVAP) for Small Cal Ammunition</i>	-	-	10.270	-	10.270	11.309	7.820	8.428	5.826	0.000	43.653

Remarks

This funding line continues the development work of both 7.62mm and 5.56mm ADVAP cartridges into EMD.

D. Acquisition Strategy

The 7.62mm and 5.56mm ADVAP programs will use a Government developed design and manufacturing processes. Multiple component contracts will be awarded to purchase raw materials and equipment. In FY 2016, design optimization and prototype manufacturing will occur in order to demonstrate TRL 6 for XM1158. Milestone B (MS-B) will occur in 1st QTR FY 2017 leading to fabrication and testing of qualification hardware. The 5.56mm cartridge will follow in FY 2018 under a similar strategy as 7.62mm.

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 / 4				PE 0603639A / Tank and Medium Caliber Ammunition				EC2 I Adv Armor-Piercing (ADVAP) for Small Cal Ammo							
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	MIPR	Picatinny Arsenal : New Jersey	0.000	0.200		0.200		-		-		-	Continuing	Continuing	Continuing
DoD Ordnance Technology Consortium (DOTC)	C/FFP	TBD : TBD	0.000	0.750		1.500		-		-		-	Continuing	Continuing	Continuing
Facilitization - TBD	C/FFP	TBD : TBD	0.000	0.250		0.750		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.000	1.200		2.450		-		-		-	-	-	-
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	Picatinny Arsenal : New Jersey	0.000	1.680		1.944		-		-		-	Continuing	Continuing	Continuing
Army Research Lab (ARL)	MIPR	Aberdeen : Maryland	0.000	1.000		1.478		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.000	2.680		3.422		-		-		-	-	-	-
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
Army Research Lab (ARL)	MIPR	Aberdeen : Maryland	0.000	1.400		1.828		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.000	1.400		1.828		-		-		-	-	-	-
Project Cost Totals			0.000	5.280		7.700		-		-		-	-	-	-

UNCLASSIFIED

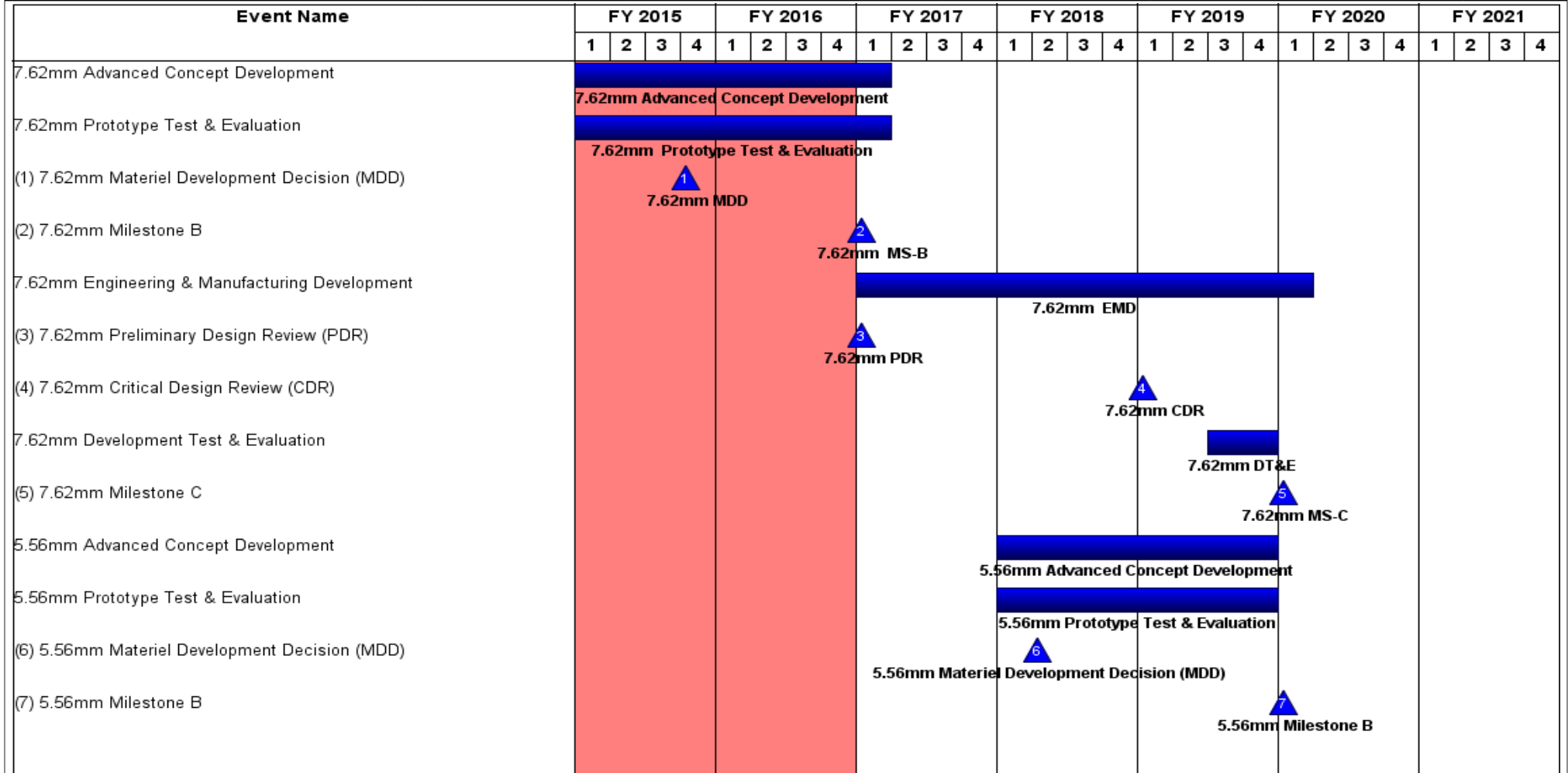
Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army							Date: February 2016			
Appropriation/Budget Activity 2040 / 4			R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>			Project (Number/Name) EC2 / <i>Adv Armor-Piercing (ADVAP) for Small Cal Ammo</i>				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EC2 / Adv Armor-Piercing (ADVAP) for Small Cal Ammo
--	--	---



UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EC2 / Adv Armor-Piercing (ADVAP) for Small Cal Ammo
--	--	---

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				
5.56mm Engineering & Manufacturing Development	5.56mm EMD																															
(1) 5.56mm Preliminary Design Review (PDR)																	▲ 5.56mm															
(2) 5.56mm Critical Design Review (CDR)																													▲ 5.56mm			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EC2 / <i>Adv Armor-Piercing (ADVAP) for Small Cal Ammo</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
7.62mm Advanced Concept Development	1	2015	1	2017
7.62mm Prototype Test & Evaluation	1	2015	1	2017
7.62mm Materiel Development Decision (MDD)	4	2015	4	2015
7.62mm Milestone B	1	2017	1	2017
7.62mm Engineering & Manufacturing Development	1	2017	1	2020
7.62mm Preliminary Design Review (PDR)	1	2017	1	2017
7.62mm Critical Design Review (CDR)	1	2019	1	2019
7.62mm Development Test & Evaluation	3	2019	4	2019
7.62mm Milestone C	1	2020	1	2020
5.56mm Advanced Concept Development	1	2018	4	2019
5.56mm Prototype Test & Evaluation	1	2018	4	2019
5.56mm Materiel Development Decision (MDD)	2	2018	2	2018
5.56mm Milestone B	1	2020	1	2020
5.56mm Engineering & Manufacturing Development	1	2020	4	2023
5.56mm Preliminary Design Review (PDR)	4	2019	4	2019
5.56mm Critical Design Review (CDR)	4	2021	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition				Project (Number/Name) EC3 / Ammunition Logistics Prototyping			
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
EC3: Ammunition Logistics Prototyping	-	1.702	3.571	2.017	-	2.017	2.258	2.825	2.478	1.826	0.000	16.677
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY15 Project EC3 is a new start.

A. Mission Description and Budget Item Justification

This project supports the future force by improving the distribution, management, reliability and survivability of ammunition through the advanced development, integration, and demonstration of logistics system enablers. These enablers will improve the efficiency and effectiveness of ammunition operations, to include retrograde, while reducing the logistics footprint on the battlefield. Technology areas addressed include handling, distribution, and management (strategic and tactical), prognostics, diagnostics, and asset visibility, explosives safety, and adaptive and environmentally friendly packaging and palletization. The efficient deployment and sustainment of reliable ammunition is vital to success on the battlefield. This project enhances the operational effectiveness of the ammunition logistics system to ensure the distribution of reliable ammunition to the warfighter.

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

	FY 2015	FY 2016	FY 2017
Title: Munitions Health and Inventory Monitoring Systems	1.702	1.390	0.722
Description: Performance and reliability of certain munitions can be degraded by the environmental exposure history they have experienced in their lifetime. This program will develop simple to complex environmental health and inventory monitoring systems to improve reliability and asset visibility and enable effective Condition Based Management for Ammunition.			
FY 2015 Accomplishments: Modified passive time/temperature exposure sensor design to include user required additional temperature range and completed engineering tests.			
FY 2016 Plans: Complete operational testing and final design of a passive time/temperature exposure sensor. Design prototype components of an ammunition packaging mounted environmental health monitoring system that will facilitate improved ammunition management.			
FY 2017 Plans: Fabricate environmental health monitoring system prototypes and conduct engineering testing. Conduct correlation testing on the passive time/temperature exposure sensor with additional ammunition items.			
Title: Munitions Containerization Systems	-	0.596	0.812

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EC3 / <i>Ammunition Logistics Prototyping</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: For each family of munitions containers, optimize prototype container systems for automation compatibility, combat unit load quantity, sustainability/recyclability, Insensitive Munitions/explosives safety, environmental protection, load reconfiguration, unitization, and standardized interfaces. This will improve ammunition distribution efficiency while minimizing environmental and operational impacts.</p> <p>FY 2016 Plans: Mature the design of an advanced lightweight plastic polymer cylindrical ammunition container.</p> <p>FY 2017 Plans: Complete fabrication and prototype verification testing of the lightweight plastic polymer cylindrical ammunition container.</p>				
<p>Title: Insensitive Munitions (IM) Integration</p> <p>Description: Optimize multiple IM technologies to improve munitions survivability and warfighter safety. Advanced IM Technologies will be developed in the areas of warhead, propulsion and propellants, explosives, packaging, and barriers. Efforts will increase the number of IM compliant ammunition items fielded in order to mitigate munitions reaction to fast cook-off, slow cook-off, fragment impact, sympathetic reaction, bullet impact, and shaped charge jet.</p> <p>FY 2016 Plans: Develop Insensitive Munitions (IM) booster explosives to replace booster materials in fuzes as well as supplemental and auxiliary charges. Develop less sensitive IM propellants for future mortar and tank munitions. Implement warhead venting technology for the 120mm high energy mortar round. Develop printable energetics for propellant charge designs.</p> <p>FY 2017 Plans: Transition booster energetics to large caliber artillery and mortar programs. Integrate particle impact mitigating sleeves warhead venting features into large caliber warheads for impact and thermal threat mitigation. Implement container seam venting technologies into mortar packaging containers. Demonstrate improved shock response in printed propellant charge designs.</p>		-	1.585	0.483
Accomplishments/Planned Programs Subtotals		1.702	3.571	2.017
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EC3 / <i>Ammunition Logistics Prototyping</i>

<u>E. Performance Metrics</u> N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EC3 / Ammunition Logistics Prototyping
--	--	--

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			
Contractor-RRAPDS/Low Cost Thermal Indicator	MIPR	TBD : TBD	0.000	1.449		-		-		-		-	0	1.449	0
Contract - RRAPDS	C/CPIF	TBD : TBD	0.000	-		1.400		0.550		-		0.550	0	1.950	0
Contract-Plastic Cylindrical Container	MIPR	TBD : TBD	0.000	-		0.220		0.300		-		0.300	0	0.520	0
Contract-Insensitive Munitions	MIPR	TBD : TBD	0.000	-		0.130		0.100		-		0.100	0	0.230	0
Subtotal			0.000	1.449		1.750		0.950		-		0.950	0.000	4.149	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			
ARDEC	MIPR	Picatiny Arsenal : NJ	0.000	0.167		1.721		0.917		-		0.917	0	2.805	0
Subtotal			0.000	0.167		1.721		0.917		-		0.917	0.000	2.805	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			
Yuma Proving Ground	MIPR	Yuma : AZ	0.000	0.086		0.100		-		-		-	0	0.186	0
Test and Eval	MIPR	TBD : TBD	0.000	-		-		0.150		-		0.150	0	0.150	0
Subtotal			0.000	0.086		0.100		0.150		-		0.150	0.000	0.336	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	1.702	3.571	2.017	-	2.017	0.000	7.290	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EC3 / Ammunition Logistics Prototyping
--	--	--

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
Advanced Concept Development-Munitions Health Monitoring-1																												
Advanced Concept Development-Munitions Health Monitoring-1A																												
Advanced Concept Development-Munitions Health Monitoring-2																												
Advanced Concept Development-Munitions Containerization-1																												
Advanced Concept Development-Munitions Containerization-1A																												
Advanced Concept Development-Insensitive Munitions																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EC3 / <i>Ammunition Logistics Prototyping</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Advanced Concept Development-Munitions Health Monitoring-1	2	2015	4	2020
Advanced Concept Development-Munitions Health Monitoring-1A	1	2019	4	2021
Advanced Concept Development-Munitions Health Monitoring-2	2	2015	4	2021
Advanced Concept Development-Munitions Containerization-1	3	2016	4	2021
Advanced Concept Development-Munitions Containerization-1A	3	2017	4	2021
Advanced Concept Development-Insensitive Munitions	1	2016	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>				Project (Number/Name) EL6 / <i>Individual Assault Munition (IAM)</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>EL6: Individual Assault Munition (IAM)</i>	-	0.000	0.000	0.000	-	0.000	1.896	8.469	10.980	0.000	0.000	21.345
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition			Project (Number/Name) EL7 / Reduced Range Small Caliber Training Ammunition				
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
EL7: Reduced Range Small Caliber Training Ammunition	-	0.000	0.000	2.166	-	2.166	9.000	13.500	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start program in FY 2017. The 0603639A EL7, Reduced Range Small Caliber Training Ammunition (RRTA). The RRTA technology applies to multiple calibers. As the technology matures it will be transitioned to Project 0604802A EP3 starting in FY 2018 for 7.62mm, and FY 2020 for .50 caliber ammunition.

A. Mission Description and Budget Item Justification

The Reduced Range Small Caliber Training Ammunition (RRTA) program is a critical technology development in response to the 7.62mm and .50 Caliber Capabilities Development Documents (CDD). The overall objective of the RRTA program is to develop and field 7.62mm RRTA cartridges that will provide a ballistic match to M80A1 and M62A1 cartridges to standard training ranges, while reducing the maximum range of the ammunition. This will allow soldiers to train with 7.62mm weapons on restricted ranges. The RRTA cartridge will be designed to be compatible with all Army 7.62mm weapons, but specifically optimized to work in the M240 Machine Gun. After the 7.62mm cartridge is matured. FY 2017 dollars support Technology Maturation and Risk Reduction in preparation for a TRL 6 demonstration and preparation for Milestone B.

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

	FY 2015	FY 2016	FY 2017
Title: Technology Maturation and Risk Reduction (TMRR)	-	-	2.166
Description: Develop, demonstrate, and quantify a Reduced Range Small Caliber Training Ammunition (RRTA) 7.62mm capability that will provide a reduced range training capability to the M240 gunner.			
FY 2017 Plans: Mature development and demonstrate (TRL6) 7.62mm Ball and Trace RRTA cartridges. Conduct Materiel Development Decision (MDD), Preliminary Design Review (PDR), and Milestone B (MS-B) preparations.			
Accomplishments/Planned Programs Subtotals	-	-	2.166

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 0604802A Project EP3: Reduced Range Small Caliber Training Ammunition	-	-	-	-	-	6.000	5.000	20.900	10.500	0.000	42.400

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EL7 / <i>Reduced Range Small Caliber Training Ammunition</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
The 0604802A EP3, Reduced Range Small Caliber Training Ammunition (RRTA), program will not be a new start. Funds in this program in FY 2018 are a realignment of funds from program 0603639A EL7, Reduced Range Small Caliber Training Ammunition, for more efficient, effective program management. The 0604802A EP3 RRTA funding line continues the development work of 7.62mm and .50 Caliber RRTA cartridges into Engineering and Manufacturing Development (EMD).

D. Acquisition Strategy

The government plans to award up to two contracts under the Defense Ordnance Technology Consortium (DOTC) for initial prototype evaluation in FY 2017. After Milestone B in FY 2018, the government intends to downselect to one contract to complete the development and transition into production. The .50 Caliber program will follow a similar strategies starting in FY 2018.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EL7 / Reduced Range Small Caliber Training Ammunition
--	--	---

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 Manager Maneuver Ammunition Systems (PM MAS) - Labor and Travel	Various	Picatinny Arsenal : New Jersey	0.000	-		-		0.066		-		0.066	Continuing	Continuing	Continuing
Contractor 1	TBD	TBD : TBD	0.000	-		-		0.650		-		0.650	Continuing	Continuing	Continuing
Contractor 2	TBD	TBD : TBD	0.000	-		-		0.650		-		0.650	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		1.366		-		1.366	-	-	-

Remarks

N/A

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			
Armament Research Development and Engineering Center (ARDEC)	MIPR	Picatinny Arsenal : New Jersey	0.000	-		-		0.450		-		0.450	Continuing	Continuing	Continuing
Army Research Lab (ARL)	MIPR	Aberdeen Proving Grounds : Maryland	0.000	-		-		0.100		-		0.100	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.550		-		0.550	-	-	-

Remarks

N/A

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			
Aberdeen Test Center (ATC)	MIPR	Aberdeen Proving Grounds : Maryland	0.000	-		-		0.250		-		0.250	Continuing	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EL7 / <i>Reduced Range Small Caliber Training Ammunition</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			0.000	-		-		0.250		-		0.250	-	-	-

Remarks
N/A

	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	2.166	-	2.166	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EL7 / Reduced Range Small Caliber Training Ammunition
--	--	---

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) 7.62mm Materiel Development Decision (MDD)	7.62mm Materiel Development Decision (MDD)								▲																			
7.62mm Prototype Contracts 1-2									■																			
7.62mm Prototype Test & Evaluation									■																			
(2) 7.62mm Milestone B (MS-B)																	▲											
7.62mm Engineering and Manufacturing Development (EMD)																	■											
7.62mm Developmental Test and Evaluation (DT&E)																	■											
(3) 7.62mm Preliminary Design Review (PDR) Government																					▲							
(4) 7.62mm Critical Design Review (CDR)																									▲			
(5) .50 Caliber Materiel Development Decision (MDD)													▲															
.50 Caliber Prototype Contracts 1-2													■															
(6) .50 Caliber Preliminary Design Review (PDR) Government																	▲											
(7) .50 Caliber Milestone B (MS-B)																					▲							
.50 Caliber Engineering and Manufacturing Development (EMD)																					■							

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EL7 / <i>Reduced Range Small Caliber Training Ammunition</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) .50 Caliber Preliminary Design Review (PDR)																																							
.50 Caliber Developmental Test and Evaluation (DT&E)																																							
(2) .50 Caliber Critical Design Review (CDR)																																							
																					▲ .50 PDR									■ .50 Caliber DT&E									▲ .50 CD

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EL7 / <i>Reduced Range Small Caliber Training Ammunition</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
7.62mm Materiel Development Decision (MDD)	1	2017	1	2017
7.62mm Prototype Contracts 1-2	2	2017	4	2017
7.62mm Prototype Test & Evaluation	3	2017	2	2018
7.62mm Milestone B (MS-B)	1	2019	1	2019
7.62mm Engineering and Manufacturing Development (EMD)	1	2019	4	2020
7.62mm Developmental Test and Evaluation (DT&E)	2	2019	4	2019
7.62mm Preliminary Design Review (PDR) Government	1	2020	1	2020
7.62mm Critical Design Review (CDR)	2	2021	2	2021
.50 Caliber Materiel Development Decision (MDD)	1	2018	1	2018
.50 Caliber Prototype Contracts 1-2	2	2018	1	2019
.50 Caliber Preliminary Design Review (PDR) Government	1	2019	1	2019
.50 Caliber Milestone B (MS-B)	4	2019	4	2019
.50 Caliber Engineering and Manufacturing Development (EMD)	1	2020	4	2020
.50 Caliber Preliminary Design Review (PDR)	4	2020	4	2020
.50 Caliber Developmental Test and Evaluation (DT&E)	4	2020	1	2021
.50 Caliber Critical Design Review (CDR)	4	2021	4	2021

Note

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition				Project (Number/Name) EL8 / LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER			
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
EL8: LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER	-	0.000	2.400	1.280	-	1.280	2.500	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Lightweight Small Caliber Ammunition will develop and qualify lightweight cartridge case for 7.62mm ammunition to replace current brass cartridge case. The initial focus will be on 7.62mm ammunition followed by .50 caliber variant in FY 2018. In FY 2017 the 7.62mm program will transition to 0604802A EP6, Lightweight Cartridge Case for Small Caliber Ammunition. The 0604802A EP6, Lightweight Cartridge Case for Small Caliber Ammunition, program is not a new start. Funds in the 0604802A EP6, Lightweight Cartridge Case for Small Caliber Ammunition, program in FY 2017 are a realignment of funds from program 0603639A EL8, Lightweight Cartridge Case for Small Caliber Ammunition, for more efficient and effective program management.

A. Mission Description and Budget Item Justification

The Lightweight Small Caliber Ammunition (LSCA) program is a critical technology development in response to the 7.62mm and .50 Caliber Capabilities Development Documents (CDD). The goal of the LSCA Program is to reduce the Soldier load through reduction in ammunition weight. The LSCA Program will develop and field 7.62mm LSCA cartridges that will provide the same capabilities as the M80A1 and M62A1 cartridges. The LSCA cartridge will be designed to be compatible with all Army 7.62mm weapon systems, but specifically optimized to work in the M240 Machine Gun. After the 7.62mm cartridge is matured a .50 Caliber variant will be developed. FY 2017 funding will support 7.62mm TRL 6 evaluation of the 7.62mm Phase II Defense Ordinance Technology Consortium (DOTC) efforts, solicitation release, preliminary design review, and milestone B preparation for the LSCA Program.

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

	FY 2015	FY 2016	FY 2017
Title: 7.62mm Technology Maturation & Risk Reduction (TMRR) for Lightweight Small Caliber Ammunition (LSCA)	-	2.400	1.280
Description: Develop, demonstrate, and qualify 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.			
FY 2016 Plans: Complete the Phase I Defense Ordinance Technology Consortium (DOTC) efforts and demonstrate TRL 6 evaluation on 7.62mm M80 (legacy) polymeric cartridges Phase I DOTC efforts. Initiate two Phase II DOTC efforts to determine whether lightweight polymer case can maintain performance and reliability of the current specify 7.62mm M80A1 and M62A1 cartridges. Conduct Materiel Development Decision (MDD) and generate and compile required documentation for Full and Open Competition (i.e.			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EL8 / <i>LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER</i>
--	---	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Market Survey, Acquisition Plan/Acquisition Strategy, Source Selection Plan, Statement of Work, Performance Specification, Independent Cost Estimate, etc).			
<i>FY 2017 Plans:</i> Complete Phase II DOTC efforts and demonstrate TRL 6 for M80A1 and M62A1 LSCA cartridge deliverables will undergo TRL 6 evaluation. Finalize documentation required for Full and Open competition by including the information obtained from the Phase II DOTC efforts. Conduct a technology readiness assessment, develop the request for proposal, and obtain MS B approval.			
Accomplishments/Planned Programs Subtotals	-	2.400	1.280

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>
• PE 0654802A Project EP6: <i>Lightweight Cartridge Case for Small Caliber Ammunition</i>	-	-	1.290	-	1.290	3.808	3.820	7.829	4.826	0.000	21.573

Remarks

D. Acquisition Strategy

During Technology Maturation and Risk Reduction (TMRR), award up to two contracts for initial prototype evaluation of the M80A1 and M62A1 LSCA in FY 2016 via Department of Defense (DOD) Ordnance Technology Consortium (DOTC) resulting in 7.62mm LSCA TRL 6 Demonstrations. During Engineering and Manufacturing Development (EMD), award a two-phased Full and Open Competitive contract upon Milestone B approval. The Government intends to award up to two contracts for Phase I and downselect to one contractor for Phase II to manufacture test hardware to support Production Qualification Testing planned for FY 2021. Milestone C is planned for FY 2022 and .50 caliber will follow a similar approach starting in FY 2018.

E. Performance Metrics

N/A

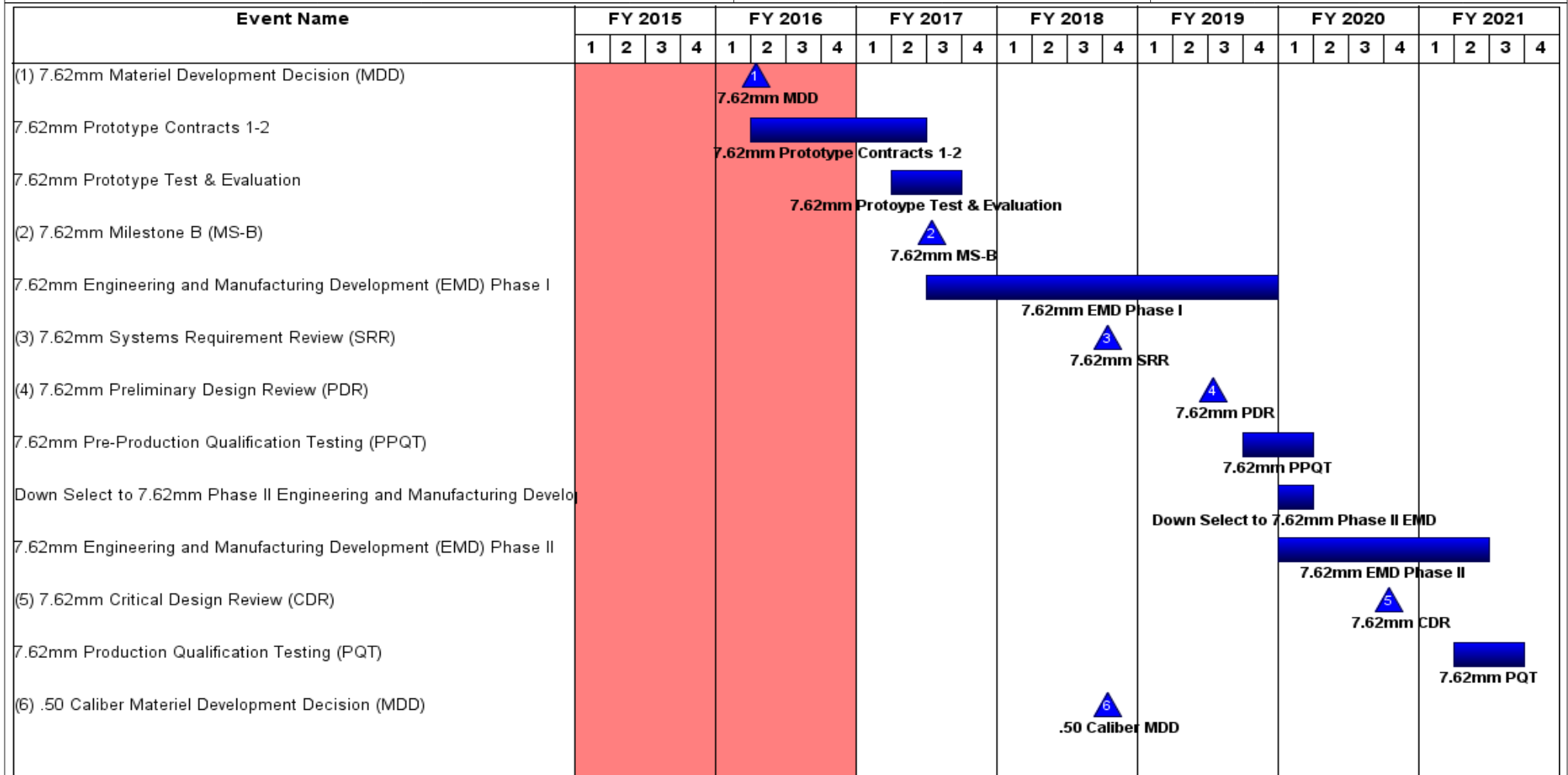
UNCLASSIFIED

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 / 4				PE 0603639A / Tank and Medium Caliber Ammunition				EL8 / LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER							
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 Manager Maneuver Ammunition Systems (PM MAS) - Labor and Travel	Various	Picatinny Arsenal : New Jersey	0.000	-		0.200		0.090		-		0.090	Continuing	Continuing	Continuing
Contract 1	TBD	TBD : TBD	0.000	-		0.750		0.075		-		0.075	Continuing	Continuing	Continuing
Contract 2	TBD	TBD : TBD	0.000	-		0.750		0.075		-		0.075	Continuing	Continuing	Continuing
Subtotal			0.000	-		1.700		0.240		-		0.240	-	-	-
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			
Armament Research Development and Engineering Center (ARDEC)	MIPR	Picatinny Arsenal : New Jersey	0.000	-		0.450		0.420		-		0.420	Continuing	Continuing	Continuing
Army Research Lab (ARL)	MIPR	Aberdeen Proving Grounds : Maryland	0.000	-		-		0.180		-		0.180	Continuing	Continuing	Continuing
Subtotal			0.000	-		0.450		0.600		-		0.600	-	-	-
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			
Aberdeen Test Center (ATC)	MIPR	Aberdeen Proving Grounds : Maryland	0.000	-		0.250		0.440		-		0.440	Continuing	Continuing	Continuing
Subtotal			0.000	-		0.250		0.440		-		0.440	-	-	-
Project Cost Totals			0.000	-		2.400		1.280		-		1.280	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EL8 / LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER
--	--	--



UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EL8 / <i>LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER</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
.50 Caliber Prototype Test & Evaluation																	.50 Caliber Prototype Test & Evaluation											
(1) .50 Caliber Milestone B (MS-B)																					▲ .50 Caliber MS-B							
.50 Caliber Engineering and Manufacturing Development (EMD)																									.50 Caliber EMD			
(2) .50 Caliber Preliminary Design Review (PDR)																					▲ .50 Caliber PDR							
(3) .50 Caliber Critical Design Review (CDR)																									▲ .50 Caliber CDR			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EL8 / <i>LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
7.62mm Materiel Development Decision (MDD)	2	2016	2	2016
7.62mm Prototype Contracts 1-2	2	2016	2	2017
7.62mm Prototype Test & Evaluation	2	2017	3	2017
7.62mm Milestone B (MS-B)	3	2017	3	2017
7.62mm Engineering and Manufacturing Development (EMD) Phase I	3	2017	4	2019
7.62mm Systems Requirement Review (SRR)	4	2018	4	2018
7.62mm Preliminary Design Review (PDR)	3	2019	3	2019
7.62mm Pre-Production Qualification Testing (PPQT)	4	2019	1	2020
Down Select to 7.62mm Phase II Engineering and Manufacturing Development (EMD)	1	2020	1	2020
7.62mm Engineering and Manufacturing Development (EMD) Phase II	1	2020	2	2021
7.62mm Critical Design Review (CDR)	4	2020	4	2020
7.62mm Production Qualification Testing (PQT)	2	2021	3	2021
.50 Caliber Materiel Development Decision (MDD)	4	2018	4	2018
.50 Caliber Prototype Test & Evaluation	1	2019	4	2019
.50 Caliber Milestone B (MS-B)	4	2019	4	2019
.50 Caliber Engineering and Manufacturing Development (EMD)	1	2020	4	2021
.50 Caliber Preliminary Design Review (PDR)	2	2020	2	2020
.50 Caliber Critical Design Review (CDR)	2	2021	2	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition			Project (Number/Name) EU1 / Enhanced Lethality Cannon Munitions				
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
EU1: <i>Enhanced Lethality Cannon Munitions</i>	-	0.000	0.000	9.866	-	9.866	10.000	0.000	0.000	0.000	0.000	19.866
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project EU1, Enhanced Lethality Cannon Munitions is a new start program in FY 2017.

A. Mission Description and Budget Item Justification

This program will identify, develop, prototype, and demonstrate new enhanced lethality technologies, components, and subsystems maturity for cannon munitions to enable fact-based analysis of enhanced lethality alternatives, quantify their effectiveness in mitigating evolving and derived capability gaps, reduce integration risk, and support transition into existing/new cannon munitions. This program will evaluate and analyze the effectiveness, efficiency, producibility, affordability, safety, and compatibility of these prototype potential materiel solutions in high fidelity simulations and representative realistic performance-related developmental tests. Up to four potential enhanced lethality cannon munition materiel solution alternatives from Government and Industry will be prototyped and evaluated. The best of these potential materiel alternatives will be further refined, tested, and demonstrated prior to the transition of mature enhanced lethality technologies into existing/new cannon munition Programs of Record (PoRs). This program addresses derived requirements for increased organic Brigade Combat Team (BCT) indirect fire stowed kills, potential lethality shortfalls of smaller payload extended range cannon munitions fired from existing fielded US weapon systems, and increased lethality demands being placed on unitary cannon artillery rounds due to the pending policy-driven loss of cluster munitions.

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

	FY 2015	FY 2016	FY 2017
Title: FY 2017 Plans	-	-	9.866
Description: Identify, develop, and prototype enhanced lethality technologies.			
FY 2017 Plans: Identify, develop, and prototype potential enhanced lethality technologies, material processes, components, and subsystems in a 155mm Cannon artillery munition form factor. Conduct initial lethality simulations and performance-related developmental tests for up to four potential prototype alternatives to determine potential effectiveness, efficiency, producibility, affordability, safety, and compatibility with existing US weapon systems and propellants.			
Accomplishments/Planned Programs Subtotals	-	-	9.866

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EU1 / <i>Enhanced Lethality Cannon Munitions</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 604802 / EU7: <i>Enhanced Lethality Cannon Munitions (RDTE 6.5)</i>	-	-	-	-	-	-	8.000	8.000	8.000	0.000	24.000

Remarks

D. Acquisition Strategy

As a pre-Milestone B advanced component development and competitive prototyping program, this effort will identify, develop, prototype, evaluate, analyze, and demonstrate up to four potential enhanced lethality alternative solutions from Government and Industry. This effort will quantify their respective maturity and effectiveness in mitigating evolving and derived capability gaps across a representative range of enemy target sets and operational scenarios. Appropriate mature enhanced lethality technologies will be selected for subsequent transition as an inherent part of new cannon munition programs of record development at Milestone B, via Engineering and Manufacturing Development into ongoing cannon munition development programs, via material changes into existing production cannon munitions, and/or via Recapitalization of the "on-the-shelf" cannon munition war reserve stockpile.

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 / 4				PE 0603639A / Tank and Medium Caliber Ammunition				EU1 / Enhanced Lethality Cannon Munitions							
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
Enhanced Lethality Development and Prototyping	MIPR	TBD/Various : Various	0.000	-		-		7.416	Jan 2017	-		7.416	7.500	14.916	14.916
Subtotal			0.000	-		-		7.416		-		7.416	7.500	14.916	14.916
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	MIPR	PM CAS : Picatinny, NJ	0.000	-		-		0.650	Jan 2017	-		0.650	0.650	1.300	1.300
Government Engineering Support Costs	MIPR	ARDEC : Picatinny, NJ	0.000	-		-		-		-		-	0.550	0.550	0.550
Subtotal			0.000	-		-		0.650		-		0.650	1.200	1.850	1.850
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
Performance-related Developmental tests	MIPR	Naval Surface Warfare Center : Dahlgren, VA	0.000	-		-		1.400	Feb 2017	-		1.400	0.200	1.600	1.600
Performance-related developmental tests	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	-		-		-		-		-	0.600	0.600	0.600
Lethality Simulations and Evaluation	MIPR	ARDEC : Picatinny, NJ	0.000	-		-		0.400	Jan 2017	-		0.400	0.500	0.900	0.900
Subtotal			0.000	-		-		1.800		-		1.800	1.300	3.100	3.100
Project Cost Totals			0.000	-		0.000		9.866		-		9.866	10.000	19.866	19.866

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EU1 / <i>Enhanced Lethality Cannon Munitions</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
--	-------------	---------	---------	--------------	-------------	---------------	------------------	------------	--------------------------

Remarks	
----------------	--

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EU1 / <i>Enhanced Lethality Cannon Munitions</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								
Identify, Develop, and Prototype Candidate for Technology Solution																																				
Conduct Initial Performance-Related Developmental Tests																																				
Evaluate, Analyze, and Downselect Candidate for Prototype Solution																																				
Refine Best Candidate for Prototype Solution																																				
Conduct Final Performance-Related Developmental Tests																																				

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EU1 / <i>Enhanced Lethality Cannon Munitions</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Identify, Develop, and Prototype Candidate for Technology Solution	1	2017	4	2018
Conduct Initial Performance-Related Developmental Tests	2	2017	4	2017
Evaluate, Analyze, and Downselect Candidate for Prototype Solution	4	2017	1	2018
Refine Best Candidate for Prototype Solution	2	2018	3	2018
Conduct Final Performance-Related Developmental Tests	3	2018	4	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition				Project (Number/Name) EU2 / Improved Multi-Option Fuze (iMOFA/iMOFM)			
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
EU2: Improved Multi-Option Fuze (iMOFA/iMOFM)	-	0.000	0.000	7.892	-	7.892	0.000	0.000	0.000	0.000	0.000	7.892
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project EU2, Improved Multi-Option Fuze is a new start program in FY 2017

A. Mission Description and Budget Item Justification

This program will identify, develop, prototype, and demonstrate new improved multi-option fuze technologies, components, and subsystems based on Next Generation Proximity Sensor (NGPS) capabilities with built-in exportability attributes previously matured via OSD-sponsored techbase efforts under the Joint Fuze Technology Program and Defense Exportability Features (DEF) Congressional Pilot Program. This program will evaluate and analyze the effectiveness, efficiency, producibility, affordability, safety, and compatibility of these prototype potential materiel solutions in representative realistic performance-related developmental tests. Up to four potential improved multi-option fuze solution alternatives from Government and/or Industry will be prototyped and evaluated leveraging NGPS with built-in DEF technology. This program will enable fact-based analysis of new height of burst/proximity fuzing alternatives that are resistant to enemy countermeasures and reverse engineering threats, quantify their effectiveness, reduce integration risk, and support transition into existing/new artillery/mortar fuzes and munitions.

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

	FY 2015	FY 2016	FY 2017
Title: FY 2017 Plans	-	-	7.892
Description: Identify, develop, prototype, and assess improved multi-option fuze technologies.			
FY 2017 Plans: Identify, develop, and prototype potential improved multi-option fuze technologies, components, and subsystems using NGPS with built-in DEF. Conduct performance-related developmental tests for up to four potential prototype alternatives to quantify effectiveness, reduce risk, and support transition into improved Multi-Option Fuze Artillery (iMOFA) and improved Multi-Option Fuze Mortar (iMOFM) applications.			
Accomplishments/Planned Programs Subtotals	-	-	7.892

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 604802/EU8: Improved Multi-Option Fuze (RDTE 6.5)	-	-	-	-	-	8.000	8.000	10.000	-	0.000	26.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EU2 / <i>Improved Multi-Option Fuze (iMOFA/iMOFM)</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

As an advanced component development and competitive prototyping program, this effort will identify, develop, prototype, evaluate, analyze, and demonstrate up to four potential improved Multi-Option Fuze solutions from Government and Industry. This effort will quantify their respective maturity and effectiveness in providing conventional Cannon and Mortar munitions a height of burst/proximity fuzing capability that is resistant to enemy countermeasures and reverse engineering threats. Appropriate mature potential solutions will be selected for subsequent transition as an inherent part of new improved Multi-Option Fuze programs of record. Subsequent respective Engineering and Manufacturing Development efforts will be Type Classified Standard with supporting detailed government-owned Technical Data Packages (TDPs) to enable "build to print" by Industry.

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 / 4				PE 0603639A / Tank and Medium Caliber Ammunition				EU2 / Improved Multi-Option Fuze (iMOFA/iMOFM)							
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
Improved Multi-Option Fuze Development and Prototyping	MIPR	TBD : Various	0.000	-		-		5.892	Jan 2017	-		5.892	0	5.892	5.892
Subtotal			0.000	-		-		5.892		-		5.892	0.000	5.892	5.892
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	MIPR	PM CAS : Picatinny, NJ	0.000	-		-		0.500	Jan 2017	-		0.500	0	0.500	0.500
Subtotal			0.000	-		-		0.500		-		0.500	0.000	0.500	0.500
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
Improved Multi-Option Fuze Evaluation	MIPR	ARDEC : Picatinny, NJ	0.000	-		-		0.500	Jan 2017	-		0.500	0	0.500	0.500
Performance-related Developmental Test	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	-		-		0.500	Apr 2017	-		0.500	0	0.500	0.500
Performance-related Developmental Test	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	0.000	-		-		0.500	Apr 2017	-		0.500	0	0.500	0.500
Subtotal			0.000	-		-		1.500		-		1.500	0.000	1.500	1.500
Project Cost Totals			0.000	-		0.000		7.892		-		7.892	0.000	7.892	7.892
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) EU2 / Improved Multi-Option Fuze (iMOFA/iMOFM)
--	--	--

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
Identify, Develop, and Prototype Candidate for Technology Solution																												
Conduct Performance-Related Developmental Tests																												
Evaluate and Analyze Prototype Solutions and Transition Technology																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EU2 / <i>Improved Multi-Option Fuze (iMOFA/iMOFM)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Identify, Develop, and Prototype Candidate for Technology Solution	1	2017	3	2017
Conduct Performance-Related Developmental Tests	2	2017	4	2017
Evaluate and Analyze Prototype Solutions and Transition Technology	4	2017	1	2018

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) EU3 / <i>.50 Caliber All-Purpose Tactical Cartridge (APTC)</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>EU3: .50 Caliber All-Purpose Tactical Cartridge (APTC)</i>	-	0.000	0.000	0.000	-	0.000	0.000	0.000	4.600	8.060	0.000	12.660
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition				Project (Number/Name) FA5 / Assured Precision Weapons and Munitions			
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
FA5: Assured Precision Weapons and Munitions	-	0.000	0.000	10.171	-	10.171	12.809	14.820	11.828	7.825	0.000	57.453
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The objective of this advanced component development and prototyping effort is to identify, evaluate, mature, test, and demonstrate various assured precision prototype technologies in weapons and munitions systems to prove component and subsystem maturity in a system-of-systems environment and to reduce subsequent Program of Record (PoR) integration risk. Assured Precision Weapons and Munitions are an integral part of US military strategy and continue to enable combat overmatch and dominance across the Land Component battlespace. Unhindered access to trusted Positioning, Navigation, and Timing (PNT) information under conditions where existing space based PNT (i.e. P(Y)-Code Global Positioning System (GPS)) may be limited or denied has created the need to develop, prototype, and evaluate new/emerging Assured PNT capabilities (including M-Code GPS and Pseudolites) into both PGMs and Weapons operating in a complex system-of-systems environment. This imperative is reinforced by Public Law 111-383 Section 913 which mandates the use of Air Force-developed M-Code GPS capabilities in all systems fielded FY 2018 and beyond unless a waiver is obtained from the Secretary of Defense. As such, both precision weapon and munition PoRs must coordinate with the development and technology delivery activities of the Air Force's Military GPS User Equipment (MGUE) program and the Army's Assured PNT program to protect and insure critical precision-based Joint warfighting capabilities as well as maximizing effectiveness and efficiency of US taxpayer investments across multiple Lethality portfolios.

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

	FY 2015	FY 2016	FY 2017
Title: Assured Precision Weapons and Munitions Integrated Product Support	-	-	1.614
Description: Provide assured precision weapons and munitions technical subject matter expertise.			
FY 2017 Plans: The subject matter experts will coordinate with and support the development and technology delivery activities of the Air Force's Military GPS User Equipment (MGUE) program and the Army's Assured PNT program including participation in design reviews, evaluation and formal feedback on systems requirements and technology performance, component and subsystem architecture input essential for precision weapons and munitions operating in a system-of-systems environment, and configuration management of the evolving Joint Common GPS Specification and Interface Control Document for Precision Guided Munitions.			
Title: Accelerate and Demonstrate M-Code GPS for Precision Guidance Kit	-	-	8.557
Description: Demonstrate, and evaluate the impact of prototype M-Code GPS MGUE Increment 1 technology on Precision Guidance Kit (PGK) and associated fuze setter, which will also benefit other future Indirect Fire munitions.			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) FA5 / <i>Assured Precision Weapons and Munitions</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Identify corresponding risks and modify associated component/sub-system requirements that reflect demanding gun-hardened, hot-start, high-spin post-launch munition environments to accelerate the subsequent adoption and integration of MGUE technology into PGK. Identify risks and develop prototypes M-Code capable setter system that is backward compatible with legacy systems.			
Accomplishments/Planned Programs Subtotals	-	-	10.171

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

N/A

Remarks

D. Acquisition Strategy

The Planned Acquisition Strategy for the Assured Precision Weapons and Munitions program is to utilize the Defense Ordnance Technology Consortium (DOTC) Section 845 Other Transaction Authority (OTA) contract mechanism to obtain prototypes to demonstrate and evaluate the maturity of the M-Code GPS on Precision Cannon Munitions.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) FA5 / Assured Precision Weapons and Munitions
--	--	---

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			
M-Code Technology Maturation for PGK	C/TBD	TBD : TBD	0.000	-		-		4.000	Jan 2017	-		4.000	0	4.000	4.000
M-Code Technology Maturation & Development for Fuze Setter	MIPR	ARDEC : Picatinny, NJ	0.000	-		-		4.177	Jan 2017	-		4.177	0	4.177	4.177
Subtotal			0.000	-		-		8.177		-		8.177	0.000	8.177	8.177

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	MIPR	PEO Ammo : Picatinny, NJ	0.000	-		-		0.508	Nov 2016	-		0.508	0	0.508	0.508
Assured Precision Weapons and Munitions IPT Support	MIPR	Various : Various	0.000	-		-		1.106	Dec 2016	-		1.106	0	1.106	1.106
Assured Technologies Engineering Support	MIPR	ARDEC : Picatinny, NJ	0.000	-		-		0.380	Jan 2017	-		0.380	0	0.380	0.380
Subtotal			0.000	-		-		1.994		-		1.994	0.000	1.994	1.994

	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	10.171	-	10.171	0.000	10.171

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Tank and Medium Caliber Ammunition	Project (Number/Name) FA5 / Assured Precision Weapons and Munitions
--	--	---

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
Assured Precision Weapons and Munitions IPT Support																												
Accelerate/Demo M-Code GPS for Precision Guidance Kit																												
Pseudolite related PGM Integration Risk Mitigation																												
Assured PNT Weapon & Munition adv development, prototyping, eva																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Tank and Medium Caliber Ammunition</i>	Project (Number/Name) FA5 / <i>Assured Precision Weapons and Munitions</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Assured Precision Weapons and Munitions IPT Support	1	2017	4	2021
Accelerate/Demo M-Code GPS for Precision Guidance Kit	1	2017	3	2018
Pseudolite related PGM Integration Risk Mitigation	1	2018	4	2021
Assured PNT Weapon & Munition adv development, prototyping, eval	1	2018	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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</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	-	8.633	4.301	10.506	-	10.506	12.840	10.651	10.847	10.459	Continuing	Continuing
610: <i>Food Adv Development</i>	-	3.348	0.021	5.299	-	5.299	6.579	4.830	4.508	4.631	Continuing	Continuing
C08: <i>Rapid Equipping Force</i>	-	5.285	4.000	3.259	-	3.259	5.809	5.821	5.830	5.828	Continuing	Continuing
EL1: <i>Army Field Feeding Programs</i>	-	0.000	0.280	1.948	-	1.948	0.452	0.000	0.509	0.000	0.000	3.189

A. Mission Description and Budget Item Justification

This program element supports component development and prototyping for organizational equipment, improved individual clothing and equipment that enhance Soldier battlefield effectiveness, survivability, and sustainment. This program element also supports the component development and prototyping of joint service food and combat feeding equipment designed to reduce logistics burden.

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	8.997	7.758	13.528	-	13.528
Current President's Budget	8.633	4.301	10.506	-	10.506
Total Adjustments	-0.364	-3.457	-3.022	-	-3.022
• Congressional General Reductions	-	-3.457			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.364	-			
• Adjustments to Budget Years	-	-	-3.022	-	-3.022

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>				Project (Number/Name) 610 / <i>Food Adv 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
610: <i>Food Adv Development</i>	-	3.348	0.021	5.299	-	5.299	6.579	4.830	4.508	4.631	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for the advanced component development and prototyping of joint service food and combat feeding equipment designed to reduce the logistics burden and Operation and Support (O&S) costs of subsistence support to service personnel. Project supports development of rations and rapidly deployable field food service equipment. Project conducts demonstration and validation of improved subsistence and subsistence support items used to enhance soldier effectiveness and quality of life in all four Services, as part of an integrated Department of Defense (DoD) Food Research, Development, Test, Evaluation and Engineering Program. The Program is reviewed and validated twice annually by the DoD Combat Feeding Research and Engineering Board (CFREB) as part of the Joint Service Food Program. This project develops critical enablers that support the Joint Future Force Capabilities and the Joint expeditionary mindset by maintaining readiness through fielding and integrating new equipment. This equipment enhances the field soldier's well-being and provides the soldier with usable equipment, in addition to reducing sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands on lift, combat zone footprint, and costs for logistical support.

This PE/Project supports Field Feeding Programs for all the services.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Fielded Individual Ration Improvement Project (FIRIP)	0.600	-	0.895	-	0.895
Description: Continuous product improvement project for the Meal, Ready to Eat (MRE)					
FY 2015 Accomplishments: Continued to conduct in-house product development of food components and identified suitable commercial off-the-shelf (COTS) / non-developmental item (NDI) candidate items for fielded individual operational rations (e.g. MRE 2018 date of pack) to enhance Warfighter acceptability, increase consumption and improve nutritional intake; conducted pilot scale in-house production to support engineering design, technology insertion, and commercial producibility; developed, integrated and validated state-of-the art science and technology, food processing and primary/secondary packaging innovations into individual ration platforms to increase operational effectiveness; optimized food component processing and packaging to introduce targeted items/capabilities into individual ration platforms for enhanced acceptability, nutrition and performance; transition to 6.5 for testing.					
FY 2017 Base Plans: Will continue to conduct in-house product development of food components and identify suitable COTS/NDI candidate items for fielded individual operational rations (e.g. MRE 2020 date of pack) to enhance Warfighter					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army				Date: February 2016	
Appropriation/Budget Activity 2040 / 4		R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>		Project (Number/Name) 610 / <i>Food Adv Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)					
acceptability, increase consumption and improve nutritional intake. Will conduct pilot scale in-house production to support engineering design, technology insertion, and commercial producibility. Will develop, integrate and validate state-of-the art science and technology, food processing and primary/secondary packaging innovations into individual ration platforms to increase operational effectiveness. Will optimize food component processing and packaging to introduce targeted items/capabilities into individual ration platforms for enhanced acceptability, nutrition and performance. Will transition to 6.5 for operational testing.					
Title: Assault/Special Purpose Ration Improvement Project (ASPIP)					
Description: Continuous product improvement of special purpose rations by the insertion of new technologies in nutrition, processing and packaging.					
FY 2015 Accomplishments: Based on user feedback, focus groups, emerging products and technologies and user requirements, identified COTS/NDI components for the Meal, Cold Weather/Long Range Patrol (MCW/LRP), First Strike Ration (FSR) and Modular Operational Ration Enhancement (MORE) to enhance acceptability, variety, consumption and nutritional value of scenario-specific combat rations. Conducted accelerated and long term storage studies on candidate components. Worked with industry partners to facilitate producibility and technology transition.					
FY 2017 Base Plans: Will continue to identify COTS/NDI components for the MCW/LRP, FSR and/or MORE to enhance acceptability, variety, consumption and nutritional value of scenario-specific combat rations based on user feedback, focus groups, emerging products and technologies and user requirements. Will conduct accelerated and long term storage studies on candidate components. Will transition to 6.5 for operational testing.					
Title: Fielded Group Ration Improvement Project (FGRIP)					
Description: Continuous product improvement project to continuously update/improve group ration components, menus, and packaging by integrating state-of-the-art military/commercial packaging and technology base transitions. The family of Unitized Group Rations (UGRs) includes the Unitized Group Ration - Heat & Serve (UGR-H&S), Unitized Group Ration - Express (UGR-E), Unitized Group Ration - A (UGR-A), and Unitized Group Ration - M (UGR-M).					
FY 2015 Accomplishments: Continued efforts to update/improve components, menus and packaging to increase consumption and overall nutritional intake of the family of UGRs for UGR-A (fiscal year (FY) 17 menus), M, E and H&S (2016 date of					
0.130	-	0.519	-	0.519	
0.208	-	0.831	-	0.831	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv Development</i>

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>pack). Identified COTS/NDIs and developed new food components in-house, conducted in-house testing, down-selected items and developed test menus for Warfighter evaluation. Developed, integrated and validated state-of-the-art science and technology, food processing and primary/secondary packaging innovations into group ration platforms to increase operational effectiveness, functionality and improve logistics. Transitioned to 6.5 for operational testing.</p> <p>FY 2017 Base Plans: Will continue efforts to update/improve components, menus and packaging to increase consumption and overall nutritional intake of the family of Unitized Group Rations for UGR-A (FY19 menus), M, E and H&S (2018 date of pack). Will identify COTS/NDIs and/or develop new food components in-house, conduct in-house testing, down-select items and develop test menus for Warfighter evaluation. Will develop, integrate and validate state-of-the-art science and technology, food processing and primary/secondary packaging innovations into group ration platforms to increase operational effectiveness, functionality and improve logistics. Will transition to 6.5 for operational testing.</p>					
<p>Title: US Navy Standard Core Menu (NSCM) Continuous Product Improvement Project</p> <p>Description: Provide recommendations for upgrading/improving Navy Standard Core Menu components by introducing new preparation techniques to enhance menu acceptance and effectiveness while reducing labor requirements.</p> <p>FY 2015 Accomplishments: Continued to identify and validate COTS/NDI candidate enhancement to the NSCM. Provided recommendations for improving menu components by introducing new commercial items and state-of-the-art food preparation and feeding techniques to enhance menu acceptance and reduce labor requirements. Transitioned product summaries and results/recommendations to Naval Supply Systems Command (NAVSUP) for adoption and procurement.</p> <p>FY 2017 Base Plans: Will continue to identify and validate COTS/NDI candidate enhancements to the NSCM. Will test and evaluate new products and techniques using Navy Galley equipment. Will provide recommendations for improving menu components by introducing new commercial items and state-of-the-art food preparation and feeding techniques to enhance menu acceptance and reduce labor requirements. Will transition product summaries and results/recommendation to NAVSUP for adoption and procurement.</p>	0.160	-	0.344	-	0.344
<p>Title: Barrier Coating for Optimized Package Performance</p>	0.080	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Provides low-cost, non-foil, high performance packaging materials for incorporation into existing and future combat ration packaging systems, such as the UGR-H&S and MRE.</p> <p>FY 2015 Accomplishments: Delivered prototype entrée and non-retort MRE pouches along with performance documentation/specifications and cost analysis. Presented coating technologies to milestone decision authority, Joint Service Operational Ration Forum (JSORF) and the ration supply community for use as an alternative non-foil ration packaging material.</p>					
<p>Title: Containerized Ice Making System (CIMS)</p> <p>Description: Develop a containerized ice making system to support a 600 person base camp for cooling drinking water in extreme arid conditions and support other ice requirements for those on the base camp and for soldiers going out on missions/patrols.</p> <p>FY 2015 Accomplishments: Conducted evaluation of integrated technologies in a realistic operating environment to include: modified commercial items, developmental prototypes and commercial industry technology demonstrators. Mitigated identified weaknesses in transportable ice bagging technologies with development of ruggedized, reliable system.</p>	0.518	-	-	-	-
<p>Title: Transition of Advanced Appliances for Field Kitchens</p> <p>Description: Provide the Warfighter with Jet Propellant 8 (JP-8) fueled appliances that save fuel, are simple to use, provide a safe kitchen environment, and can easily be moved into buildings when necessary. Warfighters benefit from a safer, healthier, more comfortable kitchen environment, and equipment that facilitates preparation of quality UGR-A ration meals. Existing appliances are only about 15-40% efficient; new burner technologies have demonstrated 75% efficiency, typical of stationary gas-fired equipment.</p> <p>FY 2015 Accomplishments: Performed comprehensive evaluation of appliances integrated with newly developed heating technologies. Verified performance and compatibility with multiple platforms and in dismantled operations. Completed evaluation of appliances mounted on dedicated kitchen platform to prove out component and subsystem maturity.</p>	0.360	-	-	-	-
<p>Title: Navy Food Service Analysis Tool (NFSAT)</p>	0.253	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Develop a software analysis tool for Navy Foodservice that performs the following tasks: Automatically calculate all storage space factors and requirements for naval vessels based off the specific NSCM, crew size, Naval Ship's Technical Manual 096, Weights and Stability, Naval Vessel Requirements Food Service Facility Design Manual, Build Specifications 671, 672, and Type Commander established endurance levels.</p> <p>FY 2015 Accomplishments: Awarded NFSAT software contract; demonstrated software to Navy Automatic Identification Technology (AIT) Program Management Office; and received approval for Navy use of NFSAT software.</p>					
<p>Title: Block Upgrades and Operational Improvements for Expeditionary Field Feeding Equipment.</p> <p>Description: Eliminate the sole sourcing of tray ration heater component parts. Reduce overall water consumption through the use of non-immersive cooking technologies and more efficient ware-washing equipment. Increase Kitchen flexibility through appliance upgrades. To reduce the overall fuel consumption of Expeditionary Field Feeding Equipment through enhanced combustion technologies.</p> <p>FY 2015 Accomplishments: Enhanced the ability of the United States Marine Corps (USMC) to prepare all operational rations during expeditionary operations. Identified, procured, and evaluated candidate burners for tray ration reset and developed kit and procedures for install in Tray Ration Heater (TRH).</p> <p>FY 2017 Base Plans: Will coordinate and conduct demonstration & validation (DV) of prototypes to support modification/replacement of USMC field feeding equipment. Will transition to 6.5.</p>	0.340	-	0.351	-	0.351
<p>Title: Joint Inter-service Field Feeding Burner</p> <p>Description: Develop a Joint-Service, government owned JP-8 fuel fired burner for field kitchen appliances. Government will control configuration, procurement, and support decisions. Establish parts list using widely supportable supply chain in field operations.</p> <p>FY 2015 Accomplishments: Used the burner baseline developed in this program to qualify acceptable appliance designs that interface properly with the burner. Integrated technical data package into appliance configuration control documentation.</p>	0.143	-	-	-	-
<p>Title: Multi-Purpose Individual Heating Technology (MIT)</p>	-	-	0.315	-	0.315

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Develop a disposable, lightweight heating mechanism as a low-cost component of the Meal, Cold Weather/Long Range Patrol (MCW/LRP) to facilitate preparation of operational rations in extreme environments with reduced resource requirements and increased ease of use.</p> <p>FY 2017 Base Plans: Will evaluate MIT prototypes transitioned to 6.4. Will conduct in-house test and evaluation (T&E), and transition results to 6.5.</p>					
<p>Title: Joint Intuitive Multi-function Kitchen Equipment (JIMKE)</p> <p>Description: Reduce logistics burden associated with life cycle management of Navy (USN), Air Force (USAF) and Marine Corps (USMC) foodservice equipment. Integrate diagnostic technologies to predict maintenance, reduce labor associated with troubleshooting equipment in the field, and increase mean time between failures (MTBF).</p> <p>FY 2017 Base Plans: Will develop required contract documentation to procure equipment prototypes with multi-functional capabilities for USN, USAF, and USMC. Will award contracts based on specifications for each Service and begin in-house prototype test and evaluation.</p>	-	-	0.533	-	0.533
<p>Title: Navy Galley and Scullery Upgrades</p> <p>Description: Continuously modernize foodservice operations by adding capabilities to provide optimized feeding, standardizing foodservice equipment assets fleet-wide, improving space utilization, and facilitating the continued use of the NSCM. Design, processes and equipment insertions will be implemented on legacy platforms during overhaul periods and during the new construction process on future vessels.</p> <p>FY 2017 Base Plans: Will identify advanced equipment technologies to support existing and new ship class designs to support the Galley and Scullery operations. Will conduct in-house testing of equipment recommended by Navy subject matter experts. Will transition T&E reports to USN.</p>	-	-	0.445	-	0.445
<p>Title: Greywater Recycling for the Basic Expeditionary Airfield Resources (BEAR) Kitchen Systems</p> <p>Description: Leverage NDI and COTS greywater filtration technologies to reduce operating and support (O&S) costs for the BEAR kitchen system.</p>	-	-	0.337	-	0.337

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2017 Base Plans:</i> Will review current Army science & technology efforts related to greywater recycling systems and conduct market research of existing commercial systems. Will prepare Statements of Work (SOWs) and other required contract documents. Will award contract to procure a greywater system to support Air Force BEAR kitchen and sanitation operations.</p>					
<p><i>Title:</i> Modular Integrated Kitchen System (MIKS) <i>Description:</i> Design a standardized mounting system for all Galley equipment to significantly reduce technical labor skills required to complete deck modifications. MIKS will standardize electrical and water requirements, enhance procurement options, decrease O&S costs, and increase the speed of installing new technologies into the Galley/Scullery areas.</p>	-	-	0.319	-	0.319
<p><i>FY 2017 Base Plans:</i> Will identify and evaluate potential NDI/COTS solutions. Will prepare SOWs and other required contract documents. Will award contract to build integrated modular rail system to support integration of equipment into galley operations.</p>					
<p><i>Title:</i> Defense Logistics Agency (DLA) <i>Description:</i> Support management of the Department of Defense (DoD) Electronic Document Access (EDA) and Wide Area Workflow (WAWF) programs.</p>	0.556	0.021	0.410	-	0.410
<p><i>FY 2015 Accomplishments:</i> Funded DLA Document Services to support management of the DoD EDA and WAWF programs.</p>					
<p><i>FY 2016 Plans:</i> Fund DLA Document Services to support management of the DoD EDA and WAWF programs.</p>					
<p><i>FY 2017 Base Plans:</i> Will fund DLA Document Services to support management of the DoD EDA and WAWF programs.</p>					
Accomplishments/Planned Programs Subtotals	3.348	0.021	5.299	-	5.299

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv Development</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>
• RDT&E 654713.548: <i>Military Subsistence System 654713.548</i>	2.983	1.430	0.759	-	0.759	0.358	0.472	1.148	1.178	Continuing	Continuing
• RDT&E 654713.EL2: <i>Army Field Feeding Equipment 654713.EL2</i>	-	0.333	1.295	-	1.295	1.867	1.598	0.966	0.994	Continuing	Continuing
• RDT&E 643747.EL1: <i>Army Field Feeding Programs 643747.EL1</i>	-	0.280	1.948	-	1.948	0.452	-	0.509	-	Continuing	Continuing
• OPA M65801: <i>Refrigerated Containers M65801</i>	10.290	9.486	7.459	-	7.459	10.732	13.660	11.165	15.253	Continuing	Continuing

Remarks

D. Acquisition Strategy

Project development will transition to Engineering & Manufacturing Development and production.

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 / 4				PE 0603747A / Soldier Support and Survivability					610 / Food Adv Development							
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	
Combat Feeding Program Management	Various	RDECOM, Natick, MA : Natick, MA	5.428	0.357	Sep 2015	-		0.574	Sep 2017	-		0.574	Continuing	Continuing	Continuing	
SBIR+STTR	TBD	Various : Various	0.117	-		-		-		-		-	0	0.117	0	
DLA Bill Pay	TBD	Various : Various	0.564	0.556	May 2015	0.021	May 2016	0.410	May 2017	-		0.410	0	1.551	0	
Subtotal			6.109	0.913		0.021		0.984		-		0.984	-	-	-	
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	
Joint Service Food/Combat Feeding Equipment	Various	RDECOM, Natick, MA : Natick, MA	37.381	1.028	Sep 2015	-		2.237	Sep 2017	-		2.237	Continuing	Continuing	Continuing	
Joint Service Food/Combat Feeding Equipment	Various	Various : Various	25.636	1.106	Sep 2015	-		1.726	Sep 2017	-		1.726	Continuing	Continuing	Continuing	
Subtotal			63.017	2.134		-		3.963		-		3.963	-	-	-	
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	
Joint Service Food/Combat Feeding Equipment	Various	DTC/AEC : National Capitol Region	10.281	0.301	Mar 2015	-		-		-		-	Continuing	Continuing	Continuing	
Joint Service Food/Combat Feeding Equipment	Various	Various : Various	0.000	-		-		0.352	Sep 2017	-		0.352	0	0.352	0	
Subtotal			10.281	0.301		-		0.352		-		0.352	-	-	-	
Project Cost Totals			79.407	3.348		0.021		5.299		-		5.299	-	-	-	

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army							Date: February 2016			
Appropriation/Budget Activity 2040 / 4			R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>			Project (Number/Name) 610 / <i>Food Adv Development</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
--	-------------	---------	---------	--------------	-------------	---------------	------------------	------------	--------------------------

Remarks									

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv 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
Evaluate MRE, FSR, MCW/LRP and MORE improvements	█				█																							
Evaluate MRE, FSR, MCW/LRP and MORE improvement	█												█															
Evaluate UGR Enhancements improvements	█																											
Evaluate UGR Enhancements improvement	█												█															
Transition advanced development of individual and group ration compone	█																											
Transition advanced development of individual and group ration compone	█												█															
Provide NAVSUP w/CPI, evaluations and menu development to support	█																											
Provide NAVSUP w/CPI, evaluations and menu development to support	█												█															
Conduct in-house T&E of MIT heating prototypes													█															
USMC Field Kitchen Modernization Effort	█																											
Transition of Advanced Appliances for Field Kitchens- DV of Prototypes	█																											
Transition of Advanced Appliances for Field Kitchens- DV of Prototype	█												█															
Receive approval for Navy use of NFSAT software																									█			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv 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
Identify candidate burner technology for potential integration into comm																												
Identify, procure, and evaluate candidate burners for tray ration heater re																												
Procure ETRHS sinks																												
(1) Develop Engineering Change Proposal for Diesel/Electric TriCon Refe																												
Build standalone capability for Diesel/Electric powered TRCS																												
Award contract to integrate improved refer unit with MTRCS platform																												
Coordinate packaging specifications with ration assemblers/producers																												
Conduct technology demonstration of Ice Making Systems																												
Develop performance specs based on DV of Ice Making Systems																												
Dem/Val JP8 burners for Enhanced Tray Ration Heater System-USMC																												
DV on Block Upgrade Improvements to support modification of USMC ec																												
Complete development and in-house T&E of MIKS prototypes																												
Identify and procure JIMKE prototypes																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv 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
Conduct in-house T&E of JIMKE equipment																												
ID and evaluate advanced Galley/Scullery equipment for transition to US																												
Conduct DV of Galley/Scullery equipment																												
Identify and procure prototype greywater system																												
Conduct in-house/APG T&E of greywater recycling prototypes																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Evaluate MRE, FSR, MCW/LRP and MORE improvements	1	2009	4	2015
Evaluate MRE, FSR, MCW/LRP and MORE improvement	1	2017	4	2022
Evaluate UGR Enhancements improvements	1	2009	4	2015
Evaluate UGR Enhancements improvement	1	2017	4	2022
Transition advanced development of individual and group ration components to EMD	1	2009	4	2015
Transition advanced development of individual and group ration component to EMD	1	2017	4	2022
Provide NAVSUP w/CPI, evaluations and menu development to support NSCM upgrades	1	2010	4	2015
Provide NAVSUP w/CPI, evaluations and menu development to support NSCM upgrade	1	2017	4	2022
Conduct in-house T&E of MIT heating prototypes	1	2017	4	2017
USMC Field Kitchen Modernization Effort	1	2014	4	2015
Transition of Advanced Appliances for Field Kitchens- DV of Prototypes	3	2013	4	2015
Transition of Advanced Appliances for Field Kitchens- DV of Prototype	1	2017	3	2017
Receive approval for Navy use of NFSAT software	4	2015	4	2015
Identify candidate burner technology for potential integration into comm	1	2015	2	2015
Identify, procure, and evaluate candidate burners for tray ration heater reset	1	2015	2	2015
Procure ETRHS sinks	3	2015	4	2015
Develop Engineering Change Proposal for Diesel/Electric TriCon Refer System	4	2017	4	2017
Build standalone capability for Diesel/Electric powered TRCS	1	2017	3	2017
Award contract to integrate improved refer unit with MTRCS platform	3	2015	4	2015
Coordinate packaging specifications with ration assemblers/producers	3	2014	2	2015
Conduct technology demonstration of Ice Making Systems	1	2014	4	2015

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) 610 / <i>Food Adv Development</i>
--	--	---

Events	Start		End	
	Quarter	Year	Quarter	Year
Develop performance specs based on DV of Ice Making Systems	1	2015	3	2015
Dem/Val JP8 burners for Enhanced Tray Ration Heater System-USMC	3	2017	2	2018
DV on Block Upgrade Improvements to support modification of USMC equipment	1	2017	4	2017
Complete development and in-house T&E of MIKS prototypes	1	2018	4	2018
Identify and procure JIMKE prototypes	1	2017	2	2018
Conduct in-house T&E of JIMKE equipment	2	2018	4	2019
ID and evaluate advanced Galley/Scullery equipment for transition to USN	1	2017	4	2020
Conduct DV of Galley/Scullery equipment	1	2018	4	2018
Identify and procure prototype greywater system	1	2017	4	2017
Conduct in-house/APG T&E of greywater recycling prototypes	1	2018	2	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>				Project (Number/Name) C08 / <i>Rapid Equipping Force</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
C08: <i>Rapid Equipping Force</i>	-	5.285	4.000	3.259	-	3.259	5.809	5.821	5.830	5.828	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Equipment mix and configuration may change based on changes in operational environment and circumstances.

A. Mission Description and Budget Item Justification

This R-Form reflects two (2) separate organizations; The Rapid Equipping Force(REF) and the Asymmetric Warfare Group (AWG).

All funding figures reflect only REF. AWG request is not reflected in funding figures.

The Rapid Equipping Force (REF) supports Combatant Command (COCOM)/Army Service Component Command (ASCC) based on emerging rapid equipment requirements. The REF is an enduring organization (Base funded) per Headquarters, Department of the Army, memo, SUBJECT: Implementation Plan for Stabilization of the Rapid Equipping Force (REF), signed by the Under Secretary of the Army: Joseph W. Westphal, dated 30 January 2014.

The REF harnesses current and emerging technologies to provide rapid solutions to U.S. Army Forces employed globally. The REF combines and integrates functions that cross several Army staff elements and ASCCs to accelerate materiel solutions and technology insertion to U.S. Army Forces employed globally. The REF is the Army's quick reaction capability with the ability to develop, prototype, acquire, integrate and sustain Commercial-Off-The-Shelf (COTS), Government Off-The-Shelf (GOTS) and Non-Developmental Item (NDI) solutions to meet urgent combat requirements for forces employed globally. It develops and inserts selected future force technologies, capabilities, and surrogate materiel solutions into deployed, deploying, select prepared to deploy, and transformational forces for operational evaluation, assessment, and evolutionary development. The REF assesses the provided capabilities to improve future solutions, to inform future Army capability requirements and to potentially transition the capability to an Army acquisition program.

The REF bridges the gap between the traditional acquisition process and immediate equipping needs. The REF pursues tangible solutions that can be equipped rapidly with a goal of 180 days. The REF focuses on finding immediate and effective game-changing capabilities to increase Soldier effectiveness, protection, and lethality in any operational environment. The REF process provides the mechanism to respond rapidly to an adaptive enemy who changes in days and months, not years. The REF coordinates in theater work with the ASCC of the COCOMs to understand their urgent needs, for which the REF acquisition capability may identify, procure, deliver, and sustain solutions to the deployed units. This fiscal flexibility is significant in that it permits the REF to allocate funds against emerging threats and requirements in the year of fiscal execution.

The REF works directly with Operational Commanders at all levels, but focuses on Brigade level and below to find solutions to identified capability gaps. These solutions may result in procurement of new or existing military/commercial materiel equipment, or accelerated development of a future force materiel solution for insertion into the current force now.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) C08 / <i>Rapid Equipping Force</i>

The Army Acquisition Executive designated Program Executive Office (PEO) Soldier as the Milestone Decision (MDA) to institutionalize the acquisition authorities in support of the REF and to provide proper acquisition oversight while enhancing visibility of these efforts. The MDA will ensure flexibility and speed focused on the needs of Soldiers serviced by the dedicated REF Program Management Office (PMO). This establishes a formal acquisition - reporting chain that leverages - existing reporting venues, to ensure appropriate ASA (ALT) visibility, oversight, and direction.

The REF capabilities cross all Warfighter Function Areas:

- 1 – Mission Command
- 2 – Movement and Maneuver
- 3 – Intelligence
- 4 – Fires
- 5 – Sustainment
- 6 – Protection

The REF FY17 RDT&E request \$3.259 million (Base) is for system integration, testing and evaluation to support project requirements.

The RDT&E funding also provides the REF the flexibility to invest in near-term, innovative solutions. RDT&E funds are necessary in the vast majority of all REF projects. Most importantly, REF requires RDT&E funds to conduct safety certification (testing) for REF provided non-standard equipment before it is equipped to the unit. This critical requirement exists to ensure that the equipment is safe for Soldiers to use and that any risks are known and documented. The REF also requires RDT&E funds to integrate several different COTS/GOTS/NDI technologies into one capability that solves the tougher and more complex problems. RDT&E funds are used to further develop high (>6) Technology Readiness Level (TRL) systems or advanced technologies in conjunction with industry and Other Governmental Agencies (OGAs). Frequently, these technologies only need small amounts of funding in order to help them achieve a maturity level that is suitable to solve deployed U.S. Army Forces problems. The REF requires RDT&E funds in order to modify existing technologies that were developed for one purpose, but now may be suitable to solve another problem. REF will fund deliberate projects in support of technology solution scouting to meet anticipated needs. These efforts measure and identify current technologies and provide capability assessments to TRADOC and other organizations with the intent of informing future requirements. Example efforts that may require RDTE include the following projects: Nano Unmanned Aerial System (UAS) Assessment; Carbine Optics; Command, Control, Communications, Computers, Combat System, Intelligence, Surveillance, and Reconnaissance (C5ISR); Small Unit Intelligence Surveillance Reconnaissance (ISR); Electronic Warfare; Counter Unmanned Aerial System (UAS); Operational Energy; Mission Command; and Force Protection.

Mission Description AWG: The Asymmetric Warfare Group (AWG) provides critical operational advisory support globally and rapid solution development to Army and Joint Force Commanders to enhance Soldier survivability and combat effectiveness, continuously assesses the Operating Environment (OE), to defeat current and emerging threats. As such, AWG is uniquely positioned to quickly provide feedback and observations of asymmetric threats back to TRADOC Centers and Schools allowing for the timely adaptation of training, Programs of Instruction and informing capability requirements of future forces.

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) C08 / <i>Rapid Equipping Force</i>
--	--	--

With its theater access, AWG continues to serve in its advisory capacity to assist regionally aligned forces (RAF), support ASCC security cooperation missions, as well as inform Army innovation programs. In times of crisis, the AWG will continue to be a critical combat enabler to Army and Joint contingency force deployments responding to a diverse range of theater threats and requirements.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Rapid Equipping Force</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2015 Accomplishments: The demand for REF 10-liner requirements has levels based on the increased tempo of transitioning brigades in Operation Freedom Sentinel (OFS) with nine (9) month deployments; the expansion of brigades' operational environments (OEs) that required smaller units to operate in more isolated areas; and a new force structure and role in OFS. At the end of FY15, the REF had 604 total requirement's - 513 were OCO requirements.</p> <p>FY 2016 Plans: The REF mission expands to perform Direct Support (DS) to globally deployed Soldiers, ASCCs of the Combatant Commands, regionally aligned Brigade Combat Teams (BCTs) and includes support to Operation Freedom Sentinel (OFS) in Afghanistan, Operation Inherent Resolve (OIR) in Iraq, and other operations in the CENTCOM and AFRICOM areas of responsibility. During the same period, the REF expects to see an increase in requirements submitted by Army Special Operations Forces (SOF) in other areas of the world, as well as, from brigades employed in more global roles, such as the regionally aligned BCTs, and their logistical support elements. The REF also expects to play a much more deliberate role in providing support to the Army's Global Response Force as they prepare for a wider range of response missions.</p> <p>For FY16 the REF projected 664 requirements (101 Base, 563 OCO). The projection was based on the requirements demand signal and modified using the following planning assumptions:</p> <ol style="list-style-type: none"> 1) Based on expanding Army operations worldwide we anticipate significant requirements from deployed Army forces in non-OCO regions. 2) There is no change in the OMB OCO criteria and guidance, 3) The number of troops deployed to Afghanistan/OFS (~10K) and the types of missions they are performing remains constant through June 2016 then maybe reduced by 50% for the remainder of the year, 4) The number of troops deployed to Iraq/OIR (~4K) and the types of missions they are performing remains unchanged, 	5.285	4.000	3.259	-	3.259

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) C08 / <i>Rapid Equipping Force</i>

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>5) And, there is no significant change in the level of operational support to Counter-ISL operations outside of Iraq.</p> <p>A change to any of these assumptions could have significant impact on the number and type of requirements received, and upon the type of funding (OCO or Base) required. For example, any change in OCO guidance could significantly change the ratio of OCO to Base funding required. Likewise, if troops deployed to OIR are given the mission to accompany Iraqi Security Forces during the anticipated counter-offensive REF could expect a significant increase in Warfighting function requirements for mission command, intelligence, movement and maneuver, and force protection. In OFS, a decision to retain current manning levels may similarly effect the number of requirements REF receives in FY16.</p> <p>FY 2017 Base Plans: TThe REF partners with ASCCs forces and Army SOF community to perform DS to globally deployed Soldiers and regionally aligned BCTs. The REF anticipates increased uncertainty regarding the future of OIR and other operations in the CENTCOM AOR requiring additional flexibility to develop technological solutions supporting the reduced numbers of Soldiers operating globally in order to fill force protection gaps in the face of a smaller and more lethal terrorism threat. The REF expects to increase our engagement with the ASCCs in order to address capability gaps generated by geographical and environmental constraints and improve our understanding of evolving threats and operating conditions within the respective ASCC areas of operations. The REF also expects to play a much more deliberate role in providing support to the Global Response Force as they prepare for a wider range of response missions. We anticipate increased coordination with various Army technology demonstrations and Joint Capabilities Technology Demonstrations in order to leverage developed residual technologies to rapidly address identified critical capability gaps and gain immediate feedback through limited user evaluations. In accordance with REF’s participation in the Office of Secretary of Defense (OSD) led quick reaction capability effort, the Army determined the REF would provide the Army’s warm base capability with ~100 requirements in FY17 and beyond.</p> <p>For FY17 the REF projects ~100 requirements in the following REF Warfighter function areas.</p> <p>1 – Mission Command (344K) 2 – Movement and Maneuver (782K) 3 – Intelligence (254K) 4 – Fires (34K)</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) C08 / <i>Rapid Equipping Force</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
5 – Sustainment (333K) 6 – Protection (512K)					
The REF anticipates ATEC testing and evaluation cost of \$1.000 million. The REF requires RDT&E funds to test technologies in order to ensure suitability and safety before equipping the Soldier – any modified COTS/GOTS/ NDI items has to be tested.					
AWG is uniquely postured to support unified land operations to mitigate future risk to Army forces resulting from non-traditional and hybrid threats. AWG supports solution development and equipping efforts with operational advising/global first hand observation, but does not conduct materiel acquisition without an appropriate acquisition partner; investment funding is required to legally execute the breadth of AWG’s solution development mission. The use of investment fund is kept to a minimum to accomplish proof of concept and threat replication IOT influence the Army’s capacity to adapt to the evolving threat while informing subsequent TRADOC DOTMLPF-P integration. AWG will focus efforts to investigate, evaluate, and quantify various Commercial-Off-The-Shelf /Government-Off-The-Shelf platforms and systems for purposes of research and development, testing, capability and limitation experimenting, and procurement for solutions to emerging capability gaps. These efforts will focus on near term, leveraging existing technology, and addressing identified capability gaps for emerging research shortfalls, PIPs, leap ahead technologies, and fixes to existing shortfalls (reliability, sustainability, and durability).					
The AWG RDTE Base request for FY17 is \$250K. The AWG request is not reflected in funding figures on this R-Form.					
Accomplishments/Planned Programs Subtotals	5.285	4.000	3.259	-	3.259

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
• M08101: <i>Other Procurement Army, M08101</i>	22.380	26.437	18.003	8.500	26.503	18.459	18.867	19.246	19.631	Continuing	Continuing
• 121018000: <i>Operations and Maintenance, Army, 121018000</i>	125.462	31.167	29.831	15.169	45.000	19.743	19.643	20.036	20.436	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) C08 / <i>Rapid Equipping Force</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 REF harnesses current and emerging technologies to provide rapid solutions to the urgently required capabilities of U.S. Army Forces employed globally. The REF focus is on rapidly placing capabilities into Soldiers' hands. This mission is accomplished in one of two ways: rapidly adapting COTS/GOTS/NDI equipment to meet operational needs and developing emerging deployable capability via interaction with research and development organizations and academia. All capabilities are safety tested prior to insertion into operational environments. Training and sustainment are provided for every capability until it is transitioned to an approved acquisition program or terminated through an approved Army process. Operational assessments are conducted to provide feedback in support of Army requirements generation and future capability development. REF capabilities routinely serve as a bridge to specific ONS, JUONS, and JEONS gaps to meet urgent operational requirements.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) C08 / <i>Rapid Equipping Force</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			
Mission Command	C/FFP	Various : Various	0.000	-		-		0.344		-		0.344	0	0.344	0
Movement and Maneuver	C/FFP	Various : Various	0.000	-		-		0.782		-		0.782	0	0.782	0
Intelligence	C/FFP	Various : Various	0.000	-		-		0.254		-		0.254	0	0.254	0
Fires	C/FFP	Various : Various	0.000	-		-		0.034		-		0.034	0	0.034	0
Sustainment	C/FFP	Various : Various	0.000	-		-		0.333		-		0.333	0	0.333	0
Protection	C/FFP	Various : Various	0.000	-		-		0.512		-		0.512	0	0.512	0
Dismounted Improvised Explosive Device (IED) Defeat	C/FFP	Various : Various	2.360	0.381		0.153		-		-		-	Continuing	Continuing	Continuing
Dismounted Operations Support	C/FFP	Various : Various	3.168	0.952		0.698		-		-		-	Continuing	Continuing	Continuing
Intelligence, Surveillance, and Reconnaissance (ISR) Shortfalls in Environmentally Inhospitable OEs	C/FFP	Various : Various	4.715	0.779		0.472		-		-		-	Continuing	Continuing	Continuing
Small Combat Outpost (COP) / Patrol Base (PB) Force Protection and Sustainment	C/FFP	Various : Various	3.738	-		-		-		-		-	Continuing	Continuing	Continuing
Other-REF RIPL Priorities (5-10)	C/FFP	Various : Various	8.778	-		-		-		-		-	Continuing	Continuing	0
Other	C/FFP	Various : Various	0.796	0.682		0.752		-		-		-	0	2.230	0
Base: Various Projects-Protect the Force in Counter Insurgency	C/FFP	Various : Various	11.841	-		-		-		-		-	0	11.841	0
Small Combat Outpost (COP)/Patrol Base (PB) Sustainment	C/FFP	Various : Various	0.648	0.555		0.313		-		-		-	0	1.516	0
Base: Various Projects-Enhance Intelligence Surveillance Recon	C/FFP	Various : Various	9.009	-		-		-		-		-	0	9.009	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) C08 / <i>Rapid Equipping Force</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			
Small Combat Outpost (COP)/Patrol Base (PB) Force Protection	C/FFP	Various : Various	0.870	0.746		0.492		-		-		-	0	2.108	0
Dismounted Blue Force Tracking and Mission Command	C/FFP	Various : Various	0.222	0.190		0.120		-		-		-	0	0.532	0
Base: Various Projects-Logistics/Medical in Counterinsurgency Ops	C/FFP	Various : Various	1.639	-		-		-		-		-	0	1.639	0
Base: Various Projects-Timeliness of Analysis and Information Dissemination	C/FFP	Various : Various	6.961	-		-		-		-		-	0	6.961	0
Congressional Add-Squad Mission Support System (SMSS)	C/FFP	Various : Various	1.600	-		-		-		-		-	0	1.600	0
SSTR/Economic Assumptions/FFRDC and SBIR	C/FFP	Various : Various	1.090	-		-		-		-		-	0	1.090	0
OCO: Rapid Equipping Force	C/FFP	Various : Various	19.190	-		-		-		-		-	0	19.190	0
Subtotal			76.625	4.285		3.000		2.259		-		2.259	-	-	-

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			
ATEC (REF Integrated Priority List 1-10)	C/FFP	Various : Various	11.344	-		-		-		-		-	Continuing	Continuing	Continuing
ATEC (Warfighter Function Areas)	C/FFP	Various : Various	0.000	-		-		1.000		-		1.000	0	1.000	0
ATEC (REF Integrated Priority List 1-7)	C/FFP	Various : Various	0.000	1.000		1.000		-		-		-	0	2.000	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) C08 / <i>Rapid Equipping Force</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 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) C08 / <i>Rapid Equipping Force</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
n/a	1	2017	4	2017

Note

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>				Project (Number/Name) EL1 / <i>Army Field Feeding 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
EL1: <i>Army Field Feeding Programs</i>	-	0.000	0.280	1.948	-	1.948	0.452	0.000	0.509	0.000	0.000	3.189
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

2016 shall be the first funded year for the Army Field Feeding Programs Element.

A. Mission Description and Budget Item Justification

This project provides for the advanced component development and prototyping of Army food and combat feeding equipment designed to reduce the logistics burden and Operation and Support (O&S) costs of subsistence support to service personnel. Project supports development of rapidly deployable field food service equipment in coordination with ration development efforts. Project conducts demonstration and validation of improved subsistence support items used to enhance soldier effectiveness and quality of life in the Army and the other military Services, as coordinated with the Department of Defense (DoD) Food Research, Development, Test, Evaluation and Engineering Program. This project develops critical enablers that support the Joint Future Force Capabilities and the Joint expeditionary mindset by maintaining readiness through fielding and integrating new equipment. This equipment enhances the field soldier's well-being and provides the soldier with usable equipment, in addition to reducing sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands on lift, combat zone footprint, and costs for logistical support.

This PE/Project supports Field Feeding programs for the Army.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Battlefield Kitchen (BK) technology development effort	-	0.280	1.948	-	1.948
Description: Provide replacement of the obsolete Mobile Kitchen Trailer (MKT) system. The BK shall replace the MKT with a kitchen that provides fuel efficient, thermally controlled, closed combustion appliances within an environmentally controlled workspace. The BK shall provide rations for up to 300 Soldiers within 4 hours of setup. The BK provides refrigeration, running water and a heated serving line using the same off-road prime mover as the MKT as well as transportability by rail, sea, fixed and rotary wing aircraft.					
FY 2016 Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) EL1 / <i>Army Field Feeding Programs</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete evaluation of appliances integrated with Jet Propellant 8 (JP-8) fired burners developed in the Science and Technology (S&T) phase as culmination of technology transfer agreement. Complete documentation for development contract that includes options for production.					
<i>FY 2017 Base Plans:</i> Complete transition of BK into Engineering and Manufacturing Development (EMD) phase. Complete design and build of BK component and subsystems. Initiate Integrated Logistics Support (ILS) development through the development contract.					
Accomplishments/Planned Programs Subtotals	-	0.280	1.948	-	1.948

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 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>
• RDT&E 654713.548: <i>Military Subsistence System</i>	2.983	1.430	0.759	-	0.759	0.358	0.472	1.148	1.178	Continuing	Continuing
• RDT&E 654713.EL2: <i>Army Field Feeding Equipment</i>	-	0.333	1.295	-	1.295	1.867	1.598	0.966	0.994	Continuing	Continuing
• RDT&E 643747.610: <i>Food Adv Dev</i>	3.348	0.021	5.299	-	5.299	6.579	4.830	4.508	4.631	Continuing	Continuing
• OPA M65806: <i>Assault Kitchen, Field Feeding</i>	4.889	3.632	5.167	-	5.167	4.660	4.165	4.605	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

Project development will transition to System Development & Demonstration and into production after thorough testing.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) EL1 / <i>Army Field Feeding Programs</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 Support	Various	PM Force Sustainment : Natick, MA	0.000	-		0.150	Jun 2016	0.274	Jan 2017	-		0.274	0	0.424	0
Subtotal			0.000	-		0.150		0.274		-		0.274	0.000	0.424	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			
Battlefield Kitchen	Various	PM-FSS : Natick, MA	0.000	-		0.130	Jun 2016	1.674	Feb 2017	-		1.674	0	1.804	0
Subtotal			0.000	-		0.130		1.674		-		1.674	0.000	1.804	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			
Battlefield Kitchen	Various	DTC/AEC PM-FSS, : Natick Ma	0.000	-		-		-		-		-	Continuing	Continuing	0
Subtotal			0.000	-		-		-		-		-	-	-	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	-	0.280	1.948	-	1.948	-	-	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) EL1 / <i>Army Field Feeding Programs</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																								
Conduct advanced component development and demonstration for th BK																																																				
(1) Transition Battlefield Kitchen to EMD																																																				
Award advanced component development contract for DESERT																																																				
Conduct advanced component development and demonstration for DESE																																																				
(2) Complete ECP and transition DESERT to EMD																																																				
Conduct advanced component development & demonstration on advance																																																				

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603747A / <i>Soldier Support and Survivability</i>	Project (Number/Name) EL1 / <i>Army Field Feeding Programs</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Conduct advanced component development and demonstration for th BK	1	2016	1	2018
Transition Battlefield Kitchen to EMD	2	2017	2	2017
Award advanced component development contract for DESERT	1	2018	1	2018
Conduct advanced component development and demonstration for DESERT	2	2018	4	2018
Complete ECP and transition DESERT to EMD	4	2018	4	2018
Conduct advanced component development & demonstration on advanced refrigeration	1	2020	4	2020

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: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603766A / Tactical Electronic Surveillance System - Adv Dev							
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	-	9.255	13.472	15.730	-	15.730	20.595	20.998	21.403	21.969	Continuing	Continuing
907: Tactical Exploitation Of National Capabilities-MIP	-	9.255	13.472	15.730	-	15.730	20.595	20.998	21.403	21.969	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Tactical Exploitation of National Capabilities (TENCAP) program serves as the Army's centralized lead to perform National Intelligence cross-agency engineering to evaluate, enhance, prototype, and transition Intelligence, Surveillance, and Reconnaissance (ISR) technologies/capabilities developed by Science and Technology (S&T) and other activities across the National Intelligence Community (IC) into Army systems and architectures. TENCAP (1) ensures continued access to current National and Theater sensors and supporting tactical architectures; and (2) exploits new developments that focus on improving the analysis and tasking, collection, processing, exploitation, dissemination and feedback (TCPEDF) of intelligence data. This includes efforts to: (1) shorten targeting timelines down to Platoon level; (2) enhance target identification; (3) provide better target location (accuracy); (4) provide continued coverage of a target; and (5) develop in-theater analytic tools to enable data exploitation in near-real-time support to contingency operations.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	8.953	13.472	16.963	-	16.963
Current President's Budget	9.255	13.472	15.730	-	15.730
Total Adjustments	0.302	0.000	-1.233	-	-1.233
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.302	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	-1.233	-	-1.233

Change Summary Explanation

FY 2015 change reflects a minor below threshold reprogramming.
 FY 2017 change reflects a refinement of program cost estimates.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603766A / <i>Tactical Electronic Surveillance System - Adv Dev</i>				Project (Number/Name) 907 / <i>Tactical Exploitation Of National Capabilities-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
907: <i>Tactical Exploitation Of National Capabilities-MIP</i>	-	9.255	13.472	15.730	-	15.730	20.595	20.998	21.403	21.969	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tactical Exploitation of National Capabilities (TENCAP) program serves as the Army's centralized lead to perform National Intelligence cross-agency engineering to evaluate, enhance, prototype, and transition Intelligence, Surveillance and Reconnaissance (ISR) technologies/capabilities developed by Science and Technology (S&T) and other activities across the National Intelligence Community (IC) into Army systems and architectures. TENCAP (1) ensures continued access to current National and Theater sensors and supporting tactical architectures; and (2) exploits new developments that focus on improving the analysis and tasking, collection, processing, exploitation, dissemination and feedback (TCPEDF) of intelligence data. This includes efforts to: (1) shorten targeting timelines down to Platoon level; (2) enhance target identification; (3) provide better target location (accuracy); (4) provide continued coverage of a target; and (5) develop in-theater analytic tools to enable data exploitation in near-real-time support to contingency operations.

FY2017 Base funding in the amount of \$15.730 million provides for: (1) engineering and collaborative development on multiple validated National Intelligence Community (IC) advanced developments to ensure continuous Army interoperability with those IC assets and architectures; (2) advanced development of more effective intelligence collection, processing, exploitation and dissemination (PED); and (3) advanced development of sensor capabilities for Air Vigilance (AV) Army Program of Record.

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

	FY 2015	FY 2016	FY 2017
Title: TENCAP Cross-agency Core Engineering activities	8.453	8.953	11.109
Description: Collaborate, develop and exploit emerging multi-intelligence and Space-based technologies to satisfy/accelerate Army Intelligence, Surveillance, Reconnaissance (ISR), Mission Command and Force Protection requirements.			
FY 2015 Accomplishments: Identified Army requirements in National developments; Ensured Army maintained access to sensors and Space-based capabilities; Monitored emerging technologies and systems; Exploited advances in commercial imagery and specific emitter identification technologies; Developed prototypes that improved Army intelligence products.			
FY 2016 Plans: Identify Army requirements in National developments; Ensure Army maintained access to sensors and Space-based capabilities; Monitor emerging technologies and systems; Exploit advances in commercial imagery and signal technologies; Develop prototypes that improve Army intelligence products.			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603766A / <i>Tactical Electronic Surveillance System - Adv Dev</i>	Project (Number/Name) 907 / <i>Tactical Exploitation Of National Capabilities-MIP</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Identify Army requirements in National developments; Ensure Army maintains access to sensors and Space-based capabilities; Monitor emerging technologies and systems; Exploit advances in commercial imagery and signal technologies; Develop prototypes that improve Army intelligence products.				
<p>Title: Air Vigilance</p> <p>Description: Enhanced intelligence, force protection, and indications and warning capability initiated under Army TENCAP program.</p> <p>FY 2015 Accomplishments: Advanced sensor development and enhancements for Air Vigilance (AV) Army Program of Record ingest and continued effectiveness.</p> <p>FY 2016 Plans: Advanced sensor development and enhancements for Air Vigilance (AV) Army Program of Record ingest and continued effectiveness.</p> <p>FY 2017 Plans: Advanced sensor development and enhancements for Air Vigilance (AV) Army Program of Record ingest and continued effectiveness.</p>		0.500	0.515	0.530
<p>Title: Advanced Miniaturized Data Acquisition System(AMDAS)/ AMDAS Dissemination Vehicle (ADV)</p> <p>Description: AMDAS/ADV: Continued advanced engineering and development efforts to ensure continued interoperability and effectiveness of Army Corp-level TENCAP subsystems that provide national data to the tactical warfighter via intelligence community partners classified national systems.</p> <p>FY 2015 Accomplishments: AMDAS/ADV: Continued advanced engineering and development efforts to ensure continued interoperability and effectiveness of Army Corp-level TENCAP subsystems that provide national data to the tactical warfighter via intelligence community partners classified national systems.</p> <p>FY 2016 Plans: AMDAS/ADV: Advanced sensor development and prototyping of TENCAP subsystems to ensure alignment with national architecture enhancements such as the National Technical Means (NTM) space-based capabilities progress</p> <p>FY 2017 Plans:</p>		0.302	4.004	4.091

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603766A / <i>Tactical Electronic Surveillance System - Adv Dev</i>	Project (Number/Name) 907 / <i>Tactical Exploitation Of National Capabilities-MIP</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
AMDAS/ADV: Advanced sensor development and prototyping of TENCAP subsystems to ensure alignment with evolving national architectural enhancements as the National Technical Means (NTM) space-based capabilities progress.			
Accomplishments/Planned Programs Subtotals	9.255	13.472	15.730

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
• 0605766A RDTE: <i>National Integration To Tactical Systems (MIP), 0605766A</i>	18.254	10.599	4.955	-	4.955	7.201	8.360	7.349	7.537	Continuing	Continuing
• W60001 OPA: <i>Air Vigilance (AV), OPA2 (W60001)</i>	7.000	8.224	0.733	-	0.733	1.518	2.484	2.533	2.585	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Army Tactical Exploitation of National Capabilities (TENCAP) mission is a Congressionally mandated and chartered enduring requirement to leverage National intelligence capabilities useful to the tactical Army. The Army TENCAP acquisition strategy is driven by an annual TENCAP General Officer Steering Group (TGOSG), co-chaired by the Army G2; Army G8; and the Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics, and Technology [ASA(ALT)]; and includes representatives from the Army G3; Army G6; Army Training and Doctrine Command (TRADOC); and the Program Executive Office for Intelligence, Electronic Warfare and Sensors (PEO IEW&S). The TGOSG reviews, validates, prioritizes, and guides Army TENCAP efforts, according to Army and Defense strategy. Based on this TGOSG guidance, Army TENCAP invests BA 6.4 RDTE in Intelligence Community (IC) developments during the more cost-effective advanced development phase to ensure Army requirements are met with minimal redundancy. Army TENCAP then uses BA 6.5 RDTE to manage the transition of these advanced development efforts through system development and integration into Army Programs of Record (POR). This strategy ensures these leveraged investments remain viable through multiple budget cycles, significantly increasing successful transition to recipient Army POR. With acquisition discipline and oversight provided by PEO IEW&S, Army TENCAP executes the TGOSG approved efforts through use of multiple contracts and agreements with the military, National agencies, Labs, Industry Partners and Academia for the full duration required to complete development and transition these National capabilities into enduring Army programs.

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 / 4				PE 0603766A / Tactical Electronic Surveillance System - Adv Dev				907 / Tactical Exploitation Of National Capabilities-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	
Intelligence Engineers (SETA)	C/FFP	TASC, Inc. : Alexandria, VA	7.842	-		-		-		-		-	Continuing	Continuing	Continuing	
Intelligence Engineers (SETA)	C/TBD	TBD : TBD	0.000	3.011	Dec 2014	3.563	Dec 2015	4.115	Dec 2016	-		4.115	Continuing	Continuing	Continuing	
Intelligence Engineers(Matrix Gov)	MIPR	AGC : Alexandria, VA	2.770	1.005	Nov 2014	1.028	Nov 2015	1.174	Nov 2015	-		1.174	Continuing	Continuing	Continuing	
Subtotal			10.612	4.016		4.591		5.289		-		5.289	-	-	-	
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	
TENCAP Core (Focus) Areas	Various	Multiple : Multiple	0.000	2.089	Nov 2014	1.130	Dec 2015	3.782	Dec 2016	-		3.782	Continuing	Continuing	0	
Air Vigilance	MIPR	Classified : MIPR	2.328	0.400	Nov 2014	0.515	Nov 2015	0.530	Nov 2016	-		0.530	Continuing	Continuing	Continuing	
AMDAS/ADV	MIPR	Classified : MIPR	3.500	-		4.004	Jan 2016	4.091	Dec 2016	-		4.091	Continuing	Continuing	Continuing	
Subtotal			5.828	2.489		5.649		8.403		-		8.403	-	-	-	
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	
Prgm Mgmt-Dir Gov,travel,etc.	Allot	Army TENCAP : Alexandria, VA	6.499	1.850	Oct 2014	2.156	Oct 2015	1.150	Oct 2016	-		1.150	Continuing	Continuing	Continuing	
Secured Facilities	MIPR	Army Geospatial : Ft. Belvoir, VA	0.768	0.800	Dec 2014	0.656	Dec 2015	0.423	Dec 2016	-		0.423	Continuing	Continuing	Continuing	
Subtotal			7.267	2.650		2.812		1.573		-		1.573	-	-	-	

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603766A / <i>Tactical Electronic Surveillance System - Adv Dev</i>	Project (Number/Name) 907 / <i>Tactical Exploitation Of National Capabilities-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
CORE Cross-Agency Advanced Development and Engineering	Development with Nat Intel Community																											
(1) TENCAP General Officer Steering Group (TGOSG) - annual - guides					▲ 1																							
(2) TENCAP General Officer Steering Group (TGOSG) - annual - guides					▲ 2																							
(3) TENCAP General Officer Steering Group (TGOSG) - annual - guides					▲ 3																							
(4) TENCAP General Officer Steering Group (TGOSG) - annual - guides					▲ 4																							
(5) TENCAP General Officer Steering Group (TGOSG) - annual - guides					▲ 5																							
AMDAS/ADV Advanced Development and Engineering																												
Air Vigilance Advanced Development and System prototype efforts																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603766A / <i>Tactical Electronic Surveillance System - Adv Dev</i>	Project (Number/Name) 907 / <i>Tactical Exploitation Of National Capabilities-MIP</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CORE Cross-Agency Advanced Development and Engineering	4	2006	4	2020
TENCAP General Officer Steering Group (TGOSG) - annual - guides FY18-22 POM	4	2015	4	2015
TENCAP General Officer Steering Group (TGOSG) - annual - guides FY19-23 POM	4	2016	4	2016
TENCAP General Officer Steering Group (TGOSG) - annual - guides FY20-24 POM	4	2017	4	2017
TENCAP General Officer Steering Group (TGOSG) - annual - guides FY21-25 POM	4	2018	4	2018
TENCAP General Officer Steering Group (TGOSG) - annual - guides FY22-26 POM	4	2019	4	2019
AMDAS/ADV Advanced Development and Engineering	4	2014	1	2023
Air Vigilance Advanced Development and System prototype efforts	3	2013	1	2023

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603774A / <i>Night Vision Systems Advanced 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
Total Program Element	-	3.521	7.292	10.321	-	10.321	13.856	4.729	6.779	6.828	Continuing	Continuing
VT7: <i>Soldier Maneuver Sensors - Adv Dev</i>	-	3.521	7.292	10.321	-	10.321	13.856	4.729	6.779	6.828	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element focuses on efforts to evaluate and integrate technologies and representative prototype systems that facilitate the development of Soldier-borne sensor devices transitioning from the laboratory to operational use. Efforts focus on proving out commonality across as broad a spectrum of users as possible to provide enhanced Soldier products, giving them superiority on the battlefield.

Project VT7 (Soldier Maneuver Sensors-Advanced Development): These efforts focus on providing enhanced products to give Soldiers superiority on the battlefield by providing the capability to detect enemy snipers using precise target information to mitigate operational risk before sniper fire occurs. This project integrates higher resolution thermal focal plane arrays, integrated ballistic solutions to auto-adjust reticles for range, wireless technology with weapon sights, improved range, performance, and capability, while decreasing system size and weight. These integration efforts enhance Soldier situational awareness, lethality, survivability, mobility, and comfort in combat and training environments. Additionally, this project supports efforts to evaluate and integrate technologies and representative prototype systems for the development of Soldier-borne sensor devices, transitioning from the Science and Technology (S&T) arena to operational use. This project includes cost associated with efforts for integration and interface of products on Soldiers head, body and weapons.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	3.050	7.292	9.152	-	9.152
Current President's Budget	3.521	7.292	10.321	-	10.321
Total Adjustments	0.471	0.000	1.169	-	1.169
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.471	-	1.169	-	1.169

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603774A / <i>Night Vision Systems Advanced Development</i>				Project (Number/Name) VT7 / <i>Soldier Maneuver Sensors - Adv 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
VT7: <i>Soldier Maneuver Sensors - Adv Dev</i>	-	3.521	7.292	10.321	-	10.321	13.856	4.729	6.779	6.828	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

These efforts focus on providing enhanced products to give Soldiers superiority on the battlefield by providing the capability to detect enemy snipers using precise target information to mitigate operational risk before sniper fire occurs. This project integrates higher resolution thermal focal plane arrays, integrated ballistic solutions to auto-adjust reticles for range, wireless technology with weapon sights, improved range, performance, and capability, while decreasing system size and weight. These integration efforts enhance Soldier situational awareness, lethality, survivability, mobility, and comfort in combat and training environments. Additionally, this project supports efforts to evaluate and integrate technologies and representative prototype systems for the development of Soldier-borne sensor devices, transitioning from the Science and Technology (S&T) arena to operational use. This project includes cost associated with efforts for integration and interface of products on Soldiers head, body and weapons.

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

	FY 2015	FY 2016	FY 2017
Title: Family of Weapon Sights (FWS)	1.884	4.052	-
<p>Description: FWS is a family of weapon sights that enable combat forces to acquire and engage targets with small arms and to conduct surveillance and Enhanced Target Engagement under day/night obscuration, no-light, and adverse weather conditions. The family utilizes advancements in thermal and low light level sensors to produce Individual (I), Crew-Served (CS), and Sniper (S) weapon sights operable in-line with a day optic or in stand-alone mode. This project integrates a smaller pixel focal plane array in multiple large format sizes to improve sensitivity, clarity, and range, while simultaneously reducing the size, weight and power consumption of both the Crew-Served and Sniper variants. The FWS-I variant is a weapon mounted long-wave infrared sensor that enables Soldiers to fire quickly and accurately from any carry position and with significantly reduced exposure to enemy fire by providing a wireless zeroed weapon aim point in the Soldier's goggle. Leveraging the success of the Individual variant development, the FWS-CS variant operates as the primary sight; it includes a wireless Helmet Mount Display (HMD) and provides the Soldier, with input from a laser rangefinder device, a more accurate aim point that adjusts automatically for range, ammunition characteristics, and vertical angle. The FWS-S variant mounts in-line with the Sniper's direct view optic providing a thermal imagery capability to the host weapon at the weapon's maximum effective range, plus 20% overmatch. FWS-S provides Snipers a large format display with increased pixel density that enables accurate long range engagements while maintaining day sight, extending the lethality and providing exceptional observation.</p> <p>FY 2015 Accomplishments:</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / <i>Night Vision Systems Advanced Development</i>	Project (Number/Name) VT7 / <i>Soldier Maneuver Sensors - Adv Dev</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continued Technology Maturation Risk Reduction of the FWS-S to integrate sensor and system technologies into a sight that can be clipped onto high magnification sniper day sights and provide increased identification and engagement ranges. Completed Completed prototype development and conducted Early User Assessments (EUAs) for FWS-CS and S. FY 2016 Plans: Complete Technology Maturation Risk Reduction phase for the FWS-CS and FWS-S. Prepare and release Request for Proposals (RFPs) and conduct source selection boards for FWS-CS and FWS-S development contract awards.. Begin design work in the Engineering and Manufacturing Development (EMD) phase for FWS-CS and FWS-S. Improve the manufacturing process for uncooled focal plane arrays (FPAs) and micro Optical Light Emitting Diode (OLED) displays that are key components of the FWS.				
Title: Fused Vision Mobility Capability (FVMC) Description: The FVMC is the next generation night vision goggle and day sight that will reduce the Soldier burden by allowing them to keep hands on their weapons during the day and night. The FVMC will provide automatic adjustment of imagery and matched sensor Fields of View. The FVMC will provide day/night RTA capability by interfacing with FWS-I, data display for the soldier Network Warrior End User Device/Computer (EUD), and ability to send/receive data to the EUD to support advanced EUD applications to process the sensor video, integrate it with external data sources, and produced advanced processed imagery with overlay data display. FY 2016 Plans: Begin development efforts of the Fused Vision Mobility Capability (FVMC). FY 2017 Plans: Continue development efforts of the FVMC focusing at the component level.		-	0.200	8.151
Title: Pre-Shot Threat Detection (PTD) Description: The Pre-Shot Detection (PTD) system is a compact, lightweight, mounted multi-function laser system designed to detect threat Snipers, Forward Observers and Scouts equipped with direct view optics. The PTD functions include laser illumination, optical augmentation and pointing. FY 2015 Accomplishments: Completed Performance Specification and awarded multiple contracts to build technology demonstrators for Pre-Shot Threat Detection. FY 2016 Plans:		1.637	3.040	2.170

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / <i>Night Vision Systems Advanced Development</i>	Project (Number/Name) VT7 / <i>Soldier Maneuver Sensors - Adv Dev</i>
--	--	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue Technology Maturation Risk Reduction and begin component development. Continue with lab laser development. Begin Early User Assessment (EUA), with Soldiers, based on the acquisition approach.			
FY 2017 Plans: Develop covert capability. Research and test suitable imagers for covert functionality.			
Accomplishments/Planned Programs Subtotals	3.521	7.292	10.321

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
• Night Vision Systems -Eng Dev: <i>Night Vision Systems - Eng Dev (PE 604710 L67)</i>	14.151	20.440	26.257	-	26.257	14.690	19.194	19.649	18.643	Continuing	Continuing
• Helmet Mounted Enhanced Vision Devi: <i>Helmet Mounted Enhanced Vision Devices (HMEVD) (SSN K36400)</i>	97.805	97.968	131.946	-	131.946	129.871	78.379	91.449	62.161	Continuing	Continuing
• Family of Weapon Sights (FWS) - I: <i>Family of Weapon Sights - Individual (FWS-I) (SSN K22002)</i>	2.000	53.453	55.536	-	55.536	75.006	88.491	102.756	2.685	Continuing	Continuing
• Family of Weapon Sights (FWS) - CS: <i>Family of Weapon Sights - Crew Served (FWS-CS) (SSN K22003)</i>	-	-	-	-	-	20.723	61.257	81.322	88.264	Continuing	Continuing
• Family of Weapon Sights (FWS) - S: <i>Family of Weapon Sights - Sniper (FWS-S) (SSN K22004)</i>	-	-	-	-	-	8.185	15.626	26.467	23.936	Continuing	Continuing

Remarks

D. Acquisition Strategy
The various developmental programs in this project continue to exercise competitively awarded contracts using best value source selection procedures.

E. Performance Metrics
N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / <i>Night Vision Systems Advanced Development</i>	Project (Number/Name) VT7 / <i>Soldier Maneuver Sensors - Adv Dev</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			
Program Management	Allot	Various : Various	2.609	0.605	Jan 2015	0.707	Feb 2016	1.018	Dec 2016	-		1.018	Continuing	Continuing	0
Subtotal			2.609	0.605		0.707		1.018		-		1.018	-	-	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			
Family of Weapon Sights-Crew Served (FWS-CS)	Various	NVESD : FT BELVOIR, VA	7.591	0.668	Apr 2015	2.316	Apr 2016	-		-		-	0	10.575	0
Family of Weapon Sights-Sniper (FWS-S)	MIPR	NVESD : FT BELVOIR, VA	5.300	0.540	Feb 2015	0.500	Apr 2016	-		-		-	0	6.340	0
Fused Vision Mobility Capability Device (FVMC)	MIPR	NVESD : FT BELVOIR, VA	0.000	-		0.200	May 2016	7.033	May 2017	-		7.033	Continuing	Continuing	0
Pre-Shot Threat Detection (PTD)	MIPR	NVESD : FT BELVOIR, VA	1.309	1.539	Apr 2015	2.610	Apr 2016	1.170	Jan 2017	-		1.170	0	6.628	0
Subtotal			14.200	2.747		5.626		8.203		-		8.203	-	-	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 Support	MIPR	NVESD : FT BELVOIR, VA	1.052	0.024	Mar 2015	0.959	Feb 2016	1.100	Dec 2016	-		1.100	Continuing	Continuing	0
Subtotal			1.052	0.024		0.959		1.100		-		1.100	-	-	0.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / <i>Night Vision Systems Advanced Development</i>	Project (Number/Name) VT7 / <i>Soldier Maneuver Sensors - Adv Dev</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
FWS-CS Technology Maturation Risk Reduction (TMRR)	TMRR																											
(1) FWS-CS MS B					▲ 1																							
(2) FWS-S MS B					▲ 2																							
FUSED VISION MOBILITY CAPABILITY					Development																							
(3) PTD MS A					▲ 3																							
Visible PTD Technology Maturation Risk Reduction (TMRR)					TMRR																							
Visible PTD Test and Evaluation (T&E)									T&E																			
(4) PTD MS C													▲ 4															
PTD LRIP and Production																	Production											
Covert PTD Development and Integration													Covert development and integration															
(5) NEXT GENERATION SMART SENSOR (NGSS) MS A																					▲ 5							
NGSS Technology Maturation Risk Reduction (TMRR)																									TMRR			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / <i>Night Vision Systems Advanced Development</i>	Project (Number/Name) VT7 / <i>Soldier Maneuver Sensors - Adv Dev</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FWS-CS Technology Maturation Risk Reduction (TMRR)	4	2011	3	2016
FWS-CS MS B	3	2016	3	2016
FWS-S MS B	2	2016	2	2016
FUSED VISION MOBILITY CAPABILITY	3	2013	2	2019
PTD MS A	2	2016	2	2016
Visible PTD Technology Maturation Risk Reduction (TMRR)	2	2016	4	2016
Visible PTD Test and Evaluation (T&E)	1	2017	3	2017
PTD MS C	1	2018	1	2018
PTD LRIP and Production	2	2018	4	2021
Covert PTD Development and Integration	3	2017	4	2021
NEXT GENERATION SMART SENSOR (NGSS) MS A	1	2020	1	2020
NGSS Technology Maturation Risk Reduction (TMRR)	1	2020	1	2022

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: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603779A / Environmental Quality Technology - Dem/Val							
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	-	7.529	8.813	7.785	-	7.785	8.213	9.021	9.099	9.320	Continuing	Continuing
035: National Defense Cntr For Enviro Excellence	-	2.480	2.776	2.548	-	2.548	3.366	3.391	3.372	3.384	Continuing	Continuing
E21: POLLUTION PREVENTION TECHNOLOGY DEM/VAL	-	5.049	6.037	5.237	-	5.237	4.847	5.630	5.727	5.936	Continuing	Continuing

A. Mission Description and Budget Item Justification

There is a broad application potential for environmental quality technology (EQT) to be applied to multiple Army weapon systems and installations. However technology must be demonstrated and validated (total ownership cost and performance data identified) before potential users will consider exploiting it. This program element includes projects focused on validating the general military utility or cost reduction potential of technology when applied to different types of infrastructure, military equipment or techniques. It may include validations and proof-of-principle demonstrations in field exercises to evaluate upgrades or provide new operational capabilities. The validation of technologies will be in as realistic an operating environment as possible to assess performance or cost reduction potential. EQT demonstration/validation is systemic; i.e., applies to a class of systems (e.g., vehicles or aircraft) or to a Department of Army-wide, multiple site/installation problem (e.g., unexploded ordnance detection and discrimination). This program will address, and eventually resource, programs in each of the Army environmental quality technology pillars (military materials in the environment, sustainable ranges and lands, compliance, and pollution prevention). All work must be endorsed by potential users and supported by a state-of-the-art assessment (i.e., "technology is heading for user to implement").

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	7.826	8.813	9.120	-	9.120
Current President's Budget	7.529	8.813	7.785	-	7.785
Total Adjustments	-0.297	0.000	-1.335	-	-1.335
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.297	-			
• Adjustments to Budget Years	-	-	-1.335	-	-1.335

Change Summary Explanation

FY 2017 decrease attributed to realignment to higher priority Army efforts.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>				Project (Number/Name) 035 / <i>National Defense Cntr For Enviro Excellence</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
035: <i>National Defense Cntr For Enviro Excellence</i>	-	2.480	2.776	2.548	-	2.548	3.366	3.391	3.372	3.384	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

The National Defense Center for Environmental Excellence (NDCEE) was established by Congress in 1990 with a directive to "serve as a national leadership organization to address high priority environmental problems for the Department of Defense (DoD), other government organizations, and the industrial community." The NDCEE Program is a national resource for developing and disseminating advanced environmental technologies. The NDCEE is used to demonstrate environmentally acceptable technology to industry; validate new technology prior to transferring that technology; and assist in the training of potential users as part of that technology transfer process. The NDCEE is a DoD resource for environmental quality management and technology validation. This program is managed by the Army on behalf of the Office of the Assistant Deputy Under Secretary of Defense for Environment. In May 2008, the program name was redesignated from the National Defense for Environmental Excellence to the National Defense Center for Energy and Environment to ensure that the Center's mission recognizes and addresses the strategic interdependence of energy and environmental technology requirements within an overall sustainability framework in support of our installations, weapons systems and war fighters. This name change also directly supports the DoD's proactive implementation of Executive Order 13423, "Strengthening Federal Environmental, Energy and Transportation Management."

Our broadly encompassing and growing mobile, personal and stationary advanced energy technology requirements include infrastructure, alternative and synthetic fuels, surety, renewables, storage, distribution, advanced power, micro-grids, transportation, systems integration and others. Further, to train as we fight, validated energy and environmental technologies need to be available and implemented at our installations. The NDCEE will continue to demonstrate, validate, and transfer these technologies supporting our integrated environment, safety, occupational health and energy objectives with full consideration of the triple bottom line of mission, environment and community.

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

	FY 2015	FY 2016	FY 2017
Title: Management and operation of the NDCEE.	0.288	-	-
Description: Consists of the management and operation expenses required to operate the NDCEE program by the prime contractor.			
FY 2015 Accomplishments:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) 035 / <i>National Defense Cntr For Enviro Excellence</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Provided management and operation of the NDCEE.				
<p>Title: Industrial base integration, operation of the NDCEE environmental technology facility, and environmental information analysis.</p> <p>Description: Funds the industrial base integration, operation of the NDCEE environmental technology facility, and environmental information analysis by the NDCEE prime contractor.</p> <p>FY 2015 Accomplishments: Funded industrial base integration, operation of the NDCEE environmental technology facility, and environmental information analysis.</p>		0.293	-	-
<p>Title: Conduct demonstration/validation of environmentally acceptable technologies that enhance military readiness and reduce production, operating, and/or disposal costs.</p> <p>Description: Supports the demonstration and validation of environmental, safety, occupational health, and energy technologies that support the Army's Environmental Quality Technology mission. The objective is to determine if the technology is ready for implementation that will enhance military readiness and reduce production, operating, and/or disposal costs.</p> <p>FY 2015 Accomplishments: Conducted demonstration/validation of environmentally acceptable technologies that enhance military readiness and reduce production, operating, and/or disposal costs. Technologies demonstrated consist of technologies selected by the NDCEE Technical Working Group and approved by the NDCEE Executive Advisory Board.</p> <p>FY 2016 Plans: Conduct demonstration/validation of environmentally acceptable technologies that enhance military readiness and reduce production, operating, and/or disposal costs. Technologies to be demonstrated will consist of technologies selected by the NDCEE Technical Working Group.</p> <p>FY 2017 Plans: Will conduct demonstration/validation of environmentally acceptable technologies that enhance military readiness and reduce production, operating, and/or disposal costs. Technologies to be demonstrated will consist of technologies selected by the NDCEE Technical Working Group and approved by the NDCEE Executive Advisory Board.</p>		0.991	1.709	1.569
<p>Title: NDCEE Government program management during contract negotiations and during project formulation, execution, and technology transfer.</p>		0.908	1.067	0.979

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) 035 / <i>National Defense Cntr For Enviro Excellence</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Funds the government program management office for the NDCEE. This consists of personnel assisting in contract negotiations and during project formulation, execution, and technology transfer.</p> <p>FY 2015 Accomplishments: Funded NDCEE Government program management during contract negotiations and during project formulation, execution, and technology transfer.</p> <p>FY 2016 Plans: Fund NDCEE Government program management during contract negotiations and during project formulation, execution, and technology transfer.</p> <p>FY 2017 Plans: Will fund NDCEE Government program management during contract negotiations and during project formulation, execution, and technology transfer.</p>			
Accomplishments/Planned Programs Subtotals	2.480	2.776	2.548

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

N/A

Remarks

D. Acquisition Strategy

The NDCEE is a national asset focused on DoD applications that include technology transfer to appropriate DoD organizations. The NDCEE fosters an outreach program to describe its products and capabilities that include publication of results and participation in professional meetings, symposia, conferences, and appropriate coordination with industry. The management strategy for the NDCEE centers on a DoD Executive Advisory Board (EAB) chaired by the DoD NDCEE Executive Agent on behalf of the Deputy Undersecretary of Defense for Installations and Environment and composed of senior DoD leadership to oversee NDCEE operations. The EAB is supported by the NDCEE Technical Working Group (TWG) that includes senior level staff members from each of the offices represented on the EAB. The NDCEE TWG coordinates all NDCEE activities, votes on proposed joint NDCEE projects, and reports back to the EAB Principals. Working at the tactical levels, three Focus Groups (environment, safety/occupational health, and energy) were established to develop joint projects. The Army's Environmental Quality Technology Program participating in the the Focus Groups also assists in the formulation of suggested environmental technology projects to be demonstrated within the NDCEE Program. The contracting strategy of the NDCEE is based on using an NDCEE Contracting Officer's Representative to validate all the contractual portions of the NDCEE and by technical monitors (TM) to oversee the technical aspects of each contracted task. A prime contractor operates NDCEE test facility to validate environmentally compatible technologies on a representative "shop floor". The NDCEE accounts for and conducts work for: (1) direct funded Army tasks; (2) reimbursable tasks from within DoD and from other Government agencies; and (3) when applicable Congressionally directed and funded tasks.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / Environmental Quality Technology - Dem/Val	Project (Number/Name) 035 / National Defense Cntr For Enviro Excellence

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 / 4				PE 0603779A / Environmental Quality Technology - Dem/Val				035 / National Defense Cntr For Enviro Excellence							
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 Support	MIPR	RDECOM : Aberdeen, MD	23.461	0.908	Aug 2015	1.067	Jan 2016	0.979	Jan 2017	-		0.979	Continuing	Continuing	Continuing
Subtotal			23.461	0.908		1.067		0.979		-		0.979	-	-	-
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
Product Development	TBD	Various : Various	8.797	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			8.797	-		-		-		-		-	-	-	-
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
Technical Data	Various	Various : Various	23.449	0.581	Mar 2015	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			23.449	0.581		-		-		-		-	-	-	-
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
Development Testing and Evaluation	Various	Various. : Various	26.440	0.991	Mar 2015	1.709	Mar 2016	1.569	Mar 2017	-		1.569	Continuing	Continuing	Continuing
Subtotal			26.440	0.991		1.709		1.569		-		1.569	-	-	-
Project Cost Totals			82.147	2.480		2.776		2.548		-		2.548	-	-	-

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) 035 / <i>National Defense Cntr For Enviro Excellence</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
NDCEE Management and Operations (Enduring)																												
NDCEE Env, Safety, Occ Health, and Energy Technology Dem/Val (Enduring)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) 035 / <i>National Defense Cntr For Enviro Excellence</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NDCEE Management and Operations (Enduring)	1	2014	4	2021
NDCEE Env, Safety, Occ Health, and Energy Technology Dem/Val (Enduring)	1	2014	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>				Project (Number/Name) E21 / <i>POLLUTION PREVENTION TECHNOLOGY DEM/VAL</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
E21: <i>POLLUTION PREVENTION TECHNOLOGY DEM/VAL</i>	-	5.049	6.037	5.237	-	5.237	4.847	5.630	5.727	5.936	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Advanced Component Development and Prototypes of environmental quality technologies developed within the Army Environmental Quality Technology program. The project increases operational sustainment and warfighter training capabilities by reducing soldier and worker health risks and environmental quality impacts that would otherwise result in restoration needs and compliance enforcement actions against installations while simultaneously increasing performance and standardization across the Army. The project expedites technology transition from the laboratory to operational use by demonstrating new materials and processes to fulfill the performance requirements outlined in Material Specifications, Depot Maintenance Work Requirements, Technical Manuals, Drawings and other technical data. Materials and processes demonstrated under this project are inherently more sustainable than the baseline with respect to environmental, safety and occupational health concerns, thereby reducing life cycle costs incurred by acquisition, industrial base and installation end users.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Environmental quality technology demonstration and validation: Toxic Metal Reduction in Surface Finishing of Army Weapon Systems</p> <p>Description: Increase readiness and environmental sustainability of Army depots and maintenance facilities by reducing or eliminating the use of hexavalent chromium, cadmium and associated toxic or carcinogenic materials used in surface finishing processes.</p> <p>FY 2015 Accomplishments: Conducted large-scale demonstrations of sustainable alternatives for mixed metal pretreatment, aluminum anodizing and hard chrome electroplating processes.</p> <p>FY 2016 Plans: Conduct large-scale demonstrations of sustainable alternatives for conversion coating, surface activation and copper/silver electroplating processes.</p> <p>FY 2017 Plans: Will conduct qualification testing for alternatives products in mixed metal pretreatment, conversion coating and surface activation applications.</p>	3.119	3.035	2.150
<p>Title: Environmental quality technology demonstration and validation: Airborne Lead Reduction from Army Weapon Systems</p>	1.930	1.825	1.600

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) E21 / <i>POLLUTION PREVENTION TECHNOLOGY DEM/VAL</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Sustain soldier training readiness and ensure compliance at Army installations by reducing or eliminating the use of lead compounds in rocket and missile propellants and primary explosives (primers/detonators/initiators).</p> <p>FY 2015 Accomplishments: Demonstrated large-scale producibility of a promising lead-free primary explosive composition and demonstrated a lead-free stab detonator in a relevant end item configuration.</p> <p>FY 2016 Plans: Qualify a promising lead-free primary explosive composition and will demonstrate a lead-free percussion primer in a relevant end item configuration.</p> <p>FY 2017 Plans: Will demonstrate a green, improved process for loading lead-free primers and will scale up formation of a reduced-lead alternative to current extruded rocket propellants.</p>				
<p>Title: Environmental quality technology demonstration and validation: ESOH Impacts of Short-Term Noise Assessment Procedures</p> <p>Description: Demonstrate and validate the technologies, including the underlying computational algorithms, for the impact of short-term noise assessment procedures on environmental footprint and Soldier readiness. When completed the program will: 1) have validated short-term noise assessment procedures, including uncertainty metrics and 2) have on-line, self-guided training modules for Sustainable Range Program range officers on performing and interpreting short-term noise assessment results.</p> <p>FY 2016 Plans: Incorporate community response blast noise metrics into all short-term noise assessment tools. Incorporate and validate single event metrics and thresholds determined in the Blast Noise study into the noise models. Validate that single event propagation tables are properly and consistently accessed by each noise model to be tested. Using existing validation sets (Ft. Sill and Ft. Knox), initiate validation that all models produce identical results for each of the test cases. Demonstrate an initial methodology for automating simulations, given source and propagation condition inputs for future model update validations testing. Compare and validate model outputs for the Long-Range Sound Propagation dataset, treating the desert and temperate environments separately.</p> <p>FY 2017 Plans:</p>		-	0.594	0.586

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) E21 / <i>POLLUTION PREVENTION TECHNOLOGY DEM/VAL</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Will incorporate community response blast noise metrics into all short-term noise assessment tools. Conduct comparisons and validation of models using installation validation sets (Ft. Sill and Ft. Knox). Initiate comparisons and validations of models using additional installation dataset (Ft. AP Hill). Design sampling protocols and methods.			
Title: Environmental quality technology demonstration and validation: Advanced Water Reuse Technology for Fixed Installations Description: Demonstrate and validate advanced water reuse technology for fixed installations and assess ESOH impacts. At the completion of this program, the following will be accomplished: 1) demonstration of energy efficient advanced water reuse technology at installations, 2) ESOH analysis of three water reuse technologies for installations including shower water recycling, distributed water reclamation, and centralized reclamation; 3) reports on best practices for permitting, design, and safe operation of advanced reuse technologies; and 4) marketing materials comparing quality of advanced reuse water to tap and bottled water to support technology adoption campaigns at installations and contingency bases. FY 2016 Plans: Perform analysis of toxicity and full suite of potential water contaminants (Disinfection By-Products, Pentachlorophenol, viruses, Total Organic Carbon) at Technology Enabled Capabilities Demonstration sites and at active Environmental Security Technology Certification Program demonstration sites; support permitting of advanced water reuse technology demonstration; and contract for a demonstration/validation system prototype. FY 2017 Plans: Will perform analysis of toxicity and full suite of potential water contaminants (Disinfection By-Products, Pentachlorophenol, viruses, Total Organic Carbon) at Technology Enabled Capabilities Demonstration sites and at active Environmental Security Technology Certification Program demonstration sites; will support permitting of advanced water reuse technology demonstration; and will develop a demonstration/validation system prototype.	-	0.583	0.901
Accomplishments/Planned Programs Subtotals	5.049	6.037	5.237

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
• 0605857A: 0605857A 06I	0.262	0.272	0.110	-	0.110	0.334	0.211	0.342	0.309	Continuing	Continuing

Remarks

D. Acquisition Strategy

The project ultimately transitions successfully demonstrated environmental quality technologies to Army acquisition, industrial base and installation end users. As part of the Army's Environmental Quality Technology Program, all technology efforts address a valid Army Environmental Requirements and Technology Assessments

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) E21 / <i>POLLUTION PREVENTION TECHNOLOGY DEM/VAL</i>
<p>(AERTA) requirement. The Army's Environmental Technology Integrated Product Team conducts a thorough assessment and makes funding recommendations to senior Army environmental leadership. Efforts approved by senior Army environmental leadership receive Advanced Component Development and Prototype funding to fully demonstrate and validate the technology for transition to end users for follow on implementation.</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 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) E21 / <i>POLLUTION PREVENTION TECHNOLOGY DEM/VAL</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			
Conduct Demonstrations	MIPR	Varies : Varies	0.000	5.049	Oct 2014	6.037	Oct 2015	5.237	Oct 2016	-		5.237	Continuing	Continuing	Continuing
Subtotal			0.000	5.049		6.037		5.237		-		5.237	-	-	-
Project Cost Totals			0.000	5.049		6.037		5.237		-		5.237	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) E21 / <i>POLLUTION PREVENTION TECHNOLOGY DEM/VAL</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
Toxic Metals Redution Demonstration/Validation																												
Airborne Lead Reduction Demonstration/Validation																												
ESOH Impacts of Short-Term Noise Assessment Procedures Demonstr																												
Advanced Water Reuse Technology for Fixed Installations																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / <i>Environmental Quality Technology - Dem/Val</i>	Project (Number/Name) E21 / <i>POLLUTION PREVENTION TECHNOLOGY DEM/VAL</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Toxic Metals Redution Demonstration/Validation	1	2015	4	2021
Airborne Lead Reduction Demonstration/Validation	1	2015	4	2021
ESOH Impacts of Short-Term Noise Assessment Procedures Demonstration/Validation	1	2016	4	2019
Advanced Water Reuse Technology for Fixed Installations	1	2016	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 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development							
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	-	2.839	6.075	2.300	-	2.300	3.128	3.058	3.172	3.276	Continuing	Continuing
691: <i>NATO Rsch & Devel</i>	-	2.839	6.075	2.300	-	2.300	3.128	3.058	3.172	3.276	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program implements the provisions of Title 10 U.S. Code, Section 2350a, Cooperative Research and Development (R&D) Projects: Allied Countries. The objective is to improve, through the application of emerging technologies, the conventional defense capabilities of the United States and our cooperative partners, including the North Atlantic Treaty Organization (NATO), U.S. major non-NATO allies and Friendly Foreign countries. Through technology sharing and joint equipment development these projects help reduce U.S. acquisition costs and leverage important technologies for the Army Transformation and the development of the Future Combat system. Cooperative efforts also improve multinational force compatibility with potential coalition partners through the development and use of similar equipment and improved interfaces. The program focuses specifically on international cooperative technology demonstration, validation, and interoperability of Army weapon and command, control, communications and information (C3I) systems, including the NATO Defense Against Terrorism initiatives. Projects are implemented through international agreements with foreign partners that define scope, cost and work sharing arrangements, management, contracting, security, data protection and third party transfers. Funds are used to pay for only the U.S. work share that occurs in the United States at U.S. Government and U.S. contractor facilities.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	2.952	6.075	6.248	-	6.248
Current President's Budget	2.839	6.075	2.300	-	2.300
Total Adjustments	-0.113	0.000	-3.948	-	-3.948
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.113	-			
• Adjustments to Budget Years	-	-	-3.948	-	-3.948

Change Summary Explanation

FY 2017 reduction attributed to realignment to other higher priority Army programs (i.e., classified and will be provide under separate cover).

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development				Project (Number/Name) 691 / NATO Rsch & Devel			
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
691: NATO Rsch & Devel	-	2.839	6.075	2.300	-	2.300	3.128	3.058	3.172	3.276	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program implements the provisions of Title 10 U.S. Code, Section 2350a, Cooperative Research and Development (R&D) Projects: Allied Countries. The objective is to improve, through the application of emerging technologies, the conventional defense capabilities of the United States and our cooperative partners, including the North Atlantic Treaty Organization (NATO), U.S. major non-NATO allies and Friendly Foreign countries. Through technology sharing and joint equipment development these projects help reduce U.S. acquisition costs and leverage important technologies for the Army Transformation and the development of the Future Combat system. Cooperative efforts also improve multinational force compatibility with potential coalition partners through the development and use of similar equipment and improved interfaces. The program focuses specifically on international cooperative technology demonstration, validation, and interoperability of Army weapon and command, control, communications and information (C3I) systems, including the NATO Defense Against Terrorism initiatives. Projects are implemented through international agreements with foreign partners that define scope, cost and work sharing arrangements, management, contracting, security, data protection and third party transfers. Funds are used to pay for only the U.S. work share that occurs in the United States at U.S. Government and U.S. contractor facilities.

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

	FY 2015	FY 2016	FY 2017
Title: Armaments Cooperation Enterprise Support	1.264	1.835	1.760
Description: Armaments Cooperation Enterprise Support/ International Online (IOL) Development and Implementation NATO/ International Cooperative R&D (AR 70-41) and International Acquisition (AR 70-1, AR 70-3). Prior to FY15, efforts in this area were covered under the area entitled Scientific and Technology Enterprise Management.			
FY 2015 Accomplishments: The goal of this program was to expand worldwide allied standardization and interoperability through cooperative Research and Development (R&D) and technology sharing per SECDEF guidance and especially in support of the U.S. Army. This program funded the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate internationally, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG), Defense Against Terrorism (DAT) and to pursue new cooperative R&D initiatives and international cooperative agreements such as memoranda of understanding. This program also included: The United States' share of costs of the NATO Civil Budget, Chapter IX, which funds the NATO Industrial Advisory Group (NIAG) and the Special Fund for Cooperative Planning (U. S. Army is Executive Agent for this NATO bill); the Technical Cooperation Program, and Army armaments cooperation working groups with many nations.			
FY 2016 Plans: The goal of this program is to expand worldwide allied standardization and interoperability through cooperative Research and Development (R&D) and technology sharing per SECDEF guidance and especially in support of the U.S. Army. This			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>program will fund the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate internationally, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG), Defense Against Terrorism (DAT) and to pursue new cooperative R&D initiatives and international cooperative agreements such as memoranda of understanding. Additional funds will allow the coordination for cooperative research, development and evaluation of defense technologies/systems/equipments plus joint production and follow-on support of defense systems or equipment and the procurement of foreign technologies.</p> <p>FY 2017 Plans: The goal of this program is to expand worldwide allied standardization and interoperability through cooperative Research and Development (R&D) and technology sharing per SECDEF guidance and especially in support of the U.S. Army. The execution AR 70-41 responsibilities requires DASA (DE&C) to conduct engagement with key strategy foreign partners in all regions of the world through the SNR(A) program, international agreement negotiations, and other bilateral and multilateral forums involving DASA (DE&C) personnel. This program will fund the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate internationally, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG), Defense Against Terrorism (DAT) and to pursue new cooperative R&D initiatives and international cooperative agreements such as memoranda of understanding. Funds will allow the coordination for cooperative research, development and evaluation of defense technologies/systems/equipments plus joint production and follow-on support of defense systems or equipment and the procurement of foreign technologies.</p>			
<p>Title: Communications Interoperability, and Electronics Technologies</p> <p>Description: The goal of this project is to develop technologies that enable interoperability among partner countries' command, control, communications, sensors, and information systems. Efforts under this project include development of a single solution standard avoiding development of multiple unique solutions and leverage existing interoperability standards developed by NATO. Such standards include common doctrine, technical and procedural specifications to make better use of existing information, shared data, leveraged national operating picture capabilities and enable the development of interoperability of data, databases, applications, security domains and national networks architectures. Includes efforts from areas formerly titled Multi-National Network Enabled Capabilities, Low Level Air Defense Interoperability, JTRS, Combat Identification, and Multilateral Interoperability Program.</p> <p>FY 2015 Accomplishments: The goal of this project was to develop technologies that enable interoperability among partner countries' command, control, communications, sensors, and information systems. Efforts under this project included development of a single solution standard avoiding development of multiple unique solutions and leverage existing interoperability standards developed by NATO. Such standards included common doctrine, technical and procedural specifications to make better use of existing information, shared data, leverage national operating picture capabilities and enabled the development of interoperability of data, databases,</p>	0.499	1.341	0.125

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>applications, security domains and national networks architectures. Included projects formerly titled Multi-National Network Enabled Capabilities, Low Level Air Defense Interoperability, JTRS, Combat Identification, and Multilateral Interoperability Program.</p> <p>FY 2016 Plans: The goal of this project is to develop technologies that enable interoperability among partner countries' command, control, communications, sensors, and information systems. Efforts under this project include development of a single solution standard avoiding development of multiple unique solutions and leverage existing interoperability standards developed by NATO. Such standards include common doctrine, technical and procedural specifications to make better use of existing information, shared data, leverage national operating picture capabilities and enable the development of interoperability of data, databases, applications, security domains and national networks architectures. Includes projects formerly titled Multi-National Network Enabled Capabilities, Low Level Air Defense Interoperability, JTRS, Combat Identification, and Multilateral Interoperability Program.</p> <p>FY 2017 Plans: The goal of this project is to develop technologies that enable interoperability among partner countries' command, control, communications, sensors, and information systems. Efforts under this project include development of a single solution standard avoiding development of multiple unique solutions and leverage existing interoperability standards developed by NATO. Such standards include common doctrine, technical and procedural specifications to make better use of existing information, shared data, leverage national operating picture capabilities and enable the development of interoperability of data, databases, applications, security domains and national networks architectures. FY 17 funding will be used to partially peruse cooperative projects that were postponed such as: the Coalition Wideband Networking Waveform Phase II, 5-Power-Net-centric Command and Control Interoperability projects.</p>				
<p>Title: Senior National Representatives (Army) (SNR-(A))</p> <p>Description: Senior National Representatives (Army) (SNR-(A)) Projects (Partners: France, Germany, United Kingdom and Italy): Supports harmonization of programs at various levels: exchanging information, identifying knowledge gaps and conducting feasibility studies to further promote cooperative development; standardizing, fielding and roadmapping various processes; distributing the workload among the different nations. Technology Demonstrations hosted by the U.S. reps to Land Group 6, NATO Army Armaments Group (NAAG), will provide an opportunity to observe and demonstrate the current and future capability of participating NATO nations with a view to assisting future operational and materiel interoperability. Army support of NAAG studies, analysis and technology demonstrations.</p> <p>FY 2015 Accomplishments:</p>		0.058	0.150	0.013

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Senior National Representatives (Army) (SNR-(A)) Projects with international partners: Supported harmonization of programs at various levels: exchanging information, identifying knowledge gaps and conducting feasibility studies to further promote cooperative development; standardizing, fielding and road mapping various processes; distributing the workload among the different nations. Technology Demonstrations hosted by the U.S. reps to Land Group, NATO Army Armaments Group (NAAG), provided an opportunity to observe and to demonstrate the current and future capability of participating NATO nations with a view to assisting future operational and materiel interoperability. Army support of NAAG studies, analysis and technology demonstrations.</p> <p>FY 2016 Plans: Senior National Representatives (Army) (SNR-(A)) Projects with international partner will support harmonization of programs at various levels: exchanging information, identifying knowledge gaps and conducting feasibility studies to further promote cooperative development; standardizing, fielding and road mapping various processes; distributing the workload among the different nations. Technology Demonstrations hosted by the U.S. reps to Land Group, NATO Army Armaments Group (NAAG), will provide an opportunity to observe and demonstrate the current and future capability of participating NATO nations with a view to assisting future operational and materiel interoperability. Army will support of NAAG studies, analysis and technology demonstrations. Additional funds will be used to persue cooperative initiatives that were postponed, cancelled or not persued due to funding reductions in previous years such as forums and engagement with long-standing foreign partners to identify interoperability gaps and develop necessary standardization programs.</p> <p>FY 2017 Plans: Senior National Representatives (Army) (SNR-(A)) Projects with international partner will support harmonization of programs at various levels: exchanging information, identifying knowledge gaps and conducting feasibility studies to further promote cooperative development; standardizing, fielding and road mapping various processes; distributing the workload among the different nations. Technology Demonstrations hosted by the U.S. reps to Land Group, NATO Army Armaments Group (NAAG), will provide an opportunity to observe and demonstrate the current and future capability of participating NATO nations with a view to assisting future operational and materiel interoperability. Army will support of NAAG studies, analysis and technology demonstrations. Additional funds will be used to persue cooperative initiatives that were postponed, cancelled or not persued due to funding reductions in previous years such as forums and engagement with long-standing foreign partners to identify interoperability gaps and develop necessary standardization programs. FY 17 funding will be used to pursue cooperative initiatives (i.e., forums and engagement with long-standing foreign partners to identify interoperability gaps and develop necessary standardization programs).</p>				
Title: Weapons and Munitions Technologies		0.588	1.289	0.100
Description: Weapons and munitions technologies (Partners: France, Germany, Italy, UK): The Participants in this program will develop an automated software interface between their national field artillery command and control systems. The nations will be				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
able to receive and provide mutual fire support (i.e. cannon and rocket fire) in combined operations more rapidly and with minimal errors.				
<p><i>FY 2015 Accomplishments:</i> The goal of this project was to cooperate with partner countries to increase interoperability and to develop jointly technologies to improve range, payloads, speed, survivability and lethality to maintain U.S. technical superiority and combat overmatch for Army weapons systems and associated munitions. Areas of cooperation included fuzing and warhead systems, guidance systems, counter improvised explosive device neutralization, directed energy, and fire control systems. Such cooperative development were done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. In FY15, efforts in this program were combined with Artillery Command and Control Interoperability.</p> <p><i>FY 2016 Plans:</i> The goal of this project is to cooperate with partner countries to increase interoperability and to develop jointly technologies to improve range, payloads, speed, survivability and lethality to maintain U.S. technical superiority and combat overmatch for Army weapons systems and associated munitions. Areas of cooperation include fuzing and warhead systems, guidance systems, counter improvised explosive device neutralization, directed energy, and fire control systems. Such cooperative development is done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. Since FY15, efforts in this program were combined with Artillery Command and Control Interoperability.</p> <p><i>FY 2017 Plans:</i> The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly technologies to improve range, payloads, speed, survivability and lethality to maintain U.S. technical superiority and combat overmatch for Army weapons systems and associated munitions. Areas of cooperation include fuzing and warhead systems, guidance systems, counter improvised explosive device neutralization, directed energy, and fire control systems. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. This program was combined with Artillery Command and Control Interoperability in FY15. FY 17 funding will be used to pursue cooperative projects (i.e., to develop and demonstrate interoperability among U.S. foreign partners artillery weapons systems and ammunitions).</p>				
<i>Title:</i> Soldier Technologies		0.020	0.300	-
<i>Description:</i> Soldier Technologies (Partners: United Kingdom, France, Germany, Italy, Sweden, Canada): Soldier Technologies will include R&D collaboration on technologies such as Counter Rocket and Mortar (C-RAM) and Counter Improvised Explosive				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Devices (C-IED). Programs include Military Operations in Urban Terrain (MOUT) and a variety of Defense Against Terrorism (DAT) initiatives such as Defense Against Mortar Attacks (DAMA) and Joint Precision Air Drop System (JPADS).</p> <p>FY 2015 Accomplishments: The goal of this project was to cooperate with partner countries to increase interoperability and develop jointly improved technologies to increase the effectiveness, health, and reliability of the individual soldier. Such technologies maximized soldier survivability, sustainability, mobility, combat effectiveness, and field quality of life. Efforts under this project also enabled interoperability and standardization among partner country systems that supported the individual soldier. Such cooperative development were done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. Since FY15 this program included Force Protection Projects Programs</p> <p>FY 2016 Plans: The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly improved technologies to increase the effectiveness, health, and reliability of the individual soldier. Such technologies will maximize soldier survivability, sustainability, mobility, combat effectiveness, and field quality of life. Efforts under this project will also enable interoperability and standardization among partner country systems that support the individual soldier. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. Since FY15 this program adopted Force Protection Project and projects under TRDP, additional funds will be used to persue cooperative projects that were postponed or not persue due to funding reductins in previous years such as cooperative projects in soldier psychological health and traumatic brain injury, improved small arms systems, eye safe lasers, portable soldier power technologies, and enhance body armor.</p>				
<p>Title: Ground Systems Technologies</p> <p>Description: The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly technologies to improve survivability, weapons, ground platforms (manned and unmanned), and mobility and counter-mobility to provide soldiers with unmatched offensive and defensive capabilities in weapons and military vehicles. Areas of cooperation include ground systems design, propulsion, structures, robotics, alternative fuels and lubricants, systems integration, electronics, and power management. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.</p> <p>FY 2015 Accomplishments: The goal of this project was to cooperate with partner countries to increase interoperability and developd jointly technologies to improved survivability, weapons, ground platforms (manned and unmanned), and mobility and counter-mobility to provide soldiers with unmatched offensive and defensive capabilities in weapons and military vehicles. Areas of cooperation included ground</p>		0.200	0.250	0.100

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>systems design, propulsion, structures, robotics, alternative fuels and lubricants, systems integration, electronics, and power management. Such cooperative development was done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.</p> <p>FY 2016 Plans: The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly technologies to improve survivability, weapons, ground platforms (manned and unmanned), and mobility and counter-mobility to provide soldiers with unmatched offensive and defensive capabilities in weapons and military vehicles. Areas of cooperation will include ground systems design, propulsion, structures, robotics, alternative fuels and lubricants, systems integration, electronics, and power management. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. Additional FY16 funds will be used to continue funding cooperative projects in armored vehicle underbody blast protection and unmanned ground vehicles such as Hybrid Electric PA between US and Japan.</p> <p>FY 2017 Plans: The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly technologies to improve survivability, weapons, ground platforms (manned and unmanned), and mobility and counter-mobility to provide soldiers with unmatched offensive and defensive capabilities in weapons and military vehicles. Areas of cooperation will include ground systems design, propulsion, structures, robotics, alternative fuels and lubricants, systems integration, electronics, and power management. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. FY17 funding will be used to fund the continuation of cooperative projects in armored vehicle underbody blast protection and unmanned ground vehicles such as Hybrid Electric Project Agreement between US and Japan.</p>				
<p>Title: Aviation Systems Technologies</p> <p>Description: The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly improved aerodynamics, aeromechanics, avionics, weapons and sensor integration, propulsion, and aviation autonomy technologies that improve range, payloads, speed, survivability and lethality to maintain U.S. technical superiority and combat overmatch for vertical lift aviation systems. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.</p> <p>FY 2015 Accomplishments: The goal of this project was to cooperate with partner countries to increase interoperability and to develop jointly improved aerodynamics, aeromechanics, avionics, weapons and sensor integration, propulsion, and aviation autonomy technologies</p>		0.180	0.460	0.202

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>that improved range, payloads, speed, survivability and lethality to maintain U.S. technical superiority and combat overmatch for vertical lift aviation systems. Such cooperative development was done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.</p> <p>FY 2016 Plans: The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly improved aerodynamics, aeromechanics, avionics, weapons and sensor integration, propulsion, and aviation autonomy technologies that improve range, payloads, speed, survivability and lethality to maintain U.S. technical superiority and combat overmatch for vertical lift aviation systems. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. Additional FY16 funds will be used to persue cooperative projects that were postponed or not pursued due to funding reductions in previous years such as cooperative projects to develop advance rotorcraft technologies and improve systems that aid pilots and aircrew in degraded visual environments.</p> <p>FY 2017 Plans: The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly improved aerodynamics, aeromechanics, avionics, weapons and sensor integration, propulsion, and aviation autonomy technologies that improve range, payloads, speed, survivability and lethality to maintain U.S. technical superiority and combat overmatch for vertical lift aviation systems. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. FY 17 funding will be used to pursue cooperative projects (i.e., the development of advance rotorcraft technologies and improve systems that aid pilots and aircrew in degraded visual environments).</p>				
<p>Title: Chemical and Biological Defense Technologies</p> <p>Description: The goal of this project is to cooperate with partner countries to increase interoperability and standardization of chemical, biological, and radiological defense materiel and to develop jointly improved technologies to defend against weapons of mass destruction. Areas of cooperation include aerosol physics, toxicology, vaccinations, filtration science, agent detection and monitoring, handling, and demilitarization. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.</p> <p>FY 2015 Accomplishments: The goal of this project is to cooperate with partner countries to increase interoperability and standardization of chemical, biological, and radiological defense materiel and to develop jointly improved technologies to defend against weapons of mass destruction. Areas of cooperation include aerosol physics, toxicology, vaccinations, filtration science, agent detection and</p>		0.030	0.250	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>monitoring, handling, and demilitarization. Such cooperative development was done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.</p> <p>FY 2016 Plans: The goal of this project is to cooperate with partner countries to increase interoperability and standardization of chemical, biological, and radiological defense materiel and to develop jointly improved technologies to defend against weapons of mass destruction. Areas of cooperation include aerosol physics, toxicology, vaccinations, filtration science, agent detection and monitoring, handling, and demilitarization. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries. Additional FY16 funds will be used to continue cooperative projects that were postponed due to funds reductions in previous years, such as cooperative projects to develop vaccines for soldier protection against biological threats and enhanced radiological and biological threat detection systems.</p>				
<p>Title: Missiles and Rocket Technologies</p> <p>Description: The goal of this project is to cooperate with partner countries to increase interoperability and deveop jointly improved missile and rocket technologies, such as propulsion, energetic materials, payloads, flight control systems, sensors, and seekers. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purpose of improving defense capabilities of the U.S. and partner countries.</p> <p>FY 2016 Plans: The goal of this project is to cooperate with partner countries to increase interoperability and deveop jointly improved missile and rocket technologies, such as propulsion, energetic materials, payloads, flight control systems, sensors, and seekers. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purpose of improving defense capabilities of the U.S. and partner countries. a portion of former Technology Research and Development Projects (TRDP) was moved to Missiles and Rockets as part of project realignment in FY15. Additional FY16 funds are used to persue cooperative projects that were postponed or not pursued due to funding reductions in previous years such as cooperative projects to enhance coalition capabilities in Ground-based Air Defense.</p>		-	0.200	-
Accomplishments/Planned Programs Subtotals		2.839	6.075	2.300
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 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel

D. Acquisition Strategy

Acquisition Strategy:

The goal of this program is to expand worldwide allied standardization interoperability through cooperative research and development (R&D) and technology sharing per SECDEF guidance and especially in support of the of the U.S. Army.

All projects are test or technical demonstrations to feed into potential new requirements in support of Army Transformation to the Future Force or as product improvements to the Current Force.

List of the programs curenly in place:

Communications, Interoperability, and Electronics Technologies

The goal of this project is to develop technologies that enable interoperability among partner countries' command, control, communications, sensors, and information systems. Efforts under this project include development of a single solution standard avoiding development of multiple unique solutions and leverage existing interoperability standards developed by NATO. Such standards include common doctrine, technical and procedural specifications to make better use of existing information, shared data, leverage national operating picture capabilities and enable the development of interoperability of data, databases, applications, security domains and national networks architectures. Includes projects formerly titled Multi-National Network Enabled Capabilities, Low Level Air Defense Interoperability, JTRS, Combat Identification, and Multilateral Interoperability Program.

Missile and Rocket Technologies

The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly improved missile and rocket technologies, such as propulsion, energetic materials, payloads, flight control systems, sensors, and seekers. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.

Aviation Systems Technologies

The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly improved aerodynamics, aeromechanics, avionics, weapons and sensor integration, propulsion, and aviation autonomy technologies that improve range, payloads, speed, survivability and lethality to maintain U.S. technical superiority and combat overmatch for vertical lift aviation systems. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.

Soldier Technologies

The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly improved technologies to increase the effectiveness, health, and reliability of the individual soldier. Such technologies will maximize soldier survivability, sustainability, mobility, combat effectiveness, and field quality of life. Efforts under this project will also enable interoperability and standardization among partner country systems that support the individual soldier. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.

Chemical and Biological Defense Technologies

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel
<p>The goal of this project is to cooperate with partner countries to increase interoperability and standardization of chemical, biological, and radiological defense materiel and to develop jointly improved technologies to defend against weapons of mass destruction. Areas of cooperation include aerosol physics, toxicology, vaccinations, filtration science, agent detection and monitoring, handling, and demilitarization. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.</p> <p>Ground Systems Technologies The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly technologies to improve survivability, weapons, ground platforms (manned and unmanned), and mobility and counter-mobility to provide soldiers with unmatched offensive and defensive capabilities in weapons and military vehicles. Areas of cooperation include ground systems design, propulsion, structures, robotics, alternative fuels and lubricants, systems integration, electronics, and power management. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.</p> <p>Weapons and Munitions Technologies The goal of this project is to cooperate with partner countries to increase interoperability and develop jointly technologies to improve range, payloads, speed, survivability and lethality to maintain U.S. technical superiority and combat overmatch for Army weapons systems and associated munitions. Areas of cooperation include fuzing and warhead systems, guidance systems, counter improvised explosive device neutralization, directed energy, and fire control systems. Such cooperative development will be done under the auspices of international agreements established among the participating countries for the purposes of improving defense capabilities of the U.S. and partner countries.</p> <p>Senior National Representative (Army) program Senior National Representatives (Army) (SNR-(A)) Projects with international partners: Supports harmonization of programs at various levels: exchanging information, identifying knowledge gaps and conducting feasibility studies to further promote cooperative development; standardizing, fielding and road mapping various processes; distributing the workload among the different nations. Technology Demonstrations hosted by the U.S. reps to Land Group, NATO Army Armaments Group (NAAG), provides an opportunity to observe and demonstrate the current and future capability of participating NATO nations with a view to assisting future operational and materiel interoperability. Army support of NAAG studies, analysis and technology demonstrations.</p> <p>Armaments Cooperation Enterprise Support The goal of this program is to expand worldwide allied standardization and interoperability through cooperative research and development (R&D) and technology sharing per SECDEF guidance and especially in support of the U.S. Army. This program will fund the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate internationally, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG), Defense Against Terrorism (DAT) and to pursue new cooperative R&D initiatives and international cooperative agreements such as memoranda of understanding. This program will also include: the United States' share of costs of the NATO Civil Budget, Chapter IX, which funds the NATO Industrial Advisory Group (NIAG) and the Special Fund for Cooperative Planning (U. S. Army is Executive Agent for this NATO bill); the Technical Cooperation Program, and Army armaments cooperation working groups with many nations.</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / <i>NATO Research and Development</i>	Project (Number/Name) 691 / <i>NATO Rsch & Devel</i>

<u>E. Performance Metrics</u> N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel
--	---	---

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			
ArmamentsCooperation Enterprise Support	MIPR	DASA DEC HQDA : Ft Belvoir, VA	0.000	0.006		0.006		-		-		-	0	0.012	0
Weapons and Munitions	TBD	CECOM : Aberdeen Proving Ground, MD	0.000	-		0.010		-		-		-	0	0.010	0
Communications Interoperability and Electronic Technologies Interoperability	MIPR	SPAWAR : Various	0.000	-		0.010		-		-		-	0	0.010	0
Ground Systems Technologies	MIPR	TARDEC : Warren, MI	0.000	-		0.010		-		-		-	0	0.010	0
Chemical and Biological Technologies	MIPR	Aberdeen Proving Ground : MD	0.000	-		0.010		-		-		-	0	0.010	0
Subtotal			0.000	0.006		0.046		-		-		-	0.000	0.052	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			
Missiles and Rocket Technologies	MIPR	APG, Redstone Arsenal : MD, AL	0.000	-		0.100		-		-		-	0	0.100	0
Communications, Interoperability, and Electronics Technologies	MIPR	CECOM, JTRS, COALWNW, JTNC, SPAWAR : San Diego, CA, various	0.000	0.164		0.405		-		-		-	0	0.569	0
Weapons and Munitions	Various	ARDEC, PEO AMMO, PM-CAS : VARIOUS	0.000	0.350		0.402		-		-		-	0	0.752	0
Aviation Systems Technologies	Various	AMRDEC : RED STONE, VARIOUS	0.000	0.100		0.075		-		-		-	0	0.175	0
Ground Systems Technology	FFRDC	Various : Various	0.000	0.100		0.025		-		-		-	0	0.125	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel
--	---	---

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			
SNR(A)	C/TBD	ARDEC: Arlington, VA : Various	9.012	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			9.012	0.714		1.007		-		-		-	-	-	-

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			
Armaments Cooperation Enterprise Support	C/FFP	LSS/GDIT : Fairfax, VA	0.000	1.258		1.918		1.760		-		1.760	0	4.936	0
Missiles and Rocket Technologies	MIPR	APG, Redstone Arsenal : MD, AL	0.000	-		0.100		-		-		-	0	0.100	0
Communications, Interoperability, and Electronics Technologies	MIPR	Joint Tactical Radio (JTRS), JTNC, COALWNW, SPAWAR, CERDEC, ARDEC W1DF : San Diego, CA, Red Stone Arsenal	0.000	0.235		0.558		0.125		-		0.125	0	0.918	0
Aviation Systems Technologies	MIPR	RDECOM/ AMRDEC : Red Stone Arsenal	0.000	0.050		0.335		0.200		-		0.200	0	0.585	0
Ground Systems Technology	MIPR	TARDEC : Various	0.000	0.050		0.215		0.100		-		0.100	0	0.365	0
Weapons and Munitions	Various	CECOM, ARDEC, AMMO, PEO C3T : Aberdeen Proving Ground, Various	0.000	0.238		0.588		0.100		-		0.100	0	0.926	0
Soldier Technologies	TBD	Various : Various	0.000	0.020		0.300		-		-		-	0	0.320	0
SNR(A)	C/TBD	ARL, HQDA, JCGISR: Army : Various	2.094	0.058		0.150		0.015		-		0.015	Continuing	Continuing	Continuing

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 / 4				PE 0603790A / NATO Research and Development				691 / NATO Rsch & Devel							
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
Chemical & Biological Defense Technologies	MIPR	ECBC : Edgewood, Aberdeen, MD	0.000	0.030		0.240		-		-		-	0	0.270	0
Subtotal			2.094	1.939		4.404		2.300		-		2.300	-	-	-
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
Communications, Interoperability, and Electronics Technologies	Various	JTRN, JTNC, COALWNW, CERDEC, NIGHT VISION : SPAWAR	0.000	0.100		0.368		-		-		-	0	0.468	0
Weapons and Munitions	TBD	ARDEC, PEO AMMO, ASCA : Various	0.000	-		0.200		-		-		-	0	0.200	0
Aviation Systems Technologies	TBD	RDECOM, AMRDEC : RED STONE	0.000	0.030		0.050		-		-		-	0	0.080	0
Ground Systems Technologies	MIPR	TARDEC : Various	0.000	0.050		-		-		-		-	0	0.050	0
Subtotal			0.000	0.180		0.618		-		-		-	0.000	0.798	0.000
Project Cost Totals			11.106	2.839		6.075		2.300		-		2.300	-	-	-
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel
--	---	---

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 / 4	R-1 Program Element (Number/Name) PE 0603790A / NATO Research and Development	Project (Number/Name) 691 / NATO Rsch & Devel

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
N/A	1	2017	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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603801A / <i>Aviation - Adv 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	-	0.000	0.000	10.014	-	10.014	9.008	7.840	21.998	55.423	Continuing	Continuing
B47: <i>Future Vertical Lift Medium</i>	-	0.000	0.000	10.014	-	10.014	9.008	7.840	21.998	55.423	Continuing	Continuing

Note

In Fiscal Year (FY) 2015, funding for Advanced Maintenance Concepts was realigned to Program Element (PE) 0605830A Project EE5 to reflect development efforts in Budget Activity 05, System Development and Demonstration.

In FY 2017, Future Vertical Lift, Project B47, will receive funds in PE 0603801A.

A. Mission Description and Budget Item Justification

PE 0603801A Project B32, Advanced Maintenance Concepts provides advanced development aviation support of programs that include advanced maintenance concepts and equipment. This program provides for development of rapid battle repair procedures, tools development to speed the return of aircraft to a full mission status, and development of new equipment for aerial recovery of damaged aircraft. Included in this project are: diagnostics/prognostic monitoring systems, Aviation Ground Power Unit (AGPU) redesign and incorporation of AGPU modularity capabilities, Aviation Light Utility Mobile Maintenance Cart (ALUMMC), Aviation Unit Maintenance Shop Set (AVUM SS), Unit Maintenance Aerial Recovery Kit (UMARK) and development support for tools needed to provide maintenance support to modernized/future force aircraft. There is no funding for this project in FY 2015 and beyond.

PE 0603801A Project B47, Future Vertical Lift (FVL) is an initiative, not yet an acquisition program, to develop a family of vertical lift aircraft for the United States Armed Forces. FVL was established in 2009 by the Secretary of Defense to focus all Department of Defense (DoD) vertical lift capabilities and technology development, as well as retaining long-term engineering capabilities. In October 2011, the Deputy Secretary of Defense issued the FVL Strategic Plan to outline a joint approach for the next generation vertical lift aircraft for all military services. The Strategic Plan provided a foundation for replacing the current fleet with advanced capability by shaping the development of vertical lift aircraft for the next 25 to 40 years. The development and fielding of FVL will significantly improve vertical lift capabilities providing critical aviation support to the Joint warfighting community. Increases in range, speed, payload, survivability, reliability, and reduced logistical footprint can only be achieved through the FVL approach of developing a new aircraft design. FVL will integrate advancements in technologies and design configurations balanced with appropriate trades to ensure affordability.

FY 2017 funding provides for Analysis of Alternatives (AoA) Modeling, Simulation, and Analysis and provides for Systems Engineering and Program Management (SEPM). FY 2018 continues to fund AoA efforts and provides funding for SEPM. FY 2019 supports Milestone A, Request for Proposal (RFP) development, RFP release, and SEPM. FY 2020 funds Source Selection Evaluation Board (SSEB), and continues to provide funding for SEPM. FY 2021 provides for air vehicle contract award and provides funding for SEPM.

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603801A / <i>Aviation - Adv 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	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	10.014	-	10.014
Total Adjustments	0.000	0.000	10.014	-	10.014
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	10.014	-	10.014

Change Summary Explanation

Initial funding for the program.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603801A / Aviation - Adv Dev				Project (Number/Name) B47 / Future Vertical Lift Medium			
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
B47: Future Vertical Lift Medium	-	0.000	0.000	10.014	-	10.014	9.008	7.840	21.998	55.423	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In Fiscal Year (FY) 2017, Future Vertical Lift (FVL), Project B47, will receive funds in Program Element (PE) 0603801A. Project B47 will be a New Start program and is forecasting a Materiel Development Decision in 1st Quarter 2017.

A. Mission Description and Budget Item Justification

Future Vertical Lift is an initiative, not yet an acquisition program, to develop a family of vertical lift aircraft for the United States Armed Forces. FVL was established in 2009 by the Secretary of Defense to focus all Department of Defense (DoD) vertical lift capabilities and technology development, as well as retaining long-term engineering capabilities. In October 2011, the Deputy Secretary of Defense issued the FVL Strategic Plan to outline a joint approach for the next generation vertical lift aircraft for all military services. The Strategic Plan provided a foundation for replacing the current fleet with advanced capability by shaping the development of vertical lift aircraft for the next 25 to 40 years. The development and fielding of FVL will significantly improve vertical lift capabilities providing critical aviation support to the Joint warfighting community. Increases in range, speed, payload, survivability, reliability, and reduced logistical footprint can only be achieved through the FVL approach of developing a new aircraft design. FVL will integrate advancements in technologies and design configurations balanced with appropriate trades to ensure affordability.

FY 2017 funding provides for Analysis of Alternatives (AoA) Modeling, Simulation, and Analysis and provides for Systems Engineering and Program Management (SEPM). FY 2018 continues to fund AoA efforts, Request for Proposal (RFP) development and provides funding for SEPM. FY 2019 supports Milestone A, RFP development, RFP release, and SEPM. FY 2020 funds Source Selection Evaluation Board (SSEB), and continues to provide funding for SEPM. FY 2021 provides for Technology Maturation and Risk Reduction contract awards and provides funding for SEPM.

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

	FY 2015	FY 2016	FY 2017
Title: Future Vertical Lift (FVL) Analysis of Alternatives	-	-	8.700
Description: FVL is an initiative, not yet an acquisition program, to develop a family of vertical lift aircraft for the United States Armed Forces.			
FY 2017 Plans: AoA and Modeling, Simulation, and Analysis, Systems Engineering and Program Management, travel, contractor support, and Program Management administrative cost.			
Title: Engineering Services / Research Studies and Program Management	-	-	1.314
Description: jfjffuj			
FY 2017 Plans:			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603801A / Aviation - Adv Dev	Project (Number/Name) B47 / Future Vertical Lift Medium
--	--	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
hhhhh			
Accomplishments/Planned Programs Subtotals	-	-	10.014

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

N/A

Remarks

D. Acquisition Strategy

FVL is pre Materiel Development Decision (MDD). MDD is expected in 1st Quarter 2017. The FVL Acquisition Strategy, including Program Schedule, are being developed to be presented at the MDD.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603801A / Aviation - Adv Dev	Project (Number/Name) B47 / Future Vertical Lift Medium
--	--	---

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	FVL Program Office : Redstone Arsenal, AL	0.000	-		-		0.420	Oct 2016	-		0.420	0	0.420	0
Subtotal			0.000	-		-		0.420		-		0.420	0.000	0.420	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			
Analysis of Alternatives (AoA)	TBD	TRADOC Analysis Center : Fort Leavenworth, KS	0.000	-		-		8.700	Nov 2016	-		8.700	0	8.700	0
Subtotal			0.000	-		-		8.700		-		8.700	0.000	8.700	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 Services / Research Studies - Organic	MIPR	FVL Program Office : Redstone Arsenal AL	0.000	-		-		0.454	Oct 2016	-		0.454	0	0.454	0
Engineering Services / Research Studies - Other	TBD	FVL Program Office : Redstone Arsenal AL	0.000	-		-		0.440	Nov 2016	-		0.440	0	0.440	0
Subtotal			0.000	-		-		0.894		-		0.894	0.000	0.894	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	10.014	-	10.014	0.000	10.014	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603801A / Aviation - Adv Dev	Project (Number/Name) B47 / Future Vertical Lift Medium
--	--	---

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
Analysis of Alternatives									AoA																			
(1) Materiel Development Decision													▲ MDD															
Request For Proposal Development																					RFP							
Proposal Preparation																									Proposal Prep			
(2) Milestone A																									▲ MS A			
Source Selection Evaluation Board																									SSEB			
(3) Technology Maturation and Risk Reduction Contract Award																					▲ Contract Award							

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603801A / Aviation - Adv Dev	Project (Number/Name) B47 / Future Vertical Lift Medium
--	--	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Analysis of Alternatives	1	2017	2	2018
Materiel Development Decision	1	2017	1	2017
Request For Proposal Development	3	2018	2	2019
Proposal Preparation	3	2019	1	2020
Milestone A	2	2019	2	2019
Source Selection Evaluation Board	1	2020	1	2021
Technology Maturation and Risk Reduction Contract Award	2	2021	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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv 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	-	13.188	21.233	20.834	-	20.834	19.492	16.116	16.138	15.748	Continuing	Continuing
<i>526: Marine Orien Log Eq Ad</i>	-	2.803	2.546	3.976	-	3.976	4.197	3.298	3.330	3.336	Continuing	Continuing
<i>G11: Adv Elec Energy Con Ad</i>	-	3.874	8.857	6.166	-	6.166	3.895	8.081	8.246	7.726	Continuing	Continuing
<i>G14: Materials Handling Equipment - Ad</i>	-	0.000	0.143	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<i>K39: Field Sustainment Support Ad</i>	-	0.514	1.875	2.629	-	2.629	2.261	2.351	1.714	1.761	Continuing	Continuing
<i>K41: Water And Petroleum Distribution - Ad</i>	-	3.409	3.764	3.662	-	3.662	4.773	0.000	0.000	0.000	Continuing	Continuing
<i>VR8: Combat Service Support Systems - Ad</i>	-	2.588	4.048	4.401	-	4.401	4.366	2.386	2.848	2.925	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element supports advanced component development and prototypes of new and improved technologies for combat support and combat service support equipment essential to sustaining combat operations. Advancements in bridging, electric power generators, material-handling, environmental control, shelter systems, cargo aerial delivery, field service systems, mortuary affairs equipment and petroleum equipment are necessary to improve safety and increase the tactical mobility, operational capability, lethality and survivability on the digital battlefield and to provide for greater sustainment while reducing the logistics support burden. Army Watercraft funding supports initiatives to enhance the seaworthiness, safety, survivability, supportability, energy efficiency, environmental, regulatory compliance and reliability of existing systems.

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv 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	13.380	21.233	23.019	-	23.019
Current President's Budget	13.188	21.233	20.834	-	20.834
Total Adjustments	-0.192	0.000	-2.185	-	-2.185
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.192	-			
• Adjustments to Budget Years	-	-	-2.185	-	-2.185

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>				Project (Number/Name) 526 / <i>Marine Orien Log Eq Ad</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
526: <i>Marine Orien Log Eq Ad</i>	-	2.803	2.546	3.976	-	3.976	4.197	3.298	3.330	3.336	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

FY17 dollars in the amount of \$4.221M continue to support project advanced component development, and prototype of equipment and sub-systems supporting the Army Watercraft mission to provide critical capabilities in support of Unified Land Operations (ULO), by extending the Commander's available maneuver space into and throughout the littorals, inland waterways and near coastal regions. Army watercraft equipment supports the conduct of riverine, Logistics Over The Shore (LOTS), Joint Logistics Over The Shore (JLOTS), inter and intratheater transport, movement and maneuver, mission command and sustainment, as identified in DODD 5100.01 (Functions of the Department of Defense and its Major Components). Army Watercraft exploit the inland waterways and littoral regions as waterborne maneuver and supply routes, conducting operations through littoral entry points (developed, undeveloped, and austere access points) and in non-permissive, and/or denied access scenarios. The Army uses a spectrum of Army Watercraft Systems, from heavy sustainment ocean going landing craft capable of intratheater and ship to shore transport and undeveloped beach or harbor access, to ocean-going and harbor utility tug boats and barge derricks for transport and denied port/salvage operations, and modular causeway systems to support LOTS/JLOTS. The funding supports initiatives to enhance the seaworthiness, safety, survivability, supportability, energy efficiency, environmental, regulatory compliance and reliability of existing systems. Funded efforts will advance critical gaps in these areas for the current fleet, while at the same time researching, developing and testing emergent technologies in a manner to support future acquisitions and future fleet planning. The funding supports our ability to be compliant with the National Defense Authorization Act of 1996 Section 312 and 502(6) of the Clean Water Act and compliance with Environmental Protection Agency (EPA) emission standards.

FY17 funding will primarily support the maturation of At Sea Transfer - Modular Warping Tug (MWT) Repower study and an (MWT) Electrical Standardization study. Additional requirements to support Energy and Efficiency Compliance, Uniform National Discharge Standards (UNDS) across the fleet and Force Protection for LSV.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Army Watercraft Program Support	0.162	-	0.574	-	0.574
Description: PM/Matrix Salary Support and Analysis (i.e .AoA, Cost Analysis and WSTAT)					
FY 2015 Accomplishments: PM/Matrix Salary Support and Analysis					
FY 2017 Base Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) 526 / <i>Marine Oriented Log Eq Ad</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
PM/Matrix Support includes PM and System Engineering oversight required to manage the program and provide contractor oversight. Salaries, Benefits, Travel, Personnel Training and other government costs are included for retaining a profession acquisition workforce.					
<p>Title: Force Protection; lethal (CROWS) and non-lethal Escalation of Force (EoF)</p> <p>Description: AWS - Force Protection measure for the fleet which has limited defensive measures (i.e. CROWS and EoF)</p> <p>FY 2015 Accomplishments: Force Protection; lethal (CROWS) and non-lethal Escalation of Force (EoF) Development.</p> <p>FY 2016 Plans: Continue Force Protection - lethal (CROWS) and non-lethal Escalation of Force (EoF) development.</p> <p>FY 2017 Base Plans: Continue Force Protection, lethal (CROWS) and non-lethal (EoF) suite includes white light, eye safe laser, acoustic device and percussion grenades for LSV fleet.</p>	0.400	0.500	0.500	-	0.500
<p>Title: At Sea Transfer Development Projects</p> <p>Description: At Sea Transfer provides roll on and roll off capability from vessels; and causeway transport of vehicles and equipment.</p> <p>FY 2015 Accomplishments: At Sea Transfer development - Modular Causeway</p> <p>FY 2016 Plans: At Sea Transfer Development for vehicles to roll on roll off the vessels; and causeway transport.</p> <p>FY 2017 Base Plans: At Sea Transfer Development to include Modular Warping Tug (MWT) Standardization Project (ESTDSP) Study including Monthly Status Report, In Progress Reviews, Assessment of Solutions Report, and a Land Based Test site with drawings for the Solution.</p>	0.400	0.330	1.175	-	1.175
<p>Title: Energy Efficiency and Emissions Compliance</p> <p>Description: Energy Compliance, the main deliverables will include monthly reports, interim progress briefings and final progress review briefing.</p>	0.348	0.300	0.600	-	0.600

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) 526 / <i>Marine Oriented Log Eq Ad</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>FY 2015 Accomplishments: Energy Compliance Standards - testing</p> <p>FY 2016 Plans: Energy Compliance Standards - testing</p> <p>FY 2017 Base Plans: Energy Efficiency and Emissions Compliance: Electrical System Technology Development and Standardization Project (ESTDSP) Study Plan, Monthly Status Report, a Monthly In Progress Reviews, Reports and Other AAS Documentation.</p>					
<p>Title: Environmental Compliance Uniform Discharge Standards (UNDS)</p> <p>Description: Environmental Compliance Development to develop material solutions and control for certain "liquid" discharges that are incidental to the normal operation of Armed Forces Vessels.</p>					
<p>FY 2015 Accomplishments: Environmental Compliance Technologies IAW evolving regulatory requirements. Develop the corrosion prevention and control plan/language for the various program documents</p> <p>FY 2016 Plans: Funding for both Environmental and Corrosion support to develop the initial PESHE for Milestone B, participate in IPT meetings, review and provide input to all program documents, develop the corrosion prevention and control plan/language for the various program documents, as well as, the acquisition documents.</p> <p>FY 2017 Base Plans: Funding to continue identification of Environmental Compliance Technologies IAW evolving statutory and regulatory requirements. Support from Navy UNDS experts.</p>					
<p>Title: Army Watercraft Module Berthing (AWMB) Development</p> <p>Description: Accommodations for supercargo to support the soldier at sea.</p>					
<p>FY 2015 Accomplishments: AWMB for supercargo (passengers other than crew)</p> <p>FY 2016 Plans:</p>					
	0.537	0.916	1.127	-	1.127
	0.200	0.500	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / Logistics and Engineer Equipment - Adv Dev	Project (Number/Name) 526 / Marine Orient Log Eq Ad

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Provides support to the passengers while at sea.					
Title: Future C4ISR Fleetwide Improvements Description: AWS - C4ISR	0.206	-	-	-	-
FY 2015 Accomplishments: Future C4ISR Fleetwide Improvements reference to Maritime Navigational requirements					
Title: Digital Integration Development Description: Digital Integration Development	0.250	-	-	-	-
FY 2015 Accomplishments: Will help with the maintenance of the Digital Intergration. Old Title: Watercraft - Digital Integration Development New Title: Digital Integration Development					
Title: PEO Management - Funding returned to Original Owner due to rescission Description: PEO Management - funds returned but remain on the funding line.	0.300	-	-	-	-
FY 2015 Accomplishments: PEO Management, funds were returned to the Original source due to a rescission in the FY16 Appropriations Act for the Heavy Dump Truck.					
Accomplishments/Planned Programs Subtotals	2.803	2.546	3.976	-	3.976

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
• MA4501000 MODIFICATION KITS: MA4501000 MODIFICATION KITS	34.922	3.912	6.276	-	6.276	4.018	4.864	8.343	8.463	Continuing	Continuing
• MA4502000 INSTALLATION OF MODS: MA4502000 INSTALLATION OF MODIFICATIONS	6.403	5.393	7.006	-	7.006	2.263	2.246	3.839	3.914	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) 526 / <i>Marine Oriented Log Eq Ad</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	Total Cost
			Base	OCO	Total					Complete	
• 0604804A Log and Eng Equip EJ9: <i>0604804A Logistics and Engineer Equipment EJ9</i>	-	10.066	18.338	-	18.338	14.522	-	-	-	0	42.926
• M11101000 Army Watercraft Esp: <i>M11101000 Army Watercraft Esp</i>	3.509	39.772	21.860	-	21.860	40.220	40.465	41.237	42.020	Continuing	Continuing
• MA8900000 ITEMS LESS THAN \$5.0M: <i>MA8900000 ITEMS LESS THAN \$5.0M (FLOAT RAIL)</i>	-	5.835	1.967	-	1.967	2.377	2.427	2.474	1.487	Continuing	Continuing

Remarks

Significant Achievements:
 FY14: Completed Prototype proofing of CROWS II on LSV-2 during FY13 and FY14;
 -Completed MSV(L) Analysis of Alternative (AoA)
 FY15: Conducted extended user jury of CROWS II on LSV-2 in FY15.
 -Completed LSV Load Analysis assessment
 -Completed 13 of 14 UNDS Batch II requirements
 -Completed prototyping and user jury of AWMB. Accommodates supercargo - passengers other than crew.
 -Completed repower assessment for Modular Warping Tug
 -Completed Whole System Trade Analysis Tool (WSTAT) for MSV(L)

D. Acquisition Strategy

Leverage government and public research centers (TARDEC and Carderock) and known public research institutes (Battelle) and associated contract mechanisms to prototype, test, and evaluate component technologies that may be applicable to the current and future Army Watercraft fleet.

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 / 4				PE 0603804A / Logistics and Engineer Equipment - Adv Dev				526 / Marine Oriented Log Eq Ad							
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
Army Watercraft Module, Berthing (AWMB) Development	C/ FFPLOE	PM Force Sustainment Systems : Natick, MA	1.241	0.200	Jul 2015	0.500	Jun 2016	-		-		-	Continuing	Continuing	Continuing
Force Protection, Escalation of Force (EoF) Development (i.e. CROWS)	C/ FFPLOE	NSWCDD : Crane, IN	1.341	0.400	Dec 2014	0.500	Jan 2016	0.500	Jan 2017	-		0.500	Continuing	Continuing	Continuing
At Sea Transfer Development (Warping Tug)	C/ FFPLOE	Battelle : Columbus, OH	0.100	0.400	Mar 2015	0.330		1.175	Mar 2017	-		1.175	Continuing	Continuing	Continuing
Energy Efficiency	C/ FFPLOE	Battelle : Columbus, OH	0.518	0.348	Jan 2015	0.300		0.600	Jan 2017	-		0.600	Continuing	Continuing	Continuing
Environmental Compliance (UNDS)	C/ FFPLOE	TARDEC, Carderock : Warren, MI and Maryland	0.348	0.537	Apr 2015	0.916		1.127	Jul 2017	-		1.127	Continuing	Continuing	Continuing
C4ISR Improvements (Fleetwide)	C/ FFPLOE	SPAWAR : Charleston, SC	0.676	0.206	Aug 2015	-		-		-		-	0	0.882	Continuing
Digital Integration Development	C/ FFPLOE	SPAWAR : Charleston, SC	0.250	0.250	Mar 2015	-		-		-		-	0	0.500	0
PEO Management	SS/BA	MIPR : MIPR	0.000	0.300		-		-		-		-	0	0.300	0
Subtotal			4.474	2.641		2.546		3.402		-		3.402	-	-	-
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
Army Watercraft Program Support	MIPR	Detroit Arsenal PMS, TARDEC, ILSC. : Warren, MI	0.050	0.162	Oct 2014	-		0.574	Oct 2016	-		0.574	Continuing	Continuing	0
Subtotal			0.050	0.162		-		0.574		-		0.574	-	-	0.000

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016					
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>				Project (Number/Name) 526 / <i>Marine Orien Log Eq Ad</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	4.524	2.803		2.546		3.976		-		3.976	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) 526 / <i>Marine Oriented Log Eq Ad</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
Army Watercraft Program Support																												
(1) MSV(L)	▲ 1 MSV(L) Analysis of Alternatives																											
Force Protection Lethal and Non-Lethal Escalation of Force (EoF) Development																												
(2) Force Protection; Lethal CROW on LSV-2	▲ 2																											
At Sea Transfer Development																												
MODULAR WARPING TUG (MWT)																												
(3) MWT - Repower (Reports / Courses of Action)					▲ 3 Repower																							
(4) MWT - Electrical Standardization (Reports / Courses of Action)									▲ 4 Electrical Standardization																			
(5) MWT - Land Based Test Site (System Integration Lab)													▲ 5 Land Based Test site															
(6) MWT - SLEP Prototype																					▲ 6 Prototype							
Energy Efficiency																												
Environmental Compliance																												
Uniformed National Discharge Standards (UNDS)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) 526 / <i>Marine Orien Log Eq Ad</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Army Watercraft Program Support	1	2015	4	2021
MSV(L)	1	2015	1	2015
Force Protection Lethal and Non-Lethal Escalation of Force (EoF) Development	1	2015	4	2021
Force Protection; Lethal CROW on LSV-2	1	2015	1	2016
At Sea Transfer Development	1	2015	4	2021
MODULAR WARPING TUG (MWT)	1	2015	4	2016
MWT - Repower (Reports / Courses of Action)	1	2016	1	2016
MWT - Electrical Standardization (Reports / Courses of Action)	1	2017	1	2017
MWT - Land Based Test Site (System Integration Lab)	1	2018	1	2018
MWT - SLEP Prototype	3	2019	3	2019
Energy Efficiency	1	2015	4	2021
Environmental Compliance	1	2015	4	2021
Uniformed National Discharge Standards (UNDS)	1	2015	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>				Project (Number/Name) G11 / <i>Adv Elec Energy Con Ad</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
G11: <i>Adv Elec Energy Con Ad</i>	-	3.874	8.857	6.166	-	6.166	3.895	8.081	8.246	7.726	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Management and Distribution Control (MDC) was previously named Improved Power Distribution Illumination Systems Electrical (IPDISE).

A. Mission Description and Budget Item Justification

The Tactical Electric Power (TEP) program was established by the Department of Defense to develop modernized, standard families of mobile electric power sources and power distribution systems for all Services throughout the Department of Defense. Project Manager Expeditionary Energy & Sustainment Systems (PM E2S2) derives concept and technology developments that will improve the performance, mobility, readiness and survivability of the next generation of tactical power sources in support of all Services. It supports initiatives that are essential to the development and fielding of modernized TEP sources from Watts to Megawatts level that comply with environmental statutes and provide noise and signature-suppressed, energy-efficient, lightweight, deployable and reliable equipment. FY16 & FY17 funding will support test and evaluation of technologies for Small Tactical Electric Power (STEP), Mobile Electric Hybrid Power Sources (MEHPS), and Management and Distribution Control (MDC). Also funding will support a holistic Modeling and Simulation approach to the evaluation of Operational Energy (OE)-related impacts, systems, and improvements; with the vision of reducing Army energy dependency and demand, increasing systems and contingency bases energy efficiency, seeking alternative energy sources and supporting a culture of energy responsibility while sustaining or enhancing operational capabilities. This includes support of the Joint Operational Energy Initiative (JOEI). Out years will support investigation of general advancements in engine, power equipment, energy storage, renewable/alternative energy, and power distribution equipment that are applicable to current equipment and emerging requirements. In addition, an extensive analysis of commercial generator technology is planned to support requirements definition for the next family of tactical sets. Programs include costs for developing concept hardware and executing system evaluations at the Network Integration Evaluation (NIE) events at Ft. Bliss.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Contract Activity	0.800	4.857	3.066	-	3.066
Description: Continue development of technology supporting the STEP program, MDC, and MEHPS.					
FY 2015 Accomplishments: Awarded contracts to develop various technologies related to TEP and power distribution/management across the DoD power spectrum. Specific efforts include STEP components, MEHPS components and MDC. Developed tools, systems and capability to provide holistic analysis of Operational Energy impacts, systems and improvements.					
FY 2016 Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G11 / <i>Adv Elec Energy Con Ad</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Develop various technologies related to TEP and power distribution/management across the DoD power spectrum. Specific efforts will include STEP components, MEHPS components and MDC. Develop tools, systems and capability to provide holistic M&S analysis of Operational Energy impacts, systems and improvements.</p> <p>FY 2017 Base Plans: Develop various technologies related to TEP and power distribution/management across the DoD power spectrum. Specific efforts will include demo of metering and monitoring systems, energy storage and inverter systems, and MDC. Develop tools, systems and capability to provide holistic M&S analysis of Operational Energy impacts, systems and improvements.</p>					
<p>Title: Government System Test and Evaluation</p> <p>Description: Supports inhouse and external performance tests of concept hardware. Also supports evaluation of systems at Network Integration Evaluation (NIE).</p> <p>FY 2015 Accomplishments: Continued evaluation and testing of various technologies related to tactical electric power and power distribution and management across the DoD power spectrum. Efforts were aimed at resolving technology gaps to meet Army User requirements. Efforts supported the TEP CPD. Specific efforts included performance testing of small generator sets, hybrid/alternative energy power sources, and intelligent power distribution/management systems. Program also supported Rapid Equipping Force deployments of MEHPS concepts in support of Village Stability Operation. Program supports new equipment and concept demonstrations at NIE 15.2 and 16.1.</p> <p>FY 2016 Plans: Continue evaluation and testing of various technologies related to tactical electric power and power distribution and management across the DoD power spectrum. Efforts will be aimed at resolving technology gaps to meet Army User requirements. Efforts will support the TEP CPD. Specific efforts will include performance testing of small generator sets, hybrid/alternative energy power sources, and intelligent power distribution/management systems. Program also supports Type Classification efforts for improved Command Post infrastructure. Program supports new equipment and concept demonstrations at NIE 16.2.</p> <p>FY 2017 Base Plans: Continue evaluation and testing of various technologies related to tactical electric power and power distribution and management across the DoD power spectrum. Efforts will be aimed at resolving technology gaps to meet Army User requirements. Efforts will support the TEP CPD. Specific efforts will include performance</p>	0.300	1.500	0.400	-	0.400

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G11 / <i>Adv Elec Energy Con Ad</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
testing of hybrid/alternative energy power sources, open standards grid communications, small power sources, and intelligent power distribution/management systems. Program supports new equipment and concept demonstrations at NIE 17.2.					
<p>Title: Other Contracts and Gov't agencies</p> <p>Description: Matrix engineering and analysis support for continued development of technology supporting the STEP program, MDC, and MEHP, as well as analysis and data management.</p> <p>FY 2015 Accomplishments: Evaluated and tested various technologies related to Tactical Electric Power and power distribution/management across the DoD power spectrum. Specific efforts included development of STEP, and evaluation of MEHPS and intelligent power systems, as well as support of NIE 15.1 and 16.1. Developed tools, systems and capability to provide holistic analysis of Operational Energy impacts, systems and improvements.</p> <p>FY 2016 Plans: Continue evaluation and testing of various technologies related to tactical electric power and power distribution and management across the DoD power spectrum. Efforts will be aimed at resolving technology gaps to meet Army User requirements. Efforts will support the TEP CPD. Specific efforts will include performance testing of small generator sets, hybrid/alternative energy power sources, and intelligent power distribution/management systems. Program also supports Type Classification efforts for improved Command Post infrastructure. Program supports new equipment and concept demonstrations at NIE 16.2.</p> <p>FY 2017 Base Plans: Continue evaluation and testing of various technologies related to tactical electric power and power distribution and management across the DoD power spectrum. Efforts will be aimed at resolving technology gaps to meet Army User requirements. Efforts will support the TEP CPD. Specific efforts will include contract management and testing of small generator sets, hybrid/alternative energy power sources, and power distribution/management systems. Program supports new equipment and concept demonstrations at NIE 17.2. Includes oversight, analysis and management of Operational Energy-related impacts, systems and improvements to reduce Army's energy dependence and improve operational capabilities.</p>	1.554	1.000	1.400	-	1.400
<p>Title: Government Program Management</p> <p>Description: Continue development of technology supporting the STEP program, MDC and MEHPS.</p> <p>FY 2015 Accomplishments:</p>	1.220	1.500	1.300	-	1.300

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G11 / <i>Adv Elec Energy Con Ad</i>

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Oversight and management of various technology projects related to Tactical Electric Power and power distribution/management across the DoD power spectrum. Efforts were aimed at resolving technology gaps to meet Army User requirements. Efforts supported the STEP program and the TEP CPD. Specific efforts included development of small sets, MEHPS and intelligent power systems. Oversight, analysis and management of Operational Energy-related impacts, systems and improvements to reduce Army's energy dependence and improve operational capabilities.					
<i>FY 2016 Plans:</i> Oversight and management of various technology projects related to Tactical Electric Power and power distribution/management across the DoD power spectrum. Efforts will be aimed at resolving technology gaps to meet Army User requirements. Efforts will support the STEP program and the TEP CPD. Specific efforts will include development of small sets, MEHPS and intelligent power systems. Oversight, analysis and management of Operational Energy-related impacts, systems and improvements to reduce Army's energy dependence and improve operational capabilities. Effort will also be focused on supporting Type Classification of AMMPS microgrid and power distribution components.					
<i>FY 2017 Base Plans:</i> Oversight and management of various technology projects related to Tactical Electric Power and power distribution/management across the DoD power spectrum. Efforts will be aimed at resolving technology gaps to meet Army User requirements. Efforts will support the TEP CPD. Specific efforts will include support of MEHPS, STEP, and power MDC systems. Oversight, analysis and management of Operational Energy-related impacts, systems and improvements to reduce Army's energy dependence and improve operational capabilities.					
Accomplishments/Planned Programs Subtotals	3.874	8.857	6.166	-	6.166

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 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>
• 654804.194: <i>Logistics and Engineer Equipment - Eng Dev 194</i>	4.309	8.822	13.676	-	13.676	15.295	5.458	7.110	0.497	Continuing	Continuing
• MA9800: <i>OPA 3, Generators and Associated Eq. MA9800</i>	117.850	166.356	145.027	-	145.027	134.532	143.249	131.191	132.384	Continuing	Continuing

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G11 / <i>Adv Elec Energy Con Ad</i>

D. Acquisition Strategy

Complete advanced development pre-milestone B technology assessments and analysis, and transition products to Engineering and Manufacturing Development (EMD) phase (Milestone B) and subsequent transition to production (Milestone C). Support concept development and demonstration efforts. Products and technologies supported include tactical power and energy sources, alternative/renewable energy systems, power distribution components, and power management and distribution control systems.

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 / 4				PE 0603804A / Logistics and Engineer Equipment - Adv Dev				G11 / Adv Elec Energy Con Ad							
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
Small Tactical Electric Power (STEP) Components	MIPR	PM-E2S2 : Fort Belvoir, VA	0.433	0.100	Dec 2014	0.200		-		-		-	Continuing	Continuing	Continuing
Hybrid Power Sources Components	MIPR	PM E2S2 : Ft. Belvoir, VA	0.262	0.070	Dec 2014	0.100		0.200	Dec 2016	-		0.200	Continuing	Continuing	Continuing
Power Management and Distribution Systems	MIPR	PM E2S2 : Ft. Belvoir, VA	0.185	0.050	Dec 2014	1.000		0.700	Dec 2016	-		0.700	Continuing	Continuing	Continuing
Operational Energy	MIPR	PM E2S2 : Fort Belvoir, VA	0.000	1.000	Dec 2014	0.200		0.400	Dec 2016	-		0.400	Continuing	Continuing	Continuing
Subtotal			0.880	1.220		1.500		1.300		-		1.300	-	-	-
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
Small Tactical Electric Power (STEP) Components	Various	CERDEC : Fort Belvoir, VA	2.681	0.100	Feb 2015	0.500		-		-		-	Continuing	Continuing	Continuing
Hybrid Power Sources Components	Various	Multiple Vendors : TBD	1.565	0.100	Apr 2015	0.500		0.250	Mar 2017	-		0.250	Continuing	Continuing	Continuing
Power Management and Distribution Systems	Various	CERDEC : Fort Belvoir, VA	0.909	0.100	Feb 2015	2.057		2.066	Mar 2017	-		2.066	Continuing	Continuing	Continuing
Operational Energy	TBD	TBD (FY15) : TBD (FY15)	0.000	0.500	Feb 2015	1.800		0.500	Mar 2017	-		0.500	Continuing	Continuing	Continuing
Metering and Monitoring Demo	Various	TBD : TBD	0.000	-		-		0.250	Mar 2017	-		0.250	Continuing	Continuing	Continuing
Subtotal			5.155	0.800		4.857		3.066		-		3.066	-	-	-

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 / 4				PE 0603804A / Logistics and Engineer Equipment - Adv Dev				G11 / Adv Elec Energy Con Ad							
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
Small Tactical Electric Power (STEP) Components	MIPR	CERDEC : Fort Belvoir, VA	1.306	0.200	Dec 2014	0.200		-		-		-	Continuing	Continuing	Continuing
Hybrid Power Sources Components	MIPR	CERDEC : Fort Belvoir, VA	0.965	0.164	Dec 2014	0.100		0.600	Dec 2016	-		0.600	Continuing	Continuing	Continuing
Power Management and Distribution Control Systems	MIPR	CERDEC : Fort Belvoir, VA	0.868	0.190	Dec 2014	0.200		0.600	Dec 2016	-		0.600	Continuing	Continuing	Continuing
Operational Energy	MIPR	Dept of Energy Sandia National Labs : Washington DC	0.000	1.000	Dec 2014	0.500		0.200	Dec 2016	-		0.200	Continuing	Continuing	Continuing
Subtotal			3.139	1.554		1.000		1.400		-		1.400	-	-	-
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
Small Tactical Electric Power (STEP) Components	MIPR	CERDEC : Fort Belvoir, VA	0.630	0.100	Feb 2015	0.100		-		-		-	Continuing	Continuing	Continuing
Hybrid Power Sources Components	MIPR	CERDEC : Fort Belvoir, VA	0.265	0.100	Feb 2015	0.300		0.200	Mar 2017	-		0.200	Continuing	Continuing	Continuing
Power Management and Distribution Systems	MIPR	CERDEC : Fort Belvoir, VA	0.397	0.100	Feb 2015	1.100		0.200	Mar 2017	-		0.200	Continuing	Continuing	Continuing
Subtotal			1.292	0.300		1.500		0.400		-		0.400	-	-	-
Project Cost Totals			10.466	3.874		8.857		6.166		-		6.166	-	-	-
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G11 / <i>Adv Elec Energy Con Ad</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
SMALL TACTICAL ELECTRIC POWER (STEP) PROGRAM																												
Assess Technologies to Meet Gaps-STEP																												
Test Technologies to Meet Gaps-STEP																												
(1) Transfer to Engineering and Manufacturing Development-STEP																												
MOBILE ELECTRIC HYBRID POWER SOURCES (MEHPS)																												
Assess Technologies to Meet Gaps--MEHPS																												
Test Technologies to Meet Gaps--MEHPS																												
Develop Ruggedized Prototypes for Field Evaluations																												
Management and Distribution Control (MDC)																												
Assess Technologies to Meet Gaps-MDC																												
Test Technologies to Meet Gaps-MDC																												
Test Ruggedized MDC concepts with AMMPS Microgrid																												
(2) Transfer to Engineering and Manufacturing Development-MDC																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G11 / <i>Adv Elec Energy Con Ad</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) Transfer to Engineering and Manufacturing Development-MDC Ph																												
(2) Transfer to Engineering and Manufacturing Development-MDC Ph																												
ASSESSMENT OF TECHNOLOGIES																												
Assess Technologies to Meet Gaps and Improve Efficiencies																												
OPERATIONAL ENERGY (OE)																												
Evaluation of OE-Related Impacts, Systems and Improvements																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G11 / <i>Adv Elec Energy Con Ad</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SMALL TACTICAL ELECTRIC POWER (STEP) PROGRAM	1	2008	2	2017
Assess Technologies to Meet Gaps-STEP	1	2008	2	2017
Test Technologies to Meet Gaps-STEP	1	2008	2	2017
Transfer to Engineering and Manufacturing Development-STEP	3	2017	3	2017
MOBILE ELECTRIC HYBRID POWER SOURCES (MEHPS)	1	2010	4	2019
Assess Technologies to Meet Gaps--MEHPS	1	2010	4	2019
Test Technologies to Meet Gaps--MEHPS	1	2010	4	2019
Develop Ruggedized Prototypes for Field Evaluations	1	2019	4	2019
Management and Distribution Control (MDC)	1	2010	4	2022
Assess Technologies to Meet Gaps-MDC	1	2010	3	2020
Test Technologies to Meet Gaps-MDC	1	2010	3	2020
Test Ruggedized MDC concepts with AMMPS Microgrid	1	2013	1	2017
Transfer to Engineering and Manufacturing Development-MDC	1	2017	1	2017
Transfer to Engineering and Manufacturing Development-MDC Phase 2	4	2018	4	2018
Transfer to Engineering and Manufacturing Development-MDC Phase 3	4	2020	4	2020
ASSESSMENT OF TECHNOLOGIES	1	2017	4	2022
Assess Technologies to Meet Gaps and Improve Efficiencies	1	2017	4	2022
OPERATIONAL ENERGY (OE)	1	2015	4	2019
Evaluation of OE-Related Impacts, Systems and Improvements	1	2015	4	2019

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G14 / <i>Materials Handling Equipment - Ad</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
G14: <i>Materials Handling Equipment - Ad</i>	-	0.000	0.143	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project 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: Driver Assist	-	0.143	-	-	-
Description: Research and Demonstrate technologies which would enhance operations such as the inclusion of cameras, collision sensors and lifting aids.					
FY 2016 Plans: blank					
Accomplishments/Planned Programs Subtotals					
	-	0.143	-	-	-

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
• G41002: <i>5K Light Capacity Rough Terrain (LCRT) Forklift</i>	14.392	27.982	2.307	0.846	3.153	17.999	18.391	17.759	20.240	Continuing	Continuing
• R06701: <i>All Terrain Cranes</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. Develop additional capabilities for existing systems such as the LCRTF, RTCH, and ATLAS which will allow for

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G14 / <i>Materials Handling Equipment - Ad</i>

improved safety, autonomous or semi autonomous operation. Award contracts with vehicle or Autonomus System Developer/TARDEC Robotics to integrate existing technologies onto the platforms to allow for ease of operation or removal of the operator from vehicle. Testing will be conducted at Aberdeen Proving Grounds, MD.

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 / 4				PE 0603804A / Logistics and Engineer Equipment - Adv Dev				G14 I Materials Handling Equipment - Ad							
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
System Engineering/ Program Management	MIPR	TARDEC : Warren, MI	0.022	-		-		-		-		-	0	0.022	0
Subtotal			0.022	-		-		-		-		-	0.000	0.022	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
Field Maintenance Aids for MHE	TBD	Kalmar RT Center : Cibolo, TX	0.465	-		-		-		-		-	0	0.465	0
Driver Assist	TBD	TBD : TBD	0.000	-		0.143		-		-		-	0	0.143	0
Subtotal			0.465	-		0.143		-		-		-	0.000	0.608	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
Field Maintenance Aids for MHE	TBD	Kalmar RT Center : Cibolo, TX	0.028	-		-		-		-		-	Continuing	Continuing	0
Baseline Fuel Efficiency of MHE Equipment	TBD	TBD : TBD	0.248	-		-		-		-		-	0	0.248	0
Subtotal			0.276	-		-		-		-		-	-	-	0.000
Project Cost Totals			0.763	-		0.143		-		-		-	-	-	0.000
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G14 / <i>Materials Handling Equipment - Ad</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
Driver Assist																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) G14 / <i>Materials Handling Equipment - Ad</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Driver Assist	2	2016	4	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>				Project (Number/Name) K39 / <i>Field Sustainment Support Ad</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
K39: <i>Field Sustainment Support Ad</i>	-	0.514	1.875	2.629	-	2.629	2.261	2.351	1.714	1.761	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports development of critical soldier support and sustainment systems for cargo aerial delivery capabilities. These systems will fill identified theater distribution and services capability gaps, improve unit sustainability, and increase combat effectiveness. This project supports Advanced Component Development and Prototyping of Critical Distribution Capabilities which provide improved safety and accuracy while increasing survivability of aircraft, personnel, and equipment. This project develops critical enablers that support the Quartermaster (QM) Force Transformation Strategy and The Army's Modular Capabilities by maintaining readiness through fielding and integrating new equipment. This project also ensures Army Expeditionary Forces are capable of rapid deployment through aerial delivery initiatives and reduces sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands in lift, combat zone footprint, and costs for logistical support.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Extracted High and Low Speed Container Delivery System (EHLSCDS)	0.514	1.875	-	-	-
Description: Provides a high speed (230 knot), low altitude (375 ft AGL) capability for up to eight Container Delivery Systems (CDS) to enhance aircraft and aircrew safety while improving accuracy and reducing dispersion for receiving ground units.					
FY 2015 Accomplishments: Initiated EHLSCDS Design Validation (DV) testing.					
FY 2016 Plans: Complete EHLSCDS Design Validation (DV) testing, prepare for Milestone B and transition program into Engineering and Manufacturing Development (EMD).					
Title: Sustainment Aerial Delivery Equipment (SADE)	-	-	1.229	-	1.229
Description: SADE provides United States (US) and Joint Forces the ability to execute future movement and maneuver operations and conduct distributed supply and sustainment support. This includes incremental advancements of rotary wing, helicopter sling load, and aerial delivery capabilities, such as low cost cargo nets, auto hookup, long lines and airdrop capable multi load carousels.					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) K39 / <i>Field Sustainment Support Ad</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<i>FY 2017 Base Plans:</i> Conduct advanced component prototype design & fabrication on SADE Autoload Hookup with focus on reducing technology, engineering, integration, and life-cycle cost risk. Begin technology development demonstrations on prototype systems.					
<i>Title:</i> Joint Precision Airdrop System-2K Block 1 upgrade (JPADS-BLK1) <i>Description:</i> Supports increasing the technological and design maturity, testing, and integration of several key initiatives focused on: improved system accuracy and reliability in Global Positioning System (GPS) denied environments; collision avoidance; more precise position determination software; and improved Guidance Navigation and Control (GN&C) hardware.	-	-	1.400	-	1.400
<i>FY 2017 Base Plans:</i> Conduct advanced component prototype design & fabrication on JPADS-2K Block 1 upgrade solutions with focus on reducing technology, engineering, integration, and life-cycle cost risk. Conduct technology development demonstrations to determine if identified JPADS-2K Block 1 upgrade solutions are feasible, affordable, and supportable; satisfy validated capability requirements; and have acceptable technical risk.					
Accomplishments/Planned Programs Subtotals	0.514	1.875	2.629	-	2.629

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 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>
• OPA MA7806: <i>Precision Airdrop MA7806</i>	4.919	2.890	4.298	-	4.298	2.167	2.178	2.219	2.282	Continuing	Continuing
• RDT&E 654804.L39: <i>Field Sustainment Support ED 654804.L39</i>	1.623	1.849	3.712	-	3.712	3.028	2.128	2.907	2.985	Continuing	Continuing

Remarks

D. Acquisition Strategy
Accelerate Joint Precision Aerial Delivery System (JPADS) product improvements to transition to Production.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) K39 / <i>Field Sustainment Support Ad</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 / 4				PE 0603804A / Logistics and Engineer Equipment - Adv Dev					K39 / Field Sustainment Support Ad						
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 Support	Various	PM Force Sustainment Sys (FSS), Natick : Natick, MA	5.732	0.050	Oct 2014	0.575	Oct 2015	0.429	Oct 2016	-		0.429	Continuing	Continuing	Continuing
SBIR+STTR	TBD	Various : Various	0.090	-		-		-		-		-	0	0.090	0
Subtotal			5.822	0.050		0.575		0.429		-		0.429	-	-	-
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
Extracted High and Low Speed Container Delivery System (EHLSCDS)	Various	Various : Various	1.097	0.264	Feb 2015	0.500	Oct 2015	-		-		-	Continuing	Continuing	Continuing
SADE	Various	Various : Various	15.934	-		-		0.500	Jun 2017	-		0.500	Continuing	Continuing	Continuing
JPADS Block 1 upgrade	Various	Various : Various	1.300	-		-		0.500	Dec 2016	-		0.500	Continuing	Continuing	Continuing
Subtotal			18.331	0.264		0.500		1.000		-		1.000	-	-	-
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
JPADS Block 1 upgrade	Various	Various : Various	0.060	-		-		0.050	Sep 2017	-		0.050	0	0.110	0
SADE	Various	Various : Various	0.000	-		-		0.050	Sep 2017	-		0.050	0	0.050	0
Subtotal			0.060	-		-		0.100		-		0.100	0.000	0.160	0.000

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army											Date: February 2016		
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>				Project (Number/Name) K39 / <i>Field Sustainment Support Ad</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			
SADE	Various	YPG, AZ : YPG, AZ	0.000	-		-		0.500	Mar 2017	-		0.500	Continuing	Continuing	Continuing
Extracted High and Low Speed Container Delivery System (EHLSCDS)	Various	YPG, AZ : Arizona	0.000	0.200	Feb 2015	0.800	Oct 2016	-		-		-	0	1.000	0
JPADS Block 1 upgrade	Various	YPG, AZ : YPG, AZ	0.000	-		-		0.600	Jun 2017	-		0.600	Continuing	Continuing	Continuing
Subtotal			0.000	0.200		0.800		1.100		-		1.100	-	-	-
Project Cost Totals			24.213	0.514		1.875		2.629		-		2.629	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) K39 / <i>Field Sustainment Support Ad</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) Prepare MS A EHLSCDS	▲																											
(2) Conduct Milestone B and transition EHLSCDS to EMD					▲																							
Conduct EHLSCDS validation testing																												
Conduct SADE Autoload Hookup prototype design, fabrication, and dem																												
JPADS Block I upgrade component development and risk reduction																												
Conduct RRDAS prototype design, fabrication, and demonstration																												
Conduct Rotary A/C Low Cost AD component development																												
JPADS 10K Block upgrade component development																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) K39 / <i>Field Sustainment Support Ad</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Prepare MS A EHLSCDS	1	2015	1	2015
Conduct Milestone B and transition EHLSCDS to EMD	2	2016	2	2016
Conduct EHLSCDS validation testing	2	2015	1	2016
Conduct SADE Autoload Hookup prototype design, fabrication, and demonstration	2	2017	2	2018
JPADS Block I upgrade component development and risk reduction	1	2017	3	2018
Conduct RRDAS prototype design, fabrication, and demonstration	4	2018	2	2019
Conduct Rotary A/C Low Cost AD component development	2	2019	2	2020
JPADS 10K Block upgrade component development	2	2020	2	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>				Project (Number/Name) K41 / <i>Water And Petroleum Distribution - Ad</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
K41: <i>Water And Petroleum Distribution - Ad</i>	-	3.409	3.764	3.662	-	3.662	4.773	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops and demonstrates the potential of prototype equipment and technologies to satisfy petroleum storage, distribution, and quality surveillance system requirements. The Technology Development programs support the development and enhancement of rapidly deployable Petroleum and Water equipment. The mission includes developing fuel quality analysis systems; achieving greater capabilities in the removal of Nuclear, Biological, Chemical (NBC) and other contaminants from water sources; reducing the logistics footprint; developing water reutilization systems to reduce the requirement for transport of water into the theater; and material systems to decrease the logistics footprint and employment time for the transfer of liquid logistics in joint operations area. This vital equipment enables the Army to achieve its mission by providing the Army with the means to be highly mobile and self-sustaining in very hostile joint operations areas. Future Force operations demand that combat systems be rapidly deployable to the theater, rapidly emplaced upon arrival, and rapidly relocated to support a fast moving non-linear battlefield.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: 3K Tactical Water Purification System (3K TWPS)	-	0.565	0.635	-	0.635
Description: Funding is provided for the following effort					
FY 2016 Plans: Complete detailed system design and prepare Milestone B program documentation and analysis. Initiate Preliminary Design Review (PDR) to support MS B in 3QFY16.					
FY 2017 Base Plans: Complete system design and development leading to Critical Design Review (CDR) in 2QFY18.					
Title: Early Entry Fluid Distribution System (E2FDS)	2.659	3.199	3.027	-	3.027
Description: Funding is provided for the following effort					
FY 2015 Accomplishments: Achieve Milestone B approval. Release Request for Proposal (RFP) for (EMD) contract. Source Selection Evaluation Board (SSEB) for EMD contract. EMD Contract award.					
FY 2016 Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) K41 / <i>Water And Petroleum Distribution - Ad</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Award prototype development contract. Complete initial design of E2FDS. Initiate Preliminary Design Review of E2FDS prototype. Initiate fabrication of prototypes of E2FDS for testing.					
FY 2017 Base Plans: Take delivery of two systems from different contractors, and start Product Verification Testing for both systems.					
Title: Modular Fuel System (MFS)	0.750	-	-	-	-
Description: Funding is provided for the following effort					
FY 2015 Accomplishments: Conduct Operational Testing on the MFS. Test will include the MFS Pump Rack Module (PRM) and the MFS Tank Rack Module (TRM). Funding provides support for Soldiers to conduct Operational Tests of the MFS system.					
Accomplishments/Planned Programs Subtotals	3.409	3.764	3.662	-	3.662

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
• PM PAWS Project L41 654804: <i>Logistics and Engineer Equipment - Engineering Development L41</i>	3.071	3.361	8.363	-	8.363	5.065	9.336	9.436	9.507	Continuing	Continuing
• Distribution Sys Petroleum & Water: <i>Distribution Systems Petroleum & Water MA6000</i>	40.692	35.381	42.656	78.240	120.896	48.687	52.915	46.589	46.057	Continuing	Continuing
• Quality Surveillance Equipment: <i>Petroleum Quality Analysis System</i>	1.435	5.368	9.287	-	9.287	6.903	6.670	-	-	0	29.663

Remarks

D. Acquisition Strategy
Develop engineering prototypes for the 3K Tactical Water Purification System (3K TWPS), Early Entry Fluid Distribution System (E2FDS), and select Non-Development Item (NDI) based on market surveys and proposals from industry. Based on market research, will award either competitive or sole source contracts. E2FDS will conduct Product Verification Testing with two different contractor systems, and will use test data to inform a fair opportunity decision for production.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) K41 / <i>Water And Petroleum Distribution - Ad</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 / 4				PE 0603804A / Logistics and Engineer Equipment - Adv Dev					K41 / Water And Petroleum Distribution - Ad						
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
3K Tactical Water Purification System (3K TWPS)	Various	TARDEC : Warren, MI	0.880	-		0.150	Mar 2016	0.635	Jan 2017	-		0.635	0	1.665	Continuing
Early Entry Fluid Distribution System (E2FDS)	C/FFP	TBD : Warren, MI	0.972	1.866		3.199	Jul 2016	-		-		-	Continuing	Continuing	Continuing
3K Tactical Water Purification System (3K TWPS)	MIPR	NFESC : Port Hueneme, CA	0.989	-		0.050	Feb 2016	-		-		-	Continuing	Continuing	Continuing
Subtotal			2.841	1.866		3.399		0.635		-		0.635	-	-	-
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
Early Entry Fluid Distribution System (E2FDS)	Various	TARDEC & PM, PAWS : Warren, MI	0.390	0.793	Mar 2015	-		-		-		-	0	1.183	Continuing
Subtotal			0.390	0.793		-		-		-		-	0.000	1.183	-
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
Modular Fuel System (MFS)	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	0.750		-		-		-		-	0	0.750	Continuing
3K Tactical Water Purification System (3K TWPS)	MIPR	TARDEC : Warren, MI	0.947	-		0.365	Mar 2016	-		-		-	0	1.312	Continuing
Early Entry Fluid Distribution System (E2FDS)	MIPR	Aberdeen Proving Ground : APG, MD	0.000	-		-		3.027	Jan 2017	-		3.027	0	3.027	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) K41 / <i>Water And Petroleum Distribution - Ad</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
3K Tactical Water Purification System (3K TWPS)	<div style="position: absolute; top: 50px; left: 50px;">1 MDD</div>				<div style="position: absolute; top: 50px; left: 50px;">2 MS B</div> <div style="position: absolute; top: 100px; left: 50px;">3 PDR</div>																							
(1) 3K TWPS Materiel Development Decision																												
(2) 3K TWPS Milestone B																												
(3) 3K TWPS Preliminary Design Review																												
(4) 3K TWPS CDR																					4 CDR							
3K TWPS Developmental Testing																									DT			
(5) 3K TWPS Milestone C																					5 MS C							
3K TWPS Production Qualification Testing / Operational Testing																									PQT/OT			
Black Water Treatment (BWT)					<div style="position: absolute; top: 50px; left: 50px;">6 MDD</div>																							
(6) Black Water Treatment Materiel Development Decision													6 MDD															
(7) Black Water Treatment Milestone B																	7 MS B											
(8) Black Water Treatment Preliminary Design Review																					8 PDR							
Black Water Treatment Development Testing																									DT			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) K41 / <i>Water And Petroleum Distribution - Ad</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
Early Entry Fluid Distribution System (E2FDS)																												
(1) E2FDS Milestone B					▲ MS B																							
(2) E2FDS Preliminary Design Review									▲ PDR																			
(3) E2FDS Critical Design Review									▲ CDR																			
E2FDS Developmental/Limited User Test													■ DT/LUT															
(4) E2FDS Milestone C																	▲ MS C											
E2FDS First Article Test / Initial Operational Testing																					■ FAT/IOT							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) K41 / <i>Water And Petroleum Distribution - Ad</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
3K Tactical Water Purification System (3K TWPS)	1	2016	1	2016
3K TWPS Materiel Development Decision	2	2015	2	2015
3K TWPS Milestone B	3	2016	3	2016
3K TWPS Preliminary Design Review	3	2016	3	2016
3K TWPS CDR	3	2018	3	2018
3K TWPS Developmental Testing	2	2019	4	2019
3K TWPS Milestone C	3	2020	3	2020
3K TWPS Production Qualification Testing / Operational Testing	2	2021	2	2022
Black Water Treatment (BWT)	1	2016	1	2016
Black Water Treatment Materiel Development Decision	1	2018	1	2018
Black Water Treatment Milestone B	2	2019	2	2019
Black Water Treatment Preliminary Design Review	4	2019	4	2019
Black Water Treatment Development Testing	2	2021	4	2021
Early Entry Fluid Distribution System (E2FDS)	1	2015	1	2015
E2FDS Milestone B	2	2016	2	2016
E2FDS Preliminary Design Review	4	2016	4	2016
E2FDS Critical Design Review	2	2017	2	2017
E2FDS Developmental/Limited User Test	4	2017	2	2018
E2FDS Milestone C	4	2018	4	2018
E2FDS First Article Test / Initial Operational Testing	4	2019	2	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>				Project (Number/Name) VR8 / <i>Combat Service Support Systems - Ad</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
VR8: <i>Combat Service Support Systems - Ad</i>	-	2.588	4.048	4.401	-	4.401	4.366	2.386	2.848	2.925	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports development of critical soldier support and sustainment systems including shelter systems (rigid and soft wall), base camp subsystems, field service systems, mortuary affairs equipment, heaters, camouflage systems to counter emerging enemy threat technologies, and other combat service support equipment. These systems will fill identified theater distribution and services capability gaps, improve unit sustainability, improve resource and energy efficiency and increase combat effectiveness. This project supports Advanced Component Development and Prototyping of critical tactical support systems that support mobile Joint Service command and control, medical, and maintenance platforms. This project develops critical enablers that support the Quartermaster (QM) Force Transformation Strategy and The Army's Modular Capabilities by maintaining readiness through fielding and integrating new equipment. This project also ensures Army Expeditionary Forces are capable of rapid deployment and reduces sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands in lift, combat zone footprint, and costs for logistical support.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Energy Efficiency Solutions and Zero-Footprint Base Camp	1.563	2.041	2.497	-	2.497
Description: Zero-Footprint Base Camp reduces the operational energy and logistics footprint of the expeditionary base camp system, with the goal being a significant reduction in fuel, water, and power requirements to sustain operations in the field in addition to reducing site preparation, maintenance, and spare parts requirements. Operating a base camp such as Force Provider requires a significant amount of logistics support and also produces an enormous amount of by products, both of which cost money, human effort (that means a risk in the form of soldiers on the road), and represents a potential vulnerability.					
FY 2015 Accomplishments: Conducted evaluation of integrated technologies that transitioned from the RDECOM 6.3 programs in a realistic operating environment at the Ft Devens Base Camp Integration Laboratory (BCIL). Efforts were focused on proving out subsystem maturity and the potential of these technologies before transitioning into Engineering and Manufacturing Development (EMD) and putting them into operational use within the Army Force Provider base camps as Pre-Planned Product Improvements (P3I). Focus was on evaluating technologies that will improve upon the environmental and energy efficiency performance of the base camp. Specifically the integration and evaluation of energy efficient Expeditionary Rigid Wall Shelters with integrated Environmental Control Units /					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) VR8 / <i>Combat Service Support Systems - Ad</i>

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Heaters and energy saving appliances that will compliment improved shelter efficiencies and significantly reduce the fuel and resource demand on base camp operations.</p> <p>FY 2016 Plans: Conduct evaluation and demonstration of novel resource and operational energy saving technologies with continued focus on producing suitable technology demonstration prototypes and reducing technical risk. Identify promising technologies transitioning from the Sustainability, Logistics Basing Science and Technology Objective Demonstration (SLB-STO-D) for integration and evaluation at the FT Devens BCIL. Prepare promising Zero-Footprint Base Camp technologies for transition into Engineering and Manufacturing Development (EMD) supporting Force Provider requirements and Office of the Secretary of Defense (OSD) Joint Expeditionary Basing Work Group initiatives. Specific areas of focus include the integration and evaluation of renewable energy supplementing systems such as solar water heating, low energy demand Environmental Control Units (ECU)/heaters and energy saving appliances that will compliment improved shelter and subsystem efficiencies significantly reducing the fuel and resource demand on base camp operations.</p> <p>FY 2017 Base Plans: Conduct evaluation of integrated technologies that are transitioning from the RDECOM 6.3 programs in a realistic operating environment at the Ft Devens Base Camp Integration Laboratory (BCIL). Efforts are focused on proving out subsystem maturity and the potential of these technologies before transitioning into Engineering and Manufacturing Development (EMD) and putting them into operational use within the Army Force Provider base camps as Pre-Planned Product Improvements (P3I). Focus will be on evaluating technologies that will improve upon the environmental, resource, and energy efficiency performance of the base camp. Specifically, evaluate technologies transitioning from the Sustainability, Logistics Basing Science and Technology Objective Demonstration (SLB-STO-D). Prepare promising Zero-Footprint Base Camp technologies for transition into Engineering and Manufacturing Development (EMD) supporting Force Provider requirements and OSD Joint Expeditionary Basing Work Group initiatives.</p>					
<p>Title: Expeditionary Shelter Protection System (ESPS)</p> <p>Description: ESPS is a lightweight, rapidly deployable and reusable ballistic protection system that can be installed in commonly used military shelters in expeditionary and remote base camps and outposts where more robust forms of ballistic protection (i.e. sandbags, concrete barriers) are not readily available or logistically feasible.</p> <p>FY 2015 Accomplishments:</p>	0.200	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) VR8 / <i>Combat Service Support Systems - Ad</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Completed transition from Science and Technology (S&T) effort and conducted planning to support new development contract for ESPS.					
<p>Title: Black Waste Elimination for Small Base Camps (150 personnel)</p> <p>Description: Provides the capability to reduce/eliminate the black water generated by small base camps. The objective capability will reduce our sustainment requirements for backhauling black waste water as well as our risk of contaminating the environment with biological contaminants. This capability will significantly reduce reliance on external support and is a key capability required to move toward zero footprint base camps.</p> <p>FY 2015 Accomplishments: Transitioned black waste water elimination technologies from RDECOM 6.3 program and developed a demonstration prototype for contingency base applications to prove out component and subsystem maturity.</p> <p>FY 2016 Plans: Complete demonstration prototype fabrication and conduct evaluation of component performance for the Black Waste Elimination System and transition into Engineering and Manufacturing Development (EMD).</p>	0.250	0.500	-	-	-
<p>Title: Solid Waste Disposal for Small Base Camps</p> <p>Description: Provides an integrated waste management (reduction, treatment or disposal process) add-on capability that can safely process 1,000 lbs or more of mixed solid waste in a single day on site. Mixed solid waste produced on a single 150 person site must be properly managed through reduction, reuse, recycling, treatment, or disposal. Most of the waste is nonhazardous solid waste. Provides a substantial improvement over the current practice of burn pits that poses a health risk to Soldiers and/or the backhaul logistics burden.</p> <p>FY 2015 Accomplishments: Completed the evaluation of integrated waste management technologies. Prepared specification and contract solicitation for development of the Expeditionary Solid waste Disposal System demonstration prototype.</p> <p>FY 2016 Plans: Complete prototype design, fabrication subsystems conduct initial performance evaluation and transition into Engineering and Manufacturing Development (EMD).</p>	0.575	0.360	-	-	-
<p>Title: Ultralightweight Camouflage Net System (ULCANS)</p> <p>Description: ULCANS is durable, robust, snag resistant state of the art camouflage system that provides increased survivability against multi-spectral visual, infrared and radar threats, thermal signature suppression</p>	-	0.250	0.250	-	0.250

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) VR8 / <i>Combat Service Support Systems - Ad</i>

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>and significant thermal/solar reduction capability. ULCANS utilizes a snag-free design and is capable of use in all types of weather and climatic conditions except in heavy snow and winds. ULCANS variants are integrated systems that are very lightweight, easily deployable, versatile, user friendly and tailored to the equipment meeting the requirements of operations for combat systems, command and control equipment, logistic support sites, tactical facilities, and fixed facilities. RDT&E funding supports formal development of new ULCANS variants (snow, urban, aviation, 2 sided system) and necessary technology/signature enhancements for current ULCANS variants.</p> <p>FY 2016 Plans: Complete evaluation/demonstration of ULCANS technology enhancements in a realistic environment. Obtain HQDA approval for CDD to support ULCANS development of new variants and upgrades to existing Woodland/Desert variants. Initiate planning to support new development contract for ULCANS Arctic/Snow variant and technology enhancements to ULCANS Woodland/Desert variants.</p> <p>FY 2017 Base Plans: Initiate Milestone B documentation and prepare solicitation to support ULCANS development contract for Arctic/Snow variant and technology enhancements to ULCANS Woodland/Desert variants.</p>					
<p>Title: Expeditionary Waste to Energy System</p> <p>Description: The Expeditionary Waste to Energy System reduces the operational energy and logistics footprint of the expeditionary base camp system, with the goal of providing an integrated waste management and disposal process add-on capability that can safely process up to two tons of mixed solid organic waste in a single day on site with the energy associated with the management process being converted to usable energy in the form of fuel, heat and/or electric power. This capability will provide a safe and suitable means to dispose of waste in remote expeditionary base camps while reducing the fuel and power requirements to sustain operations in the field. This capability provides a substantial improvement over the current practice of burn pits and backhaul with associated vulnerabilities.</p> <p>FY 2016 Plans: Conduct evaluation of integrated waste to energy technologies that are transitioning from the RDECOM 6.3 programs. Efforts are focused on proving out subsystem maturity and the potential of these technologies before transitioning into Engineering and Manufacturing Development (EMD).</p> <p>FY 2017 Base Plans:</p>	-	0.897	1.654	-	1.654

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) VR8 / <i>Combat Service Support Systems - Ad</i>
--	---	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete evaluation of integrated waste to energy technologies. Prepare solicitation for development of prototypes for testing. Transition program into EMD.					
Accomplishments/Planned Programs Subtotals	2.588	4.048	4.401	-	4.401

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 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>
• RDT&E 654804.VR7: <i>Combat Service Support Systems - RDTE 654804 VR7</i>	2.692	5.463	4.325	-	4.325	4.162	2.418	2.905	2.984	Continuing	Continuing

Remarks

D. Acquisition Strategy

Evaluate Integrated Technologies in a realistic operational environment and transition promising efforts into EMD. Accelerate Base Camp efficiency and safety initiatives to incorporate in deployed camps and/or incorporate during reset of equipment.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / Logistics and Engineer Equipment - Adv Dev	Project (Number/Name) VR8 / Combat Service Support Systems - Ad
--	--	---

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 Support	Various	PM Force Sustainment Systems : Natick, MA	0.587	0.314	Oct 2014	0.334	Oct 2015	0.414	Oct 2016	-		0.414	Continuing	Continuing	0
SBIR+STTR	TBD	various : Various	0.062	-		-		-		-		-	0	0.062	0
Subtotal			0.649	0.314		0.334		0.414		-		0.414	-	-	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			
Soldier Support Equipment	Various	Various : Various	2.278	1.179	Feb 2015	2.114	Jan 2016	2.147	Jan 2017	-		2.147	Continuing	Continuing	0
Subtotal			2.278	1.179		2.114		2.147		-		2.147	-	-	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			
Soldier Support Equipment	Various	Various : Various	2.399	1.095	Feb 2015	1.600	Jan 2016	1.840	Jan 2017	-		1.840	Continuing	Continuing	0
Subtotal			2.399	1.095		1.600		1.840		-		1.840	-	-	0.000

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
	5.326	2.588	4.048	4.401	-	4.401	-	-	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) VR8 / <i>Combat Service Support Systems - Ad</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
Conduct evaluation on Net-Zero energy efficiency solutions	[Activity spans all quarters from FY 2015 to FY 2021]																											
Evaluate and Demonstrate Zero-Footprint Base Camp capabilities for Ba	[Activity spans all quarters from FY 2015 to FY 2018]																											
Complete and transition ESPS to EMD development	[Activity spans quarters 1-3 of FY 2015]																											
Conduct evaluation and demo of integrated Black Waste Elimination tec	[Activity spans all quarters from FY 2015 to FY 2016]																											
Obtain prototype and evaluate small base solid waste disposal capability	[Activity spans quarters 3-4 of FY 2015 and quarters 1-3 of FY 2016]																											
Conduct demonstration and evaluation of ULCANS technology enhancem	[Activity spans quarters 2-3 of FY 2016]																											
Conduct technology demonstration on urban ULCANS and prepare for M	[Activity spans quarters 1-2 of FY 2018]																											
Evaluate integrated Waste-to-Energy technologies	[Activity spans all quarters from FY 2016 to FY 2017]																											
Demonstrate integrated black waste elimination technologies for large ba	[Activity spans quarters 3-4 of FY 2019]																											
Conduct evaluation and demo of integrated expeditionary shelter technol	[Activity spans all quarters from FY 2016 to FY 2020]																											
(I) Prepare for MS B & transition Family of Vehicle Mounted RWS techn	[Activity spans quarter 3 of FY 2018]																											
Prepare for MS B & transition Family of Expandable/Non-expandable RV	[Activity spans quarters 1-2 of FY 2019]																											
Prepare for MS B & transition Family of Collapsible & Panelized RWS te	[Activity spans quarters 3-4 of FY 2021]																											

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) VR8 / <i>Combat Service Support Systems - Ad</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) Obtain Milestone B on Advanced Mortuary Affairs Systems																																	▲			
Conduct evaluation and demo of Integrated Soft Wall Shelter Technologies																																	2			
Obtain MS B and transition Family of SWS into EMD																	2																			
Conduct evaluation of integrated ESPS overhead protection technologies																	2																			
(2) Transition ESPS overhead protection technologies to EMD																	2																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603804A / <i>Logistics and Engineer Equipment - Adv Dev</i>	Project (Number/Name) VR8 / <i>Combat Service Support Systems - Ad</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Conduct evaluation on Net-Zero energy efficiency solutions	1	2012	4	2022
Evaluate and Demonstrate Zero-Footprint Base Camp capabilities for Base Camp Sys	1	2014	4	2018
Complete and transition ESPS to EMD development	1	2015	3	2015
Conduct evaluation and demo of integrated Black Waste Elimination technologies.	4	2014	4	2016
Obtain prototype and evaluate small base solid waste disposal capability	3	2015	3	2016
Conduct demonstration and evaluation of ULCANS technology enhancement	1	2016	2	2017
Conduct technology demonstration on urban ULCANS and prepare for MS B	1	2018	4	2018
Evaluate integrated Waste-to-Energy technologies	1	2016	4	2017
Demonstrate integrated black waste elimination technologies for large base camps	3	2019	2	2020
Conduct evaluation and demo of integrated expeditionary shelter technologies.	1	2016	4	2020
Prepare for MS B & transition Family of Vehicle Mounted RWS technology to EMD	3	2018	3	2018
Prepare for MS B & transition Family of Expandable/Non-expandable RWS to EMD	1	2019	4	2019
Prepare for MS B & transition Family of Collapsible & Panelized RWS tech to EMD	1	2021	4	2021
Obtain Milestone B on Advanced Mortuary Affairs Systems	2	2021	2	2021
Conduct evaluation and demo of Integrated Soft Wall Shelter Technologies (SWS)	1	2018	4	2018
Obtain MS B and transition Family of SWS into EMD	4	2018	1	2019
Conduct evaluation of integrated ESPS overhead protection technologies.	3	2019	4	2020
Transition ESPS overhead protection technologies to EMD	4	2020	4	2020

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv 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	-	22.825	31.962	33.503	-	33.503	28.678	28.186	33.518	34.412	Continuing	Continuing
808: <i>DoD Drug & Vacc Ad</i>	-	8.701	15.997	14.914	-	14.914	14.324	14.310	16.502	16.942	Continuing	Continuing
811: <i>Mil HIV Vac&Drug Dev</i>	-	1.036	0.965	0.638	-	0.638	0.810	0.842	0.882	0.905	Continuing	Continuing
836: <i>Field Medical Systems Advanced Development</i>	-	12.819	15.000	17.951	-	17.951	13.544	13.034	16.134	16.565	Continuing	Continuing
VST: <i>MEDEVAC Mission Equipment Package (MEP) - Adv Dev</i>	-	0.269	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.269

Note

No PE or project change in FY17.

A. Mission Description and Budget Item Justification

This program element (PE) funds development of medical materiel within the early system integration portion of the System Development and Demonstration phase of the acquisition life cycle using 6.4 funding. Program efforts support transition of promising Science and Technology candidate medical technologies (drugs, vaccines, medical devices, diagnostics, and mechanisms for detection and control of disease carrying insects) to larger scale testing in humans for safety and effectiveness. Programs are aligned to meet future force requirements identified within concept documents and organizational structures. This Program Element also provides funding for Food and Drug Administration (FDA) regulated human clinical trials to gain additional information about safety and effectiveness on the path to licensure for use in humans. The Projects supported by this PE are:

(PROJ 808) funds development of candidate medical countermeasures for infectious diseases of military relevance. Efforts include vaccines, drugs, diagnostic kits/ devices, and insect control measures. These funds support human clinical efficacy trials of the drug/vaccine in a larger group that are designed to assess performance and to continue safety assessments in a larger group of volunteers. Products from this project will transition to PE 0604807A, Project 849.

(PROJ 811) funds the development of military relevant human immunodeficiency virus (HIV) medical countermeasures. It provides funding for planning and conducting of human clinical trials in a group of healthy volunteers to assess the drug/vaccine for safety, tolerability, how the drug/vaccine is distributed, metabolized, and excreted from the body, and investigate the appropriate dose for therapeutic use. Products from this project will transition to PE 0604807A, Project 812.

(PROJ 836) funds the demonstration and validation of medical products for enhanced combat casualty care and follow-on care, including rehabilitation. This project also funds the human clinical trials that test the safety and effectiveness of biologics, devices and demonstration. Clinical trials are conducted in accordance with U.S. Food and Drug Administration (FDA) regulations. Products from this project will transition to PE 0604807A, Project 832.

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>
---	--

(PROJ VS7) funds program upgrades, retrofits, trains, and sustains the fleet of Medical Evacuation legacy helicopters that continue to play a major role in Iraq and Afghanistan. The approved force design increased the number of air frames in the force from 12 to 15 aircraft for 37 MEDEVAC companies. All products from this project will transition to PE 0604807A Project VS8.

These projects are managed by U.S. Army Medical Materiel Development Activity (USAMMDA) and U.S. Army Medical Materiel Agency (USAMMA) of the US Army Medical Research and Materiel Command.

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	23.647	31.962	35.423	-	35.423
Current President's Budget	22.825	31.962	33.503	-	33.503
Total Adjustments	-0.822	0.000	-1.920	-	-1.920
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.822	-			
• Adjustments to Budget Years	-	-	-1.920	-	-1.920

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>				Project (Number/Name) 808 / <i>DoD Drug & Vacc Ad</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
808: <i>DoD Drug & Vacc Ad</i>	-	8.701	15.997	14.914	-	14.914	14.324	14.310	16.502	16.942	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project funds development of candidate medical countermeasures for infectious diseases of military relevance. These efforts are in: vaccines, drugs, diagnostic kits/devices, and to determine if insects are infected with pathogenic organisms capable of infecting service members/preventive medicine measures. These funds support human clinical effectiveness (capacity to produce a desired size of an effect under ideal or optimal conditions) trials of the drug/vaccine in larger groups that are designed to assess how well the drug/vaccine works, and to continue safety assessments in a larger group of volunteers. Funding supports both technical evaluations and human clinical testing to assure the safety and effectiveness of medical diagnostic kits and devices. This work, which is performed in military laboratories or civilian pharmaceutical firms, is directed toward the prevention of disease, early diagnosis, and accelerated recovery time once diagnosed; to enhance battlefield readiness. All clinical trials are conducted in accordance with U.S. Food and Drug Administration (FDA) regulations, a mandatory obligation for all military products placed into the hands of medical providers or service members. Product development priorities are determined based upon four major factors: (1) the extent and threat of the disease within the Combatant Commands theater of operations, (2) the clinical severity of the disease, (3) the technical maturity of the proposed solution, and (4) the affordability of the solution (development and production).

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

	FY 2015	FY 2016	FY 2017
Title: DoD Drug and Vaccine Advanced Development	8.701	15.997	14.914
Description: Funding is provided for the following effort in the development of candidate medical countermeasures for military relevant infectious disease.			
FY 2015 Accomplishments: Topical Antileishmanial Cream (TLC, Paromomycin/Gentamicin): Topical Antileishmanial Cream transitioned in FY14 to PE 0604807A Project 849 (Drugs and Vaccines - 6.5) after completion of the site development efforts for Phase 3 (expanded safety, efficacy, and dosing study) New World clinical trial. Expanded Access Treatment Program and continued until FDA approved product is available. Dengue Tetravalent Vaccine: Dengue Tetravalent Vaccine transitioned in FY14 to PE 0604807A Project 849 after completion of volunteer follow up and data analysis on pivotal Phase 3 safety and effectiveness clinical trials. Preventive Medicine Products: These products fall into the category military operational requirements and are Commercial-Off-The-Shelf (COTS). As such, they have moved to a more appropriate Program Element (PE 0603807A Project 836 or PE 0604807A Project 832) and will be listed as separate products when they are considered for military use.			
FY 2016 Plans:			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 808 / <i>DoD Drug & Vacc Ad</i>
--	--	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Dengue Tetravalent Vaccine: Continue to fund Dengue Tetravalent Vaccine until FY18 for additional two-year volunteer follow-up and data analysis on pivotal Phase 3 safety and effectiveness clinical trials required by the Thai Ministry of Public Health. Infectious Disease Diagnostic: Transition products from S&T in FY16. Begin preparation for field testing and evaluation of several product candidates to include: Scrub Typhus, Rickettsiae, and Sand Fly Fever. Dengue Vaccine Block II: Transition from S&T in FY16. Transition from Military Infectious Diseases S&T funding and prepare for Phase 2 safety and efficacy trial (24 to 300 subjects) of vaccine candidate in an adult/military population. Treatment for Resistant Wound Infections: Products will transition from S&T in FY16. Transition from Military Infectious Diseases S&T funding and begin preparation for safety and efficacy trials of drug candidate for the Treatment for Resistant Wound Infections. Next Generation Malaria Prophylaxis: Initiate a retinal safety study in FY16 and continue to prepare the protocols for any required soldier specific studies that is needed. Arthropod Control/Surveillance: Begin preparation for field testing and evaluation of several product candidates to include; Scrub Typhus, Rickettsiae, and Sand Fly Fever.</p> <p>FY 2017 Plans: Dengue Tetravalent Vaccine: Will transition to PE 0604807A Project 849 in FY17. Infectious Disease Diagnostic products: In FY17 products within this area will move to the Rapid Diagnostic and Detection Devices. Dengue Vaccine Block II: Will continue to prepare for Phase 2 safety and efficacy trial (24 to 300 subjects) of vaccine candidate in an endemic population and plan/prepare for phase 2 studies (safety and efficacy 24 to 300 subjects) involving adult military/traveler population. Preparation will include candidate formulation evaluation in dengue human challenge studies. Treatment for Resistant Wound Infections: Products will transition in FY17 from the Military Infectious Diseases Advanced Technology program. Will begin preparation for safety and efficacy trials of drug candidate for the Treatment for Resistant Wound Infections. Next Generation Malaria Prophylaxis: Will continue the retinal (eye) safety study started in FY16 and will continue to prepare the protocols for any required soldier specific studies for FDA review. Arthropod Control/Surveillance: In FY17 products within this area will move to the Rapid Diagnostic and Detection Devices. Rapid Diagnostic and Detection Devices: In FY17 the Infectious Disease Diagnostic and Arthropod Control/ Surveillance products have moved under this product title. Will continue field testing and evaluation of several product candidates to include: dengue, chikungunya and leptospirosis.</p>			
Accomplishments/Planned Programs Subtotals	8.701	15.997	14.914

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

Remarks

D. Acquisition Strategy
Test and evaluate in-house and commercially developed products in extensive government-managed clinical trials to gather data required for FDA licensure and Environmental Protection Agency registration.

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 / 4	PE 0603807A / <i>Medical Systems - Adv Dev</i>	808 / <i>DoD Drug & Vacc Ad</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 / 4	R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev	Project (Number/Name) 808 / DoD Drug & Vacc Ad
--	---	--

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			
Medical Product Development Management Services Cost	Various	Not Applicable : Not applicable	17.390	0.965		1.280		2.130		-		2.130	Continuing	Continuing	Continuing
Medical Product Development Management Services Cost	PO	General Dynamics Information Technology, : Frederick MD	0.000	1.300		1.293		2.118		-		2.118	0	4.711	0
Subtotal			17.390	2.265		2.573		4.248		-		4.248	-	-	-

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			
Medical Product Development Cost	Various	Not applicable : Not applicable	24.717	1.270		2.632		2.036		-		2.036	Continuing	Continuing	Continuing
Product Development of Malaria Prophylaxis	Allot	TBD : TBD	0.000	1.010		-		-		-		-	0	1.010	0
Product Development of Malaria Prophylaxis	Allot	Armed Forces Research Institute of Medical Sciences : Cambodia	2.111	-		-		-		-		-	0	2.111	0
Product Development of Malaria Prophylaxis	Various	Walter Reed Army Institute of Research : Silver Spring, MD	3.000	-		-		-		-		-	0	3.000	0
Subtotal			29.828	2.280		2.632		2.036		-		2.036	-	-	-

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			
Medical Product Development Support Cost	Various	Not Applicable : Not applicable	9.652	0.997		2.545		2.527		-		2.527	Continuing	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 808 / <i>DoD Drug & Vacc Ad</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
	Topical Antileishmanial Cream Expanded Access Treatment Pgm																											
Infectious Disease Diagnostics Assays Validation of point-of-care																												
Dengue Vaccine Block II Phase 2 safety trial preparation/perform																												
Arthropod Control / Surveillance Process Validation																												
Treatment for Resistant Wound Infections Phase 2 safety trial																												
Q Fever Vaccine IND and NDA package creation																												
D5P Next Generation Malaria Drug Clinical Studies																												
Oral Drug for Cutaneous Leishmaniasis Adult Indication Study																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 808 / <i>DoD Drug & Vacc Ad</i>
--	--	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Topical Antileishmanial Cream Expanded Access Treatment Pgm	2	2011	1	2017
Infectious Disease Diagnostics Assays Validation of point-of-care	1	2016	1	2022
Dengue Vaccine Block II Phase 2 safety trial preparation/perform	1	2016	4	2019
Arthropod Control / Surveillance Process Validation	1	2016	1	2022
Treatment for Resistant Wound Infections Phase 2 safety trial	1	2016	4	2019
Q Fever Vaccine IND and NDA package creation	1	2015	4	2016
D5P Next Generation Malaria Drug Clinical Studies	1	2016	4	2017
Oral Drug for Cutaneous Leishmaniasis Adult Indication Study	1	2016	4	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>				Project (Number/Name) 811 / <i>Mil HIV Vac&Drug 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
811: <i>Mil HIV Vac&Drug Dev</i>	-	1.036	0.965	0.638	-	0.638	0.810	0.842	0.882	0.905	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds development of militarily relevant human immunodeficiency virus (HIV) medical countermeasures. It provides funding for the planning and conducting of human clinical trials in a group of healthy volunteers to assess the drug/vaccine for safety, tolerability, how the drug/vaccine is distributed, metabolized, and excreted from the body, and to investigate the appropriate dose for therapeutic use. Development efforts are focused on militarily unique needs effecting manning, mobilization, and deployment.

The major contractor is Henry M. Jackson Foundation for the Advancement of Military Medicine, Rockville, MD. Research efforts are coordinated with the National Institutes of Health.

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

	FY 2015	FY 2016	FY 2017
Title: Military HIV Vaccine & Drug Development	1.036	0.965	0.638
Description: This project funds advanced development research to develop candidate HIV vaccines, assess their safety and effectiveness in evaluations with human subjects, and protect military personnel from risks associated with HIV infection.			
FY 2015 Accomplishments: Conducted analysis of samples from safety and effectiveness clinical trial RV305 including extensive evaluation of binding antibodies based on previously determined correlates of protection. In addition, novel findings in the properties of some circulating antibodies prompted planning for an open label extension to start in FY15. Completed FY15 collection of invasive samples for safety and effectiveness clinical trials RV306 and RV328; those samples have a requirement for immediate processing and analysis. Concluded FY15 RV306 and 328 with costs associated with the five clinical trial sites associated with those protocols.			
FY 2016 Plans: In RV305 (a late boost study of RV144 vaccine recipients), coordinate final data analyses and meet with investigators as to how the data should be presented/published. Results of RV305 resulted in a rollover study (RV305 amendment) which provides an additional boost dose to selected vaccine recipients. Continue candidate vaccine trials RV306 (evaluation of different one-year boosts) and RV328 (study of AIDSVAX B/E alone) to produce further immunogenicity data that complement the RV305 data. Continue the RV403 in Mozambique, Uganda, and Thailand. Compare the studies of immune responses induced by the RV144 regimen using AIDSVAX B/E mixed with L(MPLA) [monophosphoryl lipid A) with liposomes.			
FY 2017 Plans: Will complete the rollover RV305 study (RV305 Amendment) to provide additional open-label boost to willing volunteers. Will conduct analysis of samples from RV305A study and will coordinate to analyze and evaluate data from the study. Will continue			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 811 / <i>Mil HIV Vac&Drug Dev</i>
--	--	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
to seek further complementary immunogenicity (ability to provoke immune response) data from Candidate vaccine trials RV306 and RV328 and will complete the collection of samples for safety and effectiveness of the study. RV403 study will continue in Mozambique, Uganda, and Thailand with adjuvanted AIDSVAX B/E and will continue to collect samples from volunteers. IPT will continue to review Analysis of Alternatives (AoA) and disruptive technologies that have the potential to refocus current vaccine effort to a product that has a greater utility for military relevant populations. Down selection of viable vaccine candidates will be made in anticipation of a single phase IIB efficacy trial (trials to evaluate efficacy in patients with the disease) in FY18.			
Accomplishments/Planned Programs Subtotals	1.036	0.965	0.638

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

N/A

Remarks

D. Acquisition Strategy

Test and evaluate commercially developed drug/vaccine candidates in government-managed trials.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev	Project (Number/Name) 811 / Mil HIV Vac&Drug Dev
--	---	--

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			
Medical Product Development Management Services Cost	TBD	Not Applicable : Not Applicable	2.118	0.146		0.110		0.119		-		0.119	Continuing	Continuing	Continuing
Subtotal			2.118	0.146		0.110		0.119		-		0.119	-	-	-

Remarks
Not Applicable

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medical Product Development Cost	TBD	Not applicable : Not applicable	3.289	0.508		0.343		0.308		-		0.308	Continuing	Continuing	Continuing
Medical Product Development Support Cost	TBD	TBD : TBD	0.000	-		0.222		-		-		-	0	0.222	0
Subtotal			3.289	0.508		0.565		0.308		-		0.308	-	-	-

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			
Medical Product Development Support Cost	TBD	TBD : TBD	1.572	0.250		0.195		0.157		-		0.157	0	2.174	0
Subtotal			1.572	0.250		0.195		0.157		-		0.157	0.000	2.174	0.000

Remarks
Not Applicable

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev	Project (Number/Name) 811 / Mil HIV Vac&Drug Dev
--	---	--

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			
Medical Product Development T&E Cost	TBD	Not applicable : Not Applicable	15.776	0.132		0.095		0.054		-		0.054	0	16.057	0
Subtotal			15.776	0.132		0.095		0.054		-		0.054	0.000	16.057	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	22.755	1.036	0.965	0.638	-	0.638	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 811 / <i>Mil HIV Vac&Drug Dev</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
	RV305A Amendment to add open-label boost to volunteers					FY 15-FY17																						
RV306 Intensive Immune Monitoring of Prime-Boost Vaccine																												
RV328 Intensive Immune Monitoring of AIDS VAXB/E alone					FY 12-FY15																							
RV403 to evaluate adjuvant's ability to enhance durability					FY 12-FY18																							
RV Candidate Cohort development for efficacy studies													FY 15-FY19															
RV Candidate Immune Characterization for protective immunity													FY 16-FY18															
																					FY 19-FY22							

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 811 / <i>Mil HIV Vac&Drug Dev</i>
--	--	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
RV305A Amendment to add open-label boost to volunteers	3	2015	2	2017
RV306 Intensive Immune Monitoring of Prime-Boost Vaccine	2	2011	4	2015
RV328 Intensive Immune Monitoring of AIDSVAXB/E alone	4	2014	1	2018
RV403 to evaluate adjuvant's ability to enhance durability	2	2015	3	2019
RV Candidate Cohort development for efficacy studies	4	2016	4	2018
RV Candidate Immune Characterization for protective immunity	1	2019	2	2022

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev				Project (Number/Name) 836 / Field Medical Systems Advanced Development			
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
836: Field Medical Systems Advanced Development	-	12.819	15.000	17.951	-	17.951	13.544	13.034	16.134	16.565	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this PE.

A. Mission Description and Budget Item Justification

This project funds the demonstration and validation of medical products for enhanced combat casualty care and follow-on care, including rehabilitation. This project funds human clinical trials to test the safety and effectiveness of biologics (products derived from living organisms) and devices necessary to meet medical requirements. When available, commercial-off-the-shelf (COTS) medical products are also tested and evaluated for transition to engineering and manufacturing development. Consideration is also given to reducing the medical logistics footprint through smaller weight, volume, and equipment independence from supporting materials. All clinical trials are conducted in accordance with U.S. Food and Drug Administration (FDA) regulations.

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

	FY 2015	FY 2016	FY 2017
Title: Field Medical Systems Advanced Development - PM Medical Devices	11.285	11.760	14.763
Description: Advanced Concept Development funding is provided for the following development of medical devices in support of enhanced combat casualty care.			
FY 2015 Accomplishments:			
Eye Tracking System for Assessing Concussions (system is a traumatic brain injury diagnostic tool): Noninvasive neurodiagnostic technologies for TBI is multi-focused. The Eye Tracking System for Assessing Concussions (system is a traumatic brain injury diagnostic tool) is one of multiple systems to be evaluated. All non-invasive technologies were collated under one integrated IPT. The technologies involved were Neurocognitive Assessment Tools and Eye-Tracking Systems. Future components of the multi-focused approach fall under the scope of this line item (i.e. quantitative electroencephalography (qEEG), near-infrared spectroscopy (NIRS), vestibular, etc.). TBI Diagnostic Assay System Increment II Point of Care Device: TBI Diagnostic Assay System: The focus of this effort was to use the current Biomarker technology developed by Banyan and cross-level all known technologies to Abbott Diagnostics. Contracting efforts were put in place to facilitate this path forward. Army uses the i-STAT in assemblages. The effort modernized the i-STAT platform to accommodate the new cartridges associated with the TBI Biomarkers. Impedance Threshold Device for the Treatment of TBI: Current device has a 510(k) (Pre-market Notification) clearance for multiple indications. Continued the submission of a new 510(k) planned to cover the expanded indications for the currently fielded device. Device will no longer be a stand-alone product, because the capability will be incorporated in existing ventilators. Compartment			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 836 / <i>Field Medical Systems Advanced Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Syndrome Pressure Device: Transitioned from project 840 6.3 funding and enrolled patients in the pivotal trial for FDA clearance for anticipated FY15 start of the clinical trial.</p> <p>FY 2016 Plans: TBI Diagnostic Assay System Increment II Point of Care Device: TBI Diagnostic Assay System: Continue current Biomarker technology developed by Banyan and coordinate all known technologies to Abbott Diagnostics. Continue contracting efforts in FY16. Impedance Threshold Device for the Treatment of TBI: Product has transitioned back to S&T to conduct research on the expanded indications for the fielded device. Compartment Syndrome Pressure Device: Compartment Syndrome Pressure Device will be delayed for transition into Advanced Development from S&T until FY17. Milestone A will be delayed until FY17. After the Milestone A, product will transition into Advanced Development. Junctional / Noncompressible Hemorrhage Control Agent: The plan is for the product to transition into Advanced Development after Milestone B in late FY15. If FDA requires 510-K, program will develop required paper work for submission to the FDA.</p> <p>FY 2017 Plans: TBI Diagnostic Assay System Increment II Point of Care Device: Will continue to focus on the current Biomarker technology developed by Banyan and platform development with Abbott Diagnostics. Compartment Syndrome Pressure Device: Prior testing results will determine the Materiel solution pathway. The materiel solution will transition in FY17 as previously expected. Junctional / Noncompressible Hemorrhage Control Agent: Will continue FY16 efforts to scope effort and requirements. Intrathoracic Pressure Regulation Therapy (IPRT) (Formally Ventilator Support Device): Will work on validation efforts and preclinical testing to achieve FDA 510(k) clearance of the device to enhance circulation with possible applications towards shock and head injury. Will perform testing to ensure the IPRT product is compatible with existing fielded systems. PTSD Biomarkers: Pending favorable research results in FY16, will begin prototype device development. Field Anesthesia: Pending refinement of Service and Joint requirements, will transition technology to PE 0604807A Project 832. Ocular Drug Delivery (Ocular Salvage Device): Will determine products to move forward to clinical trials based on results from bench and preclinical studies. Portable Extracorporeal Membrane Oxygen (ECMO): Will evaluate development of more compact, portable and less invasive product from existing ECMO vendors.</p>				
<p>Title: Field Medical Systems Advanced Development - PM Medical Support Systems</p> <p>Description: Funding is provided for the following effort in the development of products that support the medical mission in combat casualty care and health care operations.</p> <p>FY 2015 Accomplishments: Medical Evac and Treatment Vehicles Medical Equipment Set and Mission Essential Package: Continued collaboration with Program Executive Office Combat Support/Combat Service Support (PEO CS&CSS) and Program Executive Office Ground Combat Systems (PEO GCS) on development efforts for emerging medical vehicle evacuation/casualty evacuation (CASEVAC)</p>		1.534	3.240	3.188

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 836 / <i>Field Medical Systems Advanced Development</i>

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

	FY 2015	FY 2016	FY 2017
<p>variants. Improved Vector Tent Traps: Continued prototype development of Vector Tent Traps and transitioned to project 832. Altitude Readiness Management System (ARMS): Continued prototype development of the Altitude Readiness Management System (ARMS) and transitioned to project 832. Next Generation Uniform Repellent: Began development of the Next Generation Uniform Repellent (NGUR). The NGUR transitioned from an S&T SBIR. The NGUR is an effort to develop new military uniform insect repellent formulations for the uniform materiel and the corresponding uniform treatment technology. Next Generation Immobilization System: Transitioned from S&T SBIR. Developed prototypes for initial developmental testing and FDA data collection. The Next Generation Immobilization System (NGIS) provided advanced vibration dampening to allow for safer evacuation of spinal cord injury and traumatic brain injury casualties. Hydration Status Monitor (HSM): Hydration Status Monitor (HSM) transition continued to be delayed. Milestone B for this effort is scheduled for Feb 2015. Contract is planned to be a 4 year effort to develop the actual device and gain FDA approval for use.</p> <p>FY 2016 Plans: Medical Evac and Treatment Vehicles Medical Equipment Set and Mission Essential Package: Continue collaboration with Program Executive Office Combat Support/Combat Service Support (PEO CS&CSS) and Program Executive Office Ground Combat Systems (PEO GCS) on development efforts for emerging medical vehicle evacuation/casualty evacuation (CASEVAC) variants including AMPV source selection. Exploring CASEVAC kit development for MRAP Dash and JLTV vehicles. Transition to 832 in FY17. Improved Vector Tent Traps: Continue prototype development of Vector Tent Traps and transition to project 832. Next Generation Uniform Repellent: Continue development of the Next Generation Uniform Repellent/Impregnation process in collaboration with PEO Soldier. Obtain EPA registration. Perform cut and sew testing of EPA approved uniform repellent/impregnation process for permethrin. Investigate use of other repellents. Next Generation Immobilization System (NGIS): Continue prototype development of NGIS and begin initial developmental tests and user evaluations. Hydration Status Monitor (HSM): Hydration Status Monitor (HSM) transition will be delayed due to a more extensive feasibility study than initially determined. Initiate development of prototype devices and prepare for the Milestone B submission with required documentation.</p> <p>FY 2017 Plans: Medical Evacuation and Treatment Vehicles, Medical Equipment Set and Mission Essential Package, and CASEVAC: Will transition to project PE 0604807A Project 832. Improved Flying Vector Trap (IFVT) (formerly Improved Vector Test Traps). Will transition to PE 0604807A Project 832. Next Generation Uniform Repellent/Impregnation: Will continue development of the Next Generation Uniform Repellent/Impregnation process in collaboration with PEO Soldier. Will obtain Environmental Protection Agency (EPA) registration on a different repellent and evaluate integration into the uniform manufacturing process. Litter Transport Shock/Stressor Mitigation System (formerly Next Generation Immobilization Systems (NGIS). Will finalize prototype design for transition to PE 0604807A Project 832 to conduct developmental test and user evaluations. Remote Triage Sensor System: Will</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 836 / <i>Field Medical Systems Advanced Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
transition the Remote Triage Sensor System from a Small Business/Innovative Research (SBIR) effort to PE 0604807A Project 836. Will finalize development of a fully functional prototype in preparation for developmental and user evaluations.			
Accomplishments/Planned Programs Subtotals	12.819	15.000	17.951

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

N/A

Remarks

D. Acquisition Strategy

Develop in-house or industrial prototypes in government-managed programs to meet military and regulatory requirements for production and fielding.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev	Project (Number/Name) 836 / Field Medical Systems Advanced Development
--	---	--

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			
Medical Product Development Management Services Cost	Various	Not Applicable : Not applicable	40.255	0.933		0.623		3.124		-		3.124	Continuing	Continuing	Continuing
TBI Diagnostic Assay System - Increment II (benchtop/POC/ Bandits)	TBD	Banyan BioMarkers, Inc : Alachua FL	0.208	-		-		-		-		-	0	0.208	0
Impedance Threshold Device for the Treatment of Traumatic Brain Injury	TBD	Advance Circulatory Systems, Inc : Roseville, MN	0.154	-		-		-		-		-	0	0.154	0
Subtotal			40.617	0.933		0.623		3.124		-		3.124	-	-	-

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	TBD	TBD : TBD	0.000	0.932		-		-		-		-	0	0.932	0
Medical Product Development	TBD	ALL Product : Various	1.931	-		-		2.083		-		2.083	Continuing	Continuing	Continuing
Product Development of Freeze-dried plasma	TBD	TBD : TBD	2.400	6.378		-		-		-		-	Continuing	Continuing	Continuing
Point of Care Coagulation Profiler	TBD	TBD : TBD	0.000	-		0.385		-		-		-	0	0.385	0
TBI Diagnostic Assay System - Increment II (benchtop/POC/ Bandits)	TBD	Banyan BioMarkers, Inc : Alachua FL	6.737	-		6.614		3.200		-		3.200	0	16.551	0
Impedance Threshold Device for the Treatment of Traumatic Brain Injury	TBD	Advance Circulatory Systems Inc. : Roseville, MN	2.322	-		-		-		-		-	0	2.322	0
Compartment Syndrome Pressure Device	TBD	Twinstar : Minneapolis, MN	0.000	1.871		-		-		-		-	0	1.871	0
Hydration Status Monitor	TBD	Gaia Medical : LaJolla CA	0.000	0.841		-		-		-		-	0	0.841	0

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army											Date: February 2016				
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev				Project (Number/Name) 836 / Field Medical Systems Advanced Development							

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			
Noninvasive Neuromodulator TBI	TBD	TBD : TBD	0.000	-		2.140		-		-		-	0	2.140	0
PTSD	Various	TBD : Various locations	0.000	-		-		2.532		-		2.532	0	2.532	0
Ocular Salvage Device	Various	TBD : TBD	0.000	-		-		2.479		-		2.479	0	2.479	0
Field Anesthesia	TBD	TBD : Various	0.000	-		-		3.068		-		3.068	0	3.068	0
Field Sterilizer	TBD	TBD : TBD	0.000	-		3.815		-		-		-	0	3.815	0
Product Development	TBD	HemCon Medical Technologies : Tigard, Oregon	9.720	-		-		-		-		-	Continuing	Continuing	Continuing
Product Development	TBD	Banyan BioMarkers, Inc : Alachua FL	31.514	-		-		-		-		-	Continuing	Continuing	Continuing
Development of Platelet Derived Hemostatic agent	TBD	Fast Track Drugs & Biologics : Frederick, MD	1.800	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			56.424	10.022		12.954		13.362		-		13.362	-	-	-

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			
Medical Product Development Support Cost	Various	Not Applicable : Not applicable	44.065	0.932		0.723		0.744		-		0.744	Continuing	Continuing	Continuing
Subtotal			44.065	0.932		0.723		0.744		-		0.744	-	-	-

Remarks
No product/contract costs greater than \$1M individually.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army											Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev				Project (Number/Name) 836 / Field Medical Systems Advanced Development				

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			
Medical Product Development T&E Cost	TBD	Not applicable : Not applicable	36.061	0.932		0.700		0.721		-		0.721	Continuing	Continuing	Continuing
Subtotal			36.061	0.932		0.700		0.721		-		0.721	-	-	-

Remarks
No product/contract costs greater than \$1M individually.

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
	177.167	12.819	15.000	17.951	-	17.951	-	-	-

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev	Project (Number/Name) 836 / Field Medical Systems Advanced Development
--	---	--

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) Hydration Status Monitor MS-B	<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);"> ▲ MS-B </div>																															
(2) Ocular Salvage Device																													<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);"> ▲ MS-B </div>			
(3) Alternative Pain Delivery Device																													<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);"> ▲ MS-B </div>			
(4) Burn Polymer Cover Device																													<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);"> ▲ MS-B </div>			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) 836 / <i>Field Medical Systems Advanced Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Hydration Status Monitor MS-B	4	2015	4	2015
Ocular Salvage Device	2	2021	2	2021
Alternative Pain Delivery Device	2	2021	2	2021
Burn Polymer Cover Device	1	2021	1	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev				Project (Number/Name) VS7 / MEDEVAC Mission Equipment Package (MEP) - Adv Dev			
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
VS7: MEDEVAC Mission Equipment Package (MEP) - Adv Dev	-	0.269	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.269
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Medical Evacuation Enroute Care Validation Study is completed in FY 2015. Products from this project transition to PE 0604807A Project VS8 in FY 16.

A. Mission Description and Budget Item Justification

Original models of Army Black Hawk MEDEVAC helicopters continue to play a major role in maintaining high US troop survival rates in Iraq and Afghanistan by evacuating wounded troops in less than one-hour. In 2009 a VCSA-approved force design update increased the number of air frames in the force from 12 to 15 aircraft for 37 MEDEVAC companies to better meet operational needs. In 2010, the AMEDD accepted life-cycle management of the MEDEVAC MEP from PEO Aviation. In order to achieve required operational capability and enhance commonality across the MEDEVAC fleet, the MEDEVAC MEP program upgrades, retrofits, trains, and sustains the 256 MEDEVAC legacy helicopters to achieve the medical capability provided by the HH-60M, which is factory built for the MEDEVAC mission.

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

	FY 2015	FY 2016	FY 2017
Title: Medical Evacuation Enroute Care Validation Study	0.269	-	-
Description: Medical Evacuation Enroute Care Validation Study			
FY 2015 Accomplishments: Modified Interim MEDEVAC Mission Support System (IMMSS) to take into account the new paramedic skills being used by the flight paramedic.			
Accomplishments/Planned Programs Subtotals	0.269	-	-

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

N/A

Remarks

D. Acquisition Strategy

Develop in-house or industrial prototypes in government-managed programs to meet military MEDEVAC and regulatory requirements for production and fielding.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) VS7 / <i>MEDEVAC Mission Equipment Package (MEP) - Adv Dev</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 / 4	R-1 Program Element (Number/Name) PE 0603807A / Medical Systems - Adv Dev	Project (Number/Name) VS7 / MEDEVAC Mission Equipment Package (MEP) - Adv Dev
--	---	---

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			
Medical Product Development Management Services Cost	TBD	APM MEDEVAC : Huntsville, AL	0.189	-		-		-		-		-	0	0.189	0
Subtotal			0.189	-		-		-		-		-	0.000	0.189	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			
Medical Product Development Cost	TBD	APM MEDEVAC PEO Aviation : Huntsville AL	1.479	-		-		-		-		-	0	1.479	0
Subtotal			1.479	-		-		-		-		-	0.000	1.479	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			
Medical Product Development Support Cost	TBD	APM MEDEVAC : Huntsville, AL	0.642	0.269		-		-		-		-	0	0.911	0
Subtotal			0.642	0.269		-		-		-		-	0.000	0.911	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			
Medical Product Development T&E Cost	MIPR	APM MEDEVAC PEO Aviation : Huntsville, AL	0.199	-		-		-		-		-	0	0.199	0
Subtotal			0.199	-		-		-		-		-	0.000	0.199	0.000

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016			
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>				Project (Number/Name) VS7 / <i>MEDEVAC Mission Equipment Package (MEP) - Adv Dev</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	2.509	0.269		0.000		-	-	-	0.000	2.778	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) VS7 / <i>MEDEVAC Mission Equipment Package (MEP) - Adv Dev</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
Telemedicine Research and Development and Tech Transfer	Research and development																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603807A / <i>Medical Systems - Adv Dev</i>	Project (Number/Name) VS7 / <i>MEDEVAC Mission Equipment Package (MEP) - Adv Dev</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Telemedicine Research and Development and Tech Transfer	1	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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced 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
Total Program Element	-	8.349	22.994	31.120	-	31.120	23.067	17.846	13.136	21.181	Continuing	Continuing
ET8: <i>Personnel Airdrop System Development</i>	-	0.000	0.000	0.690	-	0.690	0.500	0.400	0.300	0.000	0.000	1.890
S51: <i>Aircrew Integrated Sys Ad</i>	-	0.161	0.152	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.313
S53: <i>Clothing And Equipment</i>	-	1.555	9.985	3.582	-	3.582	3.571	1.845	2.495	3.113	Continuing	Continuing
S54: <i>Small Arms Improvement</i>	-	4.004	7.449	10.554	-	10.554	7.285	7.377	7.472	15.421	Continuing	Continuing
VS4: <i>Soldier Protective Equipment</i>	-	2.629	5.408	16.294	-	16.294	11.711	8.224	2.869	2.647	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) for Advanced Component Development and Prototypes manages the Soldier as a system in order to increase combat effectiveness, test and deliver tangible products that save Soldier's lives, and improve Soldier's quality of life. It evaluates, develops, and tests emerging technologies and critical Soldier support systems to reduce technology risk.

Project ET8 funding (Personnel Airdrop System) supports efforts to improve Static Line (SL) and Military Free Fall (MFF) personnel parachutes and associated equipment to include canopy improvements based on integration of new technology with the goal of enhancing the insertion capability of the airborne soldier and increasing the performance, safety and durability of personnel airdrop equipment.

Project S51 funding (Aircrew Integrated Systems) supports component development and prototyping of critical Soldier support systems and other combat service support equipment that will improve unit sustainability and combat effectiveness.

Project S53 funding (Clothing and Equipment) supports development of state-of-the-art technology to improve tactical and non-tactical clothing and individual equipment to enhance the lethality, survivability, and mobility of the individual Soldier.

Project S54 funding (Small Arms Improvement) provides funds to develop, demonstrate and evaluate emerging technology for integration of systems, subcomponents and prototypes designed to enhance lethality, target acquisition, fire control, training effectiveness and reliability for current and future small arms weapon systems and ammunition.

Project VS4 funding (Soldier Protective Equipment) supports efforts to evaluate integrated technologies and representative or prototype systems that help expedite Individual Soldier Ballistic Protection technology transition from the laboratory to operational use.

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>
---	---

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	5.983	22.194	22.910	-	22.910
Current President's Budget	8.349	22.994	31.120	-	31.120
Total Adjustments	2.366	0.800	8.210	-	8.210
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	2.366	0.800	8.210	-	8.210

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>				Project (Number/Name) ET8 / <i>Personnel Airdrop System 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
ET8: <i>Personnel Airdrop System Development</i>	-	0.000	0.000	0.690	-	0.690	0.500	0.400	0.300	0.000	0.000	1.890
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding line established in FY17 for the Personnel Airdrop System Development. Efforts were previously executed in Program Element 0603827A S53.

A. Mission Description and Budget Item Justification

This funding supports efforts to improve Static Line (SL) and Military Free Fall (MFF) personnel parachutes and associated equipment to include canopy improvements based on integration of new technology with the goal of enhancing the insertion capability of the airborne soldier and increasing the performance, safety and durability of personnel airdrop equipment. Includes integration and interface on the Soldier system.

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

	FY 2015	FY 2016	FY 2017
Title: Personnel Airdrop System Development	-	-	0.690
Description: Funding line is newly established in FY17. Efforts were previously executed in Program Element 0603827A S53.			
FY 2017 Plans: Continue to evaluate component and subsystem technologies across the airdrop portfolio to meet objective requirements for static line and military free fall parachutists and transition to ES9 to prove out capability insertions through Developmental Testing (DT) and Operational Testing (OT). Perform a market survey, system integration and initial evaluation of the performing modeling and analysis of parachute deployment to improve canopy performance. Obtain Material Development Decision (MDD) in 2QFY17 to conduct market research and preliminary evaluation of an improved Parachutists Oxygen Delivery System to provide increased capacity for oxygen to support longer duration Military Free Fall operations.			
Accomplishments/Planned Programs Subtotals	-	-	0.690

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
• RDTE 654601 ES9: <i>RDTE 0604601A ES9 Advanced Tactical Parachute System</i>	-	-	1.487	-	1.487	5.709	10.020	3.528	1.851	0.000	22.595

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) ET8 / <i>Personnel Airdrop System Development</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>
• OPA MA7801: <i>OPA MA7801 Advanced Tactical Parachute System</i>	25.996	26.088	16.611	-	16.611	18.860	24.610	26.890	22.040	0	161.095

Remarks

D. Acquisition Strategy

Programs pursue technology maturation and prototype development, culminating in the transition of mature technologies (TRL 6-7) to Engineering and Manufacturing Development.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) ET8 / <i>Personnel Airdrop System 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
Evaluate component and subsystem technologies																												
(1) Parachutists Oxygen Delivery System (PODS) MDD													▲ 1															
PODS Market Research													■															
(2) PODS MS B																	▲ 2											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) ET8 / <i>Personnel Airdrop System Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Evaluate component and subsystem technologies	1	2017	4	2020
Parachutists Oxygen Delivery System (PODS) MDD	2	2017	2	2017
PODS Market Research	2	2017	1	2018
PODS MS B	2	2018	2	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>				Project (Number/Name) S51 / <i>Aircrew Integrated Sys Ad</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
S51: <i>Aircrew Integrated Sys Ad</i>	-	0.161	0.152	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.313
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding for this Project of S51 ends with FY2016.

A. Mission Description and Budget Item Justification

This project supports the Advanced Component Development and Prototyping of select Air Soldier System (Air SS) technologies. The Air SS provides improved safety, survivability, and human performance that amplifies the Warfighter's effectiveness and facilitates full-spectrum dominance of Army aircraft. The Air SS addresses capability gaps identified during combat operations in Iraq and Afghanistan including the effects of weight and bulk, limited situational awareness, and lack of functionally integrated aircrew member life support equipment. The Air SS follows an evolutionary acquisition approach that integrates mature technologies to build to the full capability. Air SS reduces overall weight and bulk of aircrew equipment, increases situational awareness, and enhances aircrew mobility. This funding provides advanced development for the Air SS in technology areas supporting improved laser eye protection, integrated power, wireless personal area networks, lightweight protective clothing, and tactile situational awareness cueing. Includes integration and interface of products on Soldiers.

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

	FY 2015	FY 2016	FY 2017
Title: Aircrew Integrated Systems (ACIS) Advanced Development	0.161	0.152	-
Description: Advanced Component Development and Prototyping (ACDP) of critical aircrew support systems technology improvements and Advanced Development (AD) and risk reduction efforts required for transition for insertion into Air Soldier System Program of Record.			
FY 2015 Accomplishments: Fund laboratories to monitor and influence Air SS technologies to include advanced wide field of view/high resolution helmet mounted display technologies and miniaturized communication devices for transition into Air SS preplanned product improvements phase.			
FY 2016 Plans: Continue to resource laboratories to monitor and influence Air SS technologies to include advanced wireless battery charging and wireless personal area networks for transition into Air SS preplanned product improvements phase.			
Accomplishments/Planned Programs Subtotals	0.161	0.152	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S51 / <i>Aircrew Integrated Sys Ad</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
• ACIS Engineering Development: <i>RDTE, A PE 0604601A PROJ S61-SDD</i>	1.742	3.463	3.811	-	3.811	3.849	3.840	1.897	1.749	Continuing	Continuing
• Aircrew Integrated Systems: <i>Aircraft Procurement, Army SSN AZ3110 - ACIS</i>	48.081	44.085	30.297	-	30.297	47.066	30.896	32.684	30.457	Continuing	Continuing

Remarks

D. Acquisition Strategy

Air SS employs an incremental acquisition approach to improve the mission effectiveness, survivability, Situational Awareness, and safety of Army aircrews. These funds resource various government agencies and labs in the transition of emerging technologies to the Air SS program.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S51 / <i>Aircrew Integrated Sys Ad</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
Air Soldier System Advanced Development	Air Soldier System Advanced Dev																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S51 / <i>Aircrew Integrated Sys Ad</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Air Soldier System Advanced Development	1	2015	4	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>				Project (Number/Name) S53 / <i>Clothing And Equipment</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
S53: <i>Clothing And Equipment</i>	-	1.555	9.985	3.582	-	3.582	3.571	1.845	2.495	3.113	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding supports efforts to evaluate and integrate technologies and representative or prototype systems that help expedite Soldier uniform and clothing technology transition from the laboratory to operational use. Efforts focus on proving out commonality across as broad a spectrum of users as possible to provide a modular, integrated uniform/clothing system from skin out and head-to-toe. It funds efforts to investigate new technologies and domestically available fabrics with Flame Resistance, moisture wicking, insect protection and camouflage technologies, including evaluation and integration of fabrics appropriate for uniforms and equipment used in jungle/tropical and Arctic environments. It funds efforts to improve personnel parachutes, to include analysis of canopy cloth fabrics and pack volume techniques. New technologies are investigated to monitor health and improve Soldier survivability, reduce weight, and improve affordability, mobility and comfort in combat and training/administrative environments. Includes integration and interface on the Soldier system.

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

	FY 2015	FY 2016	FY 2017
Title: Soldier Uniforms and Clothing	0.890	6.691	2.768
Description: Develop and provide superior and sustainable integrated clothing for the Soldier in a rapidly changing global environment.			
FY 2015 Accomplishments: Tactical/Personal Clothing. Continued to develop more durable FR fabrics for use in combat uniforms to improve service life of tactical uniforms. Conducted burn tests of insulated FR Fabrics for use in environmental clothing systems. Continued evaluation to effectively provide permethrin treatment to tactical uniforms. Continued evaluation at fabric levels to improve IR management.			
FY 2016 Plans: Tactical Clothing. Conduct evaluation of new technologies to mitigate spectral reflectance of combat uniforms. Evaluate current products to establish performance metrics for incorporation in future specifications. Develop accurate digital objective color assessment technology to provide pass/fail shade assessments for quality control. Evaluate improved lighter weight textiles which incorporate improved vector protection, FR protection, and environmental protection while providing comfort, utility, and functionality. Will continue to develop alternate insect protection with lower toxicity for all combat uniform fabrics (i.e. Army Combat Shirt, Army Combat Pants, FR Army Combat Uniform). Continue to develop more durable FR fabrics for use in combat uniforms to improve service life of tactical uniforms.			
FY 2017 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S53 / <i>Clothing And Equipment</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Tactical Clothing. Obtain Material Development Decision (MDD) and initiate technical testing on Environmental Protection System (EPS) component prototypes to provide Soldiers protection in all extreme environmental conditions. Conduct evaluation and integration of fabrics appropriate for uniforms and equipment used in jungle/tropical and Arctic environments. Initiate testing of Military Free Fall (MFF) Parachutist Environmental Equipment to provide protection for MFF parachutists while conducting High Altitude, High Opening (HAHO) MFF operations (lower temperatures, higher altitudes) for longer duration of time. Transition to S60 with MS B in 1QFY18. Continue to evaluate at the technical levels means to improve protection against cold weather, insects, and flame while increasing moisture management, signature management, breathability, and durability for tactical clothing. Initiate effort to improve the durability and reduce the fabric weight and cost of the sniper Flame Resistant Ghillie Suit. Initiate effort to improve fit, durability, and comfort of the Flame Resistant Fuel Handler Coveralls.</p>				
<p>Title: Individual Equipment</p> <p>Description: Develop and provide superior and sustainable integrated individual equipment for the Soldier in a rapidly changing global environment.</p> <p>FY 2015 Accomplishments: Hydration: Following Material Development Decision in 1QFY15, procured test assets and verified water purification test methodology to support Individual Water Treatment Device (IWTD) program of record.</p> <p>FY 2016 Plans: Load Carriage. Obtain Milestone B Decision for Individual Water Treatment Device (IWTD) in 4QFY16 and transition effort to S60. Conduct Front End Analysis on Integrated Load Carriage System (ILCS) in 3FY16 to inform technology integration requirements to ensure ILCS fully integrates with Soldier Protection System (SPS). Airdrop. Evaluate potential material solutions at the component level to enhance the T-11 and T-11R parachute systems to include potential pack tray redesign, packing loop configurations, and potential improvements to the slider, deployment sleeve and bridle. Determine technology readiness level and feasibility of integration an automatic opening device on static line parachute systems.</p> <p>FY 2017 Plans: Integrated Load Carriage. Obtain Material Development Decision (MDD) and initiate technical testing on the Integrated Load Carriage System (ILCS). The ILCS will provide an integrated load carriage that interfaces with the Soldier Protection System (SPS). Transition to S60 with MS B in 2QFY18.</p>		0.665	3.294	0.814
Accomplishments/Planned Programs Subtotals		1.555	9.985	3.582

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S53 / <i>Clothing And Equipment</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>
• 0604601A S60: <i>RDTE, 0604601A.S60, Clothing and Equipment</i>	2.422	5.980	10.166	-	10.166	7.814	5.593	7.813	9.414	Continuing	Continuing
• 121017 CFF OMA: <i>OMA, 121017, Central Funding and Fielding</i>	126.972	56.088	37.748	-	37.748	37.719	37.709	37.550	57.119	Continuing	Continuing
• MA7801 OPA: <i>OPA, MA7801, Advanced Tactical Parachute System</i>	25.996	26.088	16.611	-	16.611	18.860	24.610	26.890	22.040	Continuing	Continuing

Remarks

D. Acquisition Strategy

Programs pursue technology maturation and prototype development, culminating in the transition of mature technologies (TRL 6-7) to Engineering and Manufacturing Development. This project continues to exercise competitively awarded contracts using best value source selection procedures.

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 / 4				PE 0603827A / Soldier Systems - Advanced Development				S53 / Clothing And Equipment							
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 Support	TBD	PM SPIE : Ft. Belvoir, VA	14.288	-		0.800		0.200		-		0.200	Continuing	Continuing	Continuing
Subtotal			14.288	-		0.800		0.200		-		0.200	-	-	-
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
Engineering Support	MIPR	NSRDEC : Natick, MA	14.383	0.200		0.845		0.500		-		0.500	Continuing	Continuing	Continuing
Development Contracts	C/FFP	Various : Various	28.190	1.100		3.740		0.695		-		0.695	Continuing	Continuing	Continuing
Subtotal			42.573	1.300		4.585		1.195		-		1.195	-	-	-
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
Misc Support Costs	MIPR	Various : Various	7.077	-		0.700		0.300		-		0.300	Continuing	Continuing	Continuing
Subtotal			7.077	-		0.700		0.300		-		0.300	-	-	-
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 Costs	MIPR	various : Various	20.322	0.255		3.900		1.887		-		1.887	Continuing	Continuing	Continuing
Subtotal			20.322	0.255		3.900		1.887		-		1.887	-	-	-
Project Cost Totals			84.260	1.555		9.985		3.582		-		3.582	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army							Date: February 2016			
Appropriation/Budget Activity 2040 / 4			R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>			Project (Number/Name) S53 / <i>Clothing And Equipment</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	

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S53 / <i>Clothing And Equipment</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				
UNIFORM CLOTHING																																
Permethrin Testing																																
Flame Resistant Clothing Upgrades																																
Improve Signature Mgmt (IR) Eval & Camo in Clothing & Equipment																																
(1) Environmental Protection System MDD																																
(2) Environmental Protection System MS B																																
INDIVIDUAL EQUIPMENT																																
(3) Integrated Load Carriage System MDD																																
(4) Integrated Load Carriage System MS B																																
IWTD P248 Standard Testing																																
(5) IWTD MS B																																
T-11 Ruggedized Packing Testing																																
T-11R Pack Tray Design Testing																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S53 / <i>Clothing And Equipment</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
UNIFORM CLOTHING	1	2008	4	2018
Permethrin Testing	1	2011	4	2018
Flame Resistant Clothing Upgrades	1	2009	4	2018
Improve Signature Mgmt (IR) Eval & Camo in Clothing & Equipment	2	2012	4	2018
Environmental Protection System MDD	1	2017	1	2017
Environmental Protection System MS B	1	2018	1	2018
INDIVIDUAL EQUIPMENT	1	2009	4	2018
Integrated Load Carriage System MDD	2	2017	2	2017
Integrated Load Carriage System MS B	2	2018	2	2018
IWTD P248 Standard Testing	1	2015	1	2016
IWTD MS B	4	2016	4	2016
T-11 Ruggedized Packing Testing	2	2016	4	2016
T-11R Pack Tray Design Testing	2	2016	4	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>				Project (Number/Name) S54 / <i>Small Arms 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
S54: <i>Small Arms Improvement</i>	-	4.004	7.449	10.554	-	10.554	7.285	7.377	7.472	15.421	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New starts in FY 2017 include Additive Manufacturing (3D Printing) and Small Arms Signature Suppression.

A. Mission Description and Budget Item Justification

The Small Arms Improvement Advanced Component Development and Prototypes (ACD&P) program provides funds to mature, demonstrate, test and evaluate emerging technology from Joint Service Small Arms Program (JSSAP), Project 627, Program Element 0603607A, (Budget Activity 3), Defense Advanced Research Projects Agency (DARPA), Department of Energy National Laboratories, Research Development & Engineering Centers (RDECs) and other domestic and foreign sources for small arms weapons systems and technology. Small arms systems include weapons ranging up to 40 millimeter in caliber. Current and future efforts focus on improvements designed to enhance lethality, target acquisition and tracking, fire control, usability, training effectiveness and reliability of weapons to include ammunition when developing and/or evaluating standard and non-standard weapons. Focus areas include the maturing of technology through testing and evaluation of sub-system or system prototypes which demonstrates light weight materials, wear resistant/protective/anti-reflective coatings, observation/situational awareness improvements, human-systems integration, robotic armament capability and equipment enhancements. Benefits include continuous improvements to small arms weapons, fire control equipment, optics, gun barrels, training devices, suppressors, component mounts, weapon mounts, and weapon/ammunition interface. Includes costs associated with efforts for integration and interface of products on Soldiers' head, body and weapons.

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

	FY 2015	FY 2016	FY 2017
Title: New Weapons	0.505	1.122	1.733
Description: Description: Development of new small arms weapons			
FY 2015 Accomplishments:			
Next Generation Squad Automatic Rifle (NGSAR): Name changed from Next Generation Squad Weapon. Acquisition community assisted the United States Army Training and Doctrine Command (TRADOC) and Maneuver Center of Excellence (MCoE) in the development of Next Generation Squad Automatic Rifle requirements to include a potential replacement for the M249 in the Automatic Rifle role. Supported the Capability Development Document (CDD) and provided input to a Cost Benefit Analysis (CBA) for decision makers. Began development of the Capabilities Production Document (CPD) for the NGSAR.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms Improvement</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Externally Powered Mounted Machine Gun: Research and Analysis. Evaluated and developed metrics for externally powered weapon stations requirements. Provided information/assistance to the MCoE in the preparation of an Externally Powered Weapon CDD.</p> <p>FY 2016 Plans: Next Generation Squad Automatic Rifle (NGSAR): Begin development of Acquisition Strategy, and plan to support CPD and provide Analysis of Alternatives for stakeholders.</p> <p>Externally Powered Mounted Machine Gun: Continue evaluation of metrics for externally powered weapon stations requirements. Provide engineering design and development activities to demonstrate capabilities of an Externally Powered Weapon system.</p> <p>FY 2017 Plans: Next Generation Squad Automatic Rifle (NGSAR): Will continue coordination and development of Acquisition Strategy, CDD, CPD, and provide data from various technologies to better inform stakeholders for transition to Infantry Support Weapons.</p> <p>Externally Powered Mounted Machine Gun: Will continue to provide engineering design and development activities to demonstrate capabilities of an Externally Powered Weapon system to inform MCoE on the CDD. Functional objectives include increased lethality, expansion of mission roles and operational utility (using a single weapon) through enhanced precision and multiple firing modes, lightening of the load, reduction in physical footprint, and minimization of required electrical power consumption. Emphasis will also be placed on maintaining a proper balance with operational implementation and manufacturing producibility of the Externally Powered Weapon.</p>				
<p>Title: Small Arms Weapons Enhancements</p> <p>Description: Description: Enhancements and developments of small arms weapons</p> <p>FY 2015 Accomplishments: Individual Non-Lethal System: Tested prototype systems and collected data for analysis.</p> <p>Increased Barrel Life/Replace Chrome: Continued to conduct barrel studies to improve/enhance barrel life and eliminate chrome-lined weapon parts. Monitored contract progress in developing prototype barrel liners. Developed test plan for barrels, conducted testing at Government facility.</p> <p>Non-Standard Weapons Assessments: Conducted market research of commercially available weapon systems that have characteristics for military suitability. List included weapons needed to support Regionally Aligned Forces (RAF) training mission of foreign non-standard weapons. Drafted test plans and initiated purchase of weapons for testing.</p>		0.275	1.085	1.686

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms Improvement</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Small Business Innovative Research (SBIR) Enhancements: Continued to evaluate proposed improvements designs to enhance lethality, target acquisition and tracking, fire control, training effectiveness and reliability of weapons.</p> <p>Protective Weapons Coating: Leveraged related work conducted by Oak Ridge National Labs and discoveries from prior SBIR efforts to develop manufacturing technology to support production of super-hydrophobic coatings in support of Fire Control Capability Development Document (CDD), Squad Annex. Determined key performance tolerances of coatings to determine manufacturing requirements, and conduct limited run production of sample fire control system components.</p> <p>Weapon Upgrades and Accessories: Continued to test, evaluate and analyze ongoing and new activities to enhance small arms weapons.</p> <p>FY 2016 Plans: Individual Non-Lethal System: Provide support to users for cost/benefit analysis and requirements preparation.</p> <p>Increased Barrel Life/Replace Chrome: Continue to conduct barrel studies to improve/enhance barrel life and eliminate chrome-lined weapon parts. Monitor contract progress in developing prototype barrel liners, receive barrels for testing. Begin limited testing at Government facility.</p> <p>Recoil Reduction Mechanisms: Evaluate Recoil Reduction Mechanisms to be selected for prototype fabrication for both individual and crew served weapons.</p> <p>Armaments for Robots: Initiate the intelligence/networking and weapons design and functions for a man-in-the-loop, small caliber defensive armaments system on an unmanned ground vehicle including the Warfighter/Robot interface.</p> <p>Small Arms Deployable Networks: Begin transition of a low cost, prototype munition from Armament Research, Development and Engineering Center (ARDEC) and integrate with a grenade launcher system. The munition will remotely deploy a sensor network comprised of grenade nodes containing an Electro Optical (EO) camera, acoustic and magnetic sensor components networked via robust ad-hoc wireless communications capable of transmitting streaming audio and imagery to provide increased situational awareness. Initiate a weapon platform analysis and a configuration study. Engage potential users and perform an evaluation of operational benefit for capability development.</p> <p>Non-Standard Weapons Assessments: Conduct baseline testing of commercial weapon systems and perform capability analysis of unique weapon characteristics. Test information will be used to conduct trade off assessments of Non-Developmental Item</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms Improvement</i>

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

	FY 2015	FY 2016	FY 2017
<p>(NDI) solutions for pending requirements as well as establish safety parameters for the training mission of RAF. Continue to conduct market research of commercially available weapon systems.</p> <p>Small Business Innovative Research (SBIR) Enhancements: Continue to evaluate proposed improvements designs to enhance lethality, target acquisition and tracking, fire control, training effectiveness and reliability of weapons.</p> <p>Protective Weapons Coating: Continue to develop manufacturing technology to support production of super hydrophobic and other coatings in support of Small Arms Weapons.</p> <p>Weapon Upgrades and Accessories: Continue to test, evaluate and analyze ongoing and new activities to enhance small arms weapons.</p> <p>FY 2017 Plans: Increased Barrel Life/Replace Chrome: Will continue to conduct barrel studies to improve/enhance barrel life and eliminate chrome-lined weapon parts. Will monitor progress in the Small Arms Ammunition Configuration Study and evaluate the effects on future barrel life/chrome requirements, e.g., caliber change or higher pressures. Will develop needed technical approaches.</p> <p>Recoil Reduction Mechanisms: Transitions from Research and Analysis. Selected Recoil Reduction Mechanisms prototypes will be fabricated and tested for both individual and crew served weapons.</p> <p>Armaments for Robots: Will continue to initiate the intelligence/networking and weapons design and functions for a man-in-the-loop, small caliber defensive armaments system on an unmanned ground vehicle including the Warfighter/Robot interface.</p> <p>Small Arms Deployable Sensor Networks: Will continue research of a low cost, prototype munition from ARDEC and integrate with a grenade launcher system. The munition will remotely deploy a sensor network comprised of grenade nodes containing an Electro Optical (EO) camera, acoustic and magnetic sensor components networked via robust ad-hoc wireless communications capable of transmitting streaming audio and imagery to provide increased situational awareness.</p> <p>FY17 New Start: Additive Manufacturing (3D Printing): Transitions from Research and Analysis. Will be using 3D Printing methods to fabricate and test selected prototype weapon components for individual and crew served weapons.</p> <p>FY17 New Start: Small Arms Signature Suppression: Extend suppressor work conducted under Next Generation Squad Automatic Rifle Program to other individual and crew served weapons. Develop a standard interface for suppressors on all weapons. Examine reduced complexity/cost of suppressor components.</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms Improvement</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Non-Standard Weapons Assessments: Will continue to conduct baseline testing of commercial weapon systems and perform capability analysis of unique weapon characteristics. Will continue to utilize test information to conduct trade off assessments of NDI solutions for pending requirements as well as establish safety parameters for the training mission of RAF. Will continue to conduct market research of commercially available weapon systems.</p> <p>Small Business Innovative Research (SBIR) Enhancements: Future efforts will continue to focus on improvements designed to enhance lethality, target acquisition and tracking, fire control, training effectiveness and reliability of weapons.</p> <p>Protective Weapons Coating: Will continue to develop manufacturing technology to support production of super hydrophobic and other coatings in support of Small Arms Weapons.</p> <p>Weapon Upgrades and Accessories: Will continue to test, evaluate and analyze ongoing and new activities to enhance small arms weapons.</p>				
<p>Title: Ammunition</p> <p>Description: Description: Small arms ammunition improvement</p> <p>FY 2015 Accomplishments: Small Arms Ammunition Configuration Study: Completed development and approval of refined study plan, began execution of tasks to support evaluation of feasible technical approaches that mitigate capability gaps prescribed in the Small Arms Capabilities Based Assessment.</p> <p>FY 2016 Plans: Small Arms Ammunition Configuration Study: Continue execution of tasks to support evaluation of feasible technical approaches that mitigate capability gaps prescribed in the Small Arms Capabilities Based Assessment.</p> <p>FY 2017 Plans: Small Arms Ammunition Configuration Study: Will continue execution of tasks to support evaluation of feasible technical approaches that mitigate capability gaps prescribed in the Small Arms Capabilities Based Assessment.</p>		2.997	1.170	1.271
<p>Title: Combat Optics</p> <p>Description: Description: Improvement of small arms combat optics</p> <p>FY 2016 Plans:</p>		-	0.053	0.400

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms Improvement</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Optics Upgrades: Continue engineering evaluation, verification and validation of weapon optics performance requirements. FY 2017 Plans: Optics Upgrades: Will continue to evaluate state of the art advances in optical component technologies for inclusion in future products, including Mounted Machinegun Optic CPD, Fire Control CDD, and its associated annexes.				
Title: Fire Control Description: Description: Small arms fire control FY 2015 Accomplishments: Advanced Hyperspectral Target Acquisition (AHTA): Continued to evaluate and analyze advance approaches to acquire targets with the use of hyperspectral imaging and demonstrated capability. Precision Projectile Tracking: Refined projectile production methods and packaging. Illumination and imaging hardware were refined with software testing. Fire Control Upgrades: Initiated an overarching strategy to implement Fire Control Upgrades for Small Arms Weapons consisting of individual weapons, sniper and crew served weapons. FY 2016 Plans: Advanced Hyperspectral Target Acquisition (AHTA): Continue to evaluate and analyze advance approaches to acquire targets with the use of hyperspectral imaging and demonstrated capability. Precision Projectile Tracking: Continue to refine projectile production methods and packaging. Continue to refine illumination and imaging hardware to include software testing and validation. Complete firing of the prototypes with tracking verification. Dynamic Tracking for Fire Control: Leverage prototype development of Precision Projectile Tracking and Dynamic Tracking for Fire Control to begin system integration into one fire control device capable of both pre- and post- shot accuracy correction. Small Arms Ballistic Kernel: Validate ballistic models through live fire evaluation and expand models to incorporate future weapon platforms.		0.127	3.919	5.364

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms Improvement</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Fire Control Upgrades: Work with the Infantry School to define the scope and assist in the development of CDD for the Army's Fire Control Upgrades for Small Arms Weapons consisting of individual weapons, sniper/precision, crew served weapons, and low-velocity 40mm.</p> <p>FY 2017 Plans: Small Arms Ballistic Kernel: Will integrate ballistic software into test hardware and platforms for validation of functionality. Will incorporate models for indirect 40mm weapon systems.</p> <p>Fire Control Upgrades: Will initiate testing of advanced fire control systems for small arms platforms to define the acquisition strategy in support of the CDD consisting of individual weapons, sniper/precision, crew served weapons, and low-velocity 40mm.</p>			
<p>Title: Research and Analysis</p> <p>Description: Research and analysis of small arms</p> <p>FY 2015 Accomplishments: Conducted Market Research and Benefit Analysis of ongoing small arms research initiatives to refine requirements and identify multiple solution sets.</p> <p>FY 2016 Plans: Initiate Market Research and Benefit Analysis of armaments for robots and other small arms research.</p> <p>FY 2017 Plans: Will initiate Market Research and Benefit Analysis of 360 degree situational awareness, active stabilization, advanced kinetic weapons, low flying drone engagement, and other small arms research.</p>	0.100	0.100	0.100
Accomplishments/Planned Programs Subtotals	4.004	7.449	10.554

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>
• Individual Weapons	11.172	23.084	11.801	-	11.801	15.169	10.833	10.844	23.848	Continuing	Continuing
Engineering Deve: <i>RDTE S63, Program Element 0604601A - Infantry Support Weapons</i>											
• Crew Served Weapons	-	-	14.447	-	14.447	15.566	14.270	14.689	25.838	Continuing	Continuing
Engineering Dev: <i>RDTE EW4,</i>											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms 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>
<i>Program Element 0604601A</i>											
<i>- Infantry Support Weapons</i>											
• <i>Joint Service Small Arms</i>	7.055	5.105	5.839	-	5.839	5.787	5.874	5.990	6.110	Continuing	Continuing
<i>Program: RDTE 627, Program Element 0603607A - Joint Service Small Arms Program (JSSAP)</i>											

Remarks

In support of Small Arms Initial Capability and Capability Development Requirements, advanced technology of Small Arms Weapons is transitioned from Joint Service Small Arms Program (JSSAP), Project 627, Program Element 0603607A, (Budget Activity 3) to Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4). After the technology is demonstrated and/or validated, the program transitions to Infantry Support Weapons, Program Element 0604601A, (Budget Activity 5) for engineering and manufacturing development.

D. Acquisition Strategy

Primary strategy is to study, develop, demonstrate and evaluate emerging technologies that ultimately lead to enhancing/improving the small arms inventory.

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 / 4				PE 0603827A / Soldier Systems - Advanced Development				S54 / Small Arms Improvement							
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	Allot	PM Soldier Weapons, : Picatinny Arsenal	2.515	0.254	Mar 2015	0.680	Dec 2015	1.389	Mar 2017	-		1.389	Continuing	Continuing	Continuing
Subtotal			2.515	0.254		0.680		1.389		-		1.389	-	-	-
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
Hardware Development	MIPR	Army Research Development Engineering Centers, : Multiple	9.521	-		1.150	Dec 2015	1.000	Mar 2017	-		1.000	Continuing	Continuing	Continuing
Subtotal			9.521	-		1.150		1.000		-		1.000	-	-	-
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	MIPR	Army Research Development Engineering Centers, : Multiple	12.405	3.125	Mar 2015	4.085	Dec 2015	5.165	Mar 2017	-		5.165	Continuing	Continuing	Continuing
Subtotal			12.405	3.125		4.085		5.165		-		5.165	-	-	-
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
Developmental Testing	MIPR	Army Test and Evaluation Centers, : Multiple	7.607	0.625	Mar 2015	1.534	Dec 2015	3.000	Mar 2017	-		3.000	Continuing	Continuing	Continuing

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms 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
Next Generation Squad Automatic Rifle (NGSAR)																												
Externally Powered Mounted Machine Gun																												
Increased Barrel Life/Replace Chrome																												
Individual Non-Lethal System																												
Recoil Reduction Mechanisms																												
Armament for Robotics																												
Small Arms Deployable Sensor Networks																												
Additive Manufacturing (3D Printing)																												
Small Arms Signature Suppression																												
Non-Standard Weapon Studies																												
Small Business Innovative Research (SBIR)																												
Weapons Upgrades and Accessories																												
Small Arms Ammunition Configuration Study																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms 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
Optics Upgrades																												
Advanced Hyperspectral Target Acquisition																												
Precision Projectile Tracking																												
Dynamic Tracking for Fire Control																												
Ballistic Kernel																												
Fire Control Upgrades																												
Research and Analysis of Small Arms																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) S54 / <i>Small Arms Improvement</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Next Generation Squad Automatic Rifle (NGSAR)	1	2014	4	2017
Externally Powered Mounted Machine Gun	1	2015	4	2017
Increased Barrel Life/Replace Chrome	1	2011	4	2017
Individual Non-Lethal System	1	2013	4	2016
Recoil Reduction Mechanisms	1	2016	4	2018
Armament for Robotics	1	2016	4	2018
Small Arms Deployable Sensor Networks	1	2016	4	2017
Additive Manufacturing (3D Printing)	1	2017	4	2018
Small Arms Signature Suppression	1	2017	4	2021
Non-Standard Weapon Studies	4	2011	4	2021
Small Business Innovative Research (SBIR)	1	2015	4	2021
Weapons Upgrades and Accessories	1	2010	4	2021
Small Arms Ammunition Configuration Study	4	2014	2	2017
Optics Upgrades	1	2016	4	2021
Advanced Hyperspectral Target Acquisition	1	2014	4	2016
Precision Projectile Tracking	1	2015	4	2016
Dynamic Tracking for Fire Control	1	2016	4	2016
Ballistic Kernel	1	2016	4	2019
Fire Control Upgrades	1	2008	4	2021
Research and Analysis of Small Arms	1	2015	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>				Project (Number/Name) VS4 / <i>Soldier Protective Equipment</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
VS4: <i>Soldier Protective Equipment</i>	-	2.629	5.408	16.294	-	16.294	11.711	8.224	2.869	2.647	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding supports efforts to evaluate integrated technologies and representative or prototype systems that help expedite Individual Soldier Ballistic Protection technology transition from the laboratory to operational use.

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

	FY 2015	FY 2016	FY 2017
Title: Soldier Protective Equipment	2.629	5.408	16.294
<p>Description: Funding line established in FY12. Effort was previously executed in Program Element 0603827 S53. Effort is to increase the Warfighter lethality and mobility by optimizing Soldier protection while effectively managing all life cycle aspects of Personal Protective Equipment (PPE).</p> <p>FY 2015 Accomplishments: Conducted human factors/limited user evaluations and subsystem development and characterization testing on the Soldier Protection System (SPS) Integrated Soldier Sensor System (ISSS) in 3QFY15. Transitioned ISSS components except ultra-low powered tunable narrow band wireless capability to VS5 System Development & Demonstration (SD&D) to buy Developmental Testing (DT)/Operational Testing (OT) test items by 2QFY16. Continued efforts to synchronize the integration of new and emerging technologies at the component and subsystem level focusing on reducing weight and bulk at the subsystem and component level. Continued to evaluate component and subsystem technologies and enabling technologies across the Personal Protection Equipment (PPE) portfolio (extremities, torso and vital torso, head, eye and face protection) to counter known and emerging ballistic/blast threats. Continued efforts to characterize and increase durability and functional service life of existing personal protective systems. Completed market research and obtained Materiel Change approval to modernize the Advanced Bomb Suit (ABS). Will then procure Non-Developmental Item (NDI) candidates in FY16 for qualification/integration with existing fielded ABS with VS5 SD&D funding. Completed characteristic testing of Integrated Head Protection System (IHPS). Initiated development and testing of an inspection device to detect delamination of ballistic inserts. Initiated development of scaling law and transfer function to inform Traumatic Brain Injury (TBI) mitigation criteria/requirements for Army helmets.</p> <p>FY 2016 Plans: Continue to evaluate component and subsystem technologies across the PPE portfolio (extremities, torso and vital torso, head, eye and face protection) to counter emerging ballistic/blast threats. Continue efforts to reduce SPS weight and bulk at the system, subsystem and component level. Efforts include reducing the Soldier Protection System (SPS) soft and hard armor</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) VS4 / <i>Soldier Protective Equipment</i>

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

	FY 2015	FY 2016	FY 2017
packages aerial density while maintaining same or better performance. Continue development and test of the self-diagnostic (smart) sensor capability for Vital Torso Protection (VTP) System. Continue efforts to characterize and increase durability and functional service life of existing personal protective systems at the subsystem/component level. Initiate technology development phase in support of SPS Increment 2 in late FY16. Procure SPS ISSS ultra-low powered tunable narrow band wireless prototypes to support FY16 initial human factors/limited user evaluation, and subsystem development, as well as characterization testing in 4QFY16 and transition to VS5 SD&D. Continue & complete development and testing of an automatic inspection device to detect delamination of ballistic inserts and scaling law and transfer function to inform Traumatic Brain Injury mitigation criteria/requirements for Army helmets and transition to VS5 SD&D. Initiate development of methodology for PPE shelf and service life, and initiate efforts to advance the novel modeling method for PPE performance through 4QFY17 and transition to VS5 SD&D.			
FY 2017 Plans: Initiate Technology/Maturation and Risk Reduction efforts across the PPE portfolio (extremities, torso and vital torso, head, eye and face protection, and sensors) to support SPS Generation II requirements for lighter weight ballistic materials with improved performance and manufacturing/testing process improvements. If ready, initiate proof-of-principle demonstrations on promising new technologies and or appliqué in simulated and instrumented field exercises (LEAP-A, etc.) to evaluate SPS upgrades and inform stakeholders of new operational capabilities to initiate SPS Generation II development. Continue efforts to characterize and increase durability and functional service life of existing personal protective systems at the subsystem/component level. Continue to develop the methodology for PPE shelf and service life, and to advance the novel modeling method for PPE performance. If ready, initiate proof-of-principle demonstrations on promising new technologies and or appliqué in simulated and instrumented field exercises (LEAP-A, etc.) to evaluate SPS upgrades and and component level integration improvements with legacy systems so as to inform stakeholders of new operational capabilities to initiate SPS Generation II development including emerging threat characterization. Develop improved blast testing standardization for existing EOD systems and emerging requirements including evaluation of subsystem technologies to counter EOD threats.			
Accomplishments/Planned Programs Subtotals	2.629	5.408	16.294

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
• Soldier Protective Equipment VS5: RDTE, 0604601A.VS5, Soldier Protective Equipment	4.647	15.175	2.141	-	2.141	3.154	6.122	6.737	7.971	0.000	45.947
• Central Funding & Fielding: OMA, 121017, Central Funding & Fielding	126.972	64.631	96.468	-	96.468	74.833	75.368	63.753	76.563	0	578.588

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) VS4 / <i>Soldier Protective Equipment</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

Programs pursue technology maturation and prototype development, culminating in the transition of mature technologies (TRL 6-7) to Engineering and Manufacturing Development. This project continues to exercise competitively awarded contracts using best value source selection procedures.

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 / 4				PE 0603827A / Soldier Systems - Advanced Development				VS4 / Soldier Protective Equipment								
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 Support	C/CPFF	PM SPIE Various : Various	0.000	0.050		0.300		0.450		-		0.450	0	0.800	0	
Subtotal			0.000	0.050		0.300		0.450		-		0.450	0.000	0.800	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	
Dev/Sys Engineering Spt	MIPR	Various : Various	3.952	-		1.500		2.707		-		2.707	Continuing	Continuing	0	
Dev/Integ Contracts	TBD	Various : various	11.232	0.940		1.908		7.550		-		7.550	Continuing	Continuing	Continuing	
Subtotal			15.184	0.940		3.408		10.257		-		10.257	-	-	-	
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	
Misc Support Costs	MIPR	Various : various	1.200	-		0.700		2.025		-		2.025	Continuing	Continuing	Continuing	
Subtotal			1.200	-		0.700		2.025		-		2.025	-	-	-	
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	
DT (Ballistic/Non-ballistic) Testing	MIPR	Various : Various	0.589	1.639		1.000		3.562		-		3.562	Continuing	Continuing	Continuing	
Subtotal			0.589	1.639		1.000		3.562		-		3.562	-	-	-	
Project Cost Totals			16.973	2.629		5.408		16.294		-		16.294	-	-	-	

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) VS4 / <i>Soldier Protective Equipment</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
Continue SPS ISSS Subsystem Development																												
Conduct SPS ISSS DTI (HFE, Limited User Evals)																												
(1) Transition mature ISSS Components to VS5					▲ 1																							
(2) Obtain Materiel Change approval of ABS	▲ 2																											
SPS Technology Maturation																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / <i>Soldier Systems - Advanced Development</i>	Project (Number/Name) VS4 / <i>Soldier Protective Equipment</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Continue SPS ISSS Subsystem Development	1	2014	1	2016
Conduct SPS ISSS DTI (HFE, Limited User Evals)	2	2015	3	2015
Transition mature ISSS Components to VS5	1	2016	2	2016
Obtain Materiel Change approval of ABS	3	2015	3	2015
SPS Technology Maturation	1	2017	3	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 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0604100A / Analysis Of Alternatives
--	--

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	-	9.685	9.805	6.608	-	6.608	9.832	9.790	10.071	10.144	Continuing	Continuing
EC7: Analysis Of Alternatives	-	9.685	9.805	6.608	-	6.608	9.832	9.790	10.071	10.144	Continuing	Continuing

A. Mission Description and Budget Item Justification

This PE provides funding for analytical support of Analysis of Alternatives (AoA). Based on Department of Defense Instruction (DoDI) 5000.02, AoAs are required to be completed for a new start program prior to its first Milestone (MS) Decision. AoAs are a statutory requirement for ACAT I and ACAT II programs and regulatory for ACAT III programs. The AoAs support the preparation of the Capability Development Document (CDD), Key Performance Parameters (KPP) and Thresholds within the CDDs and tradeoff analysis. The Army must complete an AoA prior to the MS A Decision in order to successfully achieve a MS A decision for new start programs. This PE provides central funding for new start programs prior to a materiel development decision which do not yet have a Program Manager assigned for materiel development. The cited work is consistent with the Assistant Secretary of Defense, Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy and Plan. Work in this PE is performed by analytical agencies such as U.S. Army TRADOC Analysis Center and U.S. Army Materiel Systems Analysis Activity. The Army is projecting to start work on several AoAs beginning in FY 2017, and will assess and fund the highest Army priorities during the year of execution.

The FY 2017 funding request was reduced by \$3.374 million to account for the availability of prior year execution balances.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	9.910	9.805	9.982	-	9.982
Current President's Budget	9.685	9.805	6.608	-	6.608
Total Adjustments	-0.225	0.000	-3.374	-	-3.374
• Congressional General Reductions	-0.225	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-3.374	-	-3.374

Change Summary Explanation

The FY 2017 funding request was reduced by \$3.374 million 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 / 4					R-1 Program Element (Number/Name) PE 0604100A / <i>Analysis Of Alternatives</i>				Project (Number/Name) EC7 / <i>Analysis Of Alternatives</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
EC7: <i>Analysis Of Alternatives</i>	-	9.685	9.805	6.608	-	6.608	9.832	9.790	10.071	10.144	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This PE provides funding for analytical support of AoAs. Based on Department of Defense Instruction (DoDI) 5000.02, AoAs are required to be completed for a new program start prior to its first Milestone (MS) Decision. AoAs are a statutory requirement for ACAT I and ACAT II programs and regulatory for ACAT III programs. The AoAs support the preparation of the Capability Development Document, Key Performance Parameters and Thresholds within the CDDs and tradeoff analysis. The Army must complete an AoA prior to the MS A Decision in order to successfully achieve a MS A decision for new start programs. This PE provides central funding for new start programs prior to a materiel development decision which do not yet have a Program Manager assigned for materiel development. The cited work is consistent with the Assistant Secretary of Defense, Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy and Plan. Work in this PE is performed by analytical agencies such as U.S. Army TRADOC Analysis Center and U.S. Army Materiel Systems Analysis Activity. The Army will assess and fund the highest Army priorities during the year of execution.

The FY 2017 funding request was reduced by \$3.374 million to account for the availability of prior year execution balances

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

	FY 2015	FY 2016	FY 2017
Title: Acquisition Analysis of Alternatives	9.685	9.805	6.608
Description: Funds are to be used for the following effort.			
FY 2015 Accomplishments: Centrally funded AoAs of the new start programs for Long Range Precision Fires, Dominating Mobility Through Terrain Shaping & Engagement (Gator Landmine System Replacement) and M113 Replacement at Echolons Above Brigade. Each of these programs will be assigned a Program Manager pending the results of their initial Milestone Decisions.			
FY 2016 Plans: Centrally fund AoAs for new program starts that require a materiel development decision. These new programs do not yet have a Program Manager assigned.			
FY 2017 Plans: Centrally fund AoAs for new program starts that require a materiel development decision. These new programs do not yet have a Program Manager assigned.			
Accomplishments/Planned Programs Subtotals	9.685	9.805	6.608

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604100A / <i>Analysis Of Alternatives</i>	Project (Number/Name) EC7 / <i>Analysis Of Alternatives</i>
--	---	---

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

N/A

Remarks

Not applicable for this item.

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 / 4	R-1 Program Element (Number/Name) PE 0604100A / <i>Analysis Of Alternatives</i>	Project (Number/Name) EC7 / <i>Analysis Of Alternatives</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			
Analytical Support for Analyses of Alternatives	TBD	TBD : TBD	0.000	9.685		9.805		6.608		-		6.608	0	26.098	0
Subtotal			0.000	9.685		9.805		6.608		-		6.608	0.000	26.098	0.000

Remarks
N/A

	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	9.685	9.805	6.608	-	6.608	0.000	26.098	0.000

Remarks

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604100A / <i>Analysis Of Alternatives</i>	Project (Number/Name) EC7 / <i>Analysis Of Alternatives</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
Identify Candidates for FY15 AoA funding																												
Issue FY16 AoA Funding as Determined in the MDD																												
Identify Candidates for FY17 AoA funding																												
Issue FY17 AoA Funding as Determined in the MDD																												
Conduct Analysis of Alternatives																												

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604100A / <i>Analysis Of Alternatives</i>	Project (Number/Name) EC7 / <i>Analysis Of Alternatives</i>
--	---	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Identify Candidates for FY15 AoA funding	4	2014	3	2015
Issue FY16 AoA Funding as Determined in the MDD	1	2016	4	2016
Identify Candidates for FY17 AoA funding	4	2016	3	2017
Issue FY17 AoA Funding as Determined in the MDD	1	2017	4	2017
Conduct Analysis of Alternatives	1	2015	4	2018

Note

N/A

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: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604114A / Lower Tier Missile Defense (LTAMD) Capability							
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	35.132	-	35.132	93.208	78.820	87.128	84.826	Continuing	Continuing
EX2: Lower Tier Missile Defense (LTAMD) Capability	-	0.000	0.000	35.132	-	35.132	93.208	78.820	87.128	84.826	Continuing	Continuing

Note

Realigned funding from PE 0607865A, PATRIOT Product Improvement (Project DV8).

A. Mission Description and Budget Item Justification

Lower Tier Missile Defense (LTAMD) Capability program will integrate a competitively selected Gallium Nitride (GaN) array antenna onto the baseline PATRIOT RS, replacing the Passive Electronic Scanned Array (PESA) technology. The Active Electronic Scanned Array (AESA) antenna configuration change, using GaN-based technology, will enable increased radar operating ranges thereby maximizing the inherent PAC-3 Missile Segment Enhanced (MSE) capabilities to engage threats.

Lower Tier Missile Defense (LTAMD) Capability 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 Capability will be accomplished. These activities will continue through the Technology Maturation and Risk Reduction(TMRR) and Engineering and Manufacturing Development(EMD) phase to enable the prototyping, development, and testing of the LTAMD Capability.

FY2017 base dollars in the amount of \$35.132 million initiates Lower Tier Missile Defense Capability to include programmatic and engineering activities needed for the Material Development, Analysis of Alternatives (AoA) and Business Case Analyses/Trades.

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	35.132	-	35.132
Total Adjustments	0.000	0.000	35.132	-	35.132
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	35.132	-	35.132

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Missile Defense (LTAMD) Capability				Project (Number/Name) EX2 / Lower Tier Missile Defense (LTAMD) Capability			
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
EX2: Lower Tier Missile Defense (LTAMD) Capability	-	0.000	0.000	35.132	-	35.132	93.208	78.820	87.128	84.826	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Realigned funding beginning in FY2017 from PE 0607865A, PATRIOT Product Improvement (Project DV8).

A. Mission Description and Budget Item Justification

Lower Tier Missile Defense (LTAMD) Capability program will integrate a competitively selected Gallium Nitride (GaN) array antenna onto the baseline PATRIOT RS, replacing the Passive Electronic Scanned Array (PESA) technology. The Active Electronically Scanned Array (AESA) antenna configuration change, using GaN-based technology, will enable increased radar operating ranges thereby maximizing the inherent PAC-3 Missile Segment Enhanced (MSE) capabilities to engage threats.

Lower Tier Missile Defense (LTAMD) Capability 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 Capability 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 Capability.

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

	FY 2015	FY 2016	FY 2017
Title: Lower Tier Missile Defense Capability	-	-	35.132
Description: Begins Lower Tier Missile Defense Capability.			
FY 2017 Plans:			
-Begins Lower Tier Missile Defense Capability to include programmatic and engineering activities needed for the Material Development, Analysis of Alternatives (AoA) and Business Case Analyses/Trades.			
-Perform requirements analysis of the PATRIOT Antenna Transmitter Upgrade (ATU), Performance Specification and requirements allocation to hardware and software components.			
-Conduct a Systems Requirements Review (SRR) and a System Functional Review (SFR) to demonstrate readiness for hardware and software designs.			
-Initiate planning for demonstration of the Subscale Active Electronically Scanned Array (AESA) Prototype Antenna and Preliminary Design Review (PDR) for the full-scale LTAMDS AESA Antenna.			
Accomplishments/Planned Programs Subtotals	-	-	35.132

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604114A / <i>Lower Tier Missile Defense (LTAMD) Capability</i>	Project (Number/Name) EX2 / <i>Lower Tier Missile Defense (LTAMD) Capability</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
• 0607865A Project: DV8: <i>Patriot Product Improvement</i>	57.962	89.816	49.482	-	49.482	119.426	53.442	30.850	63.422	Continuing	Continuing

Remarks

D. Acquisition Strategy

The objective of the Lower Tier Air & Missile Defense Capability is to provide 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, to provide overmatch capability against the emerging threat, and to prepare a viable set of requirements to support a competitive modernization competition.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016				
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Missile Defense (LTAMD) Capability					Project (Number/Name) EX2 / Lower Tier Missile Defense (LTAMD) Capability							
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	MIPR	Various : Redstone Arsenal, AL	0.000	-		-		7.620	Oct 2016	-		7.620	Continuing	Continuing	0	
U.S. Contracts	C/FFP	Wyle : Huntsville, AL	0.000	-		-		1.260	Feb 2017	-		1.260	Continuing	Continuing	0	
Subtotal			0.000	-		-		8.880		-		8.880	-	-	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	
Technical Maturation and Risk Reduction (TMRR)	C/CPIF	TBD : TBD	0.000	-		-		26.252	Mar 2017	-		26.252	Continuing	Continuing	0	
Subtotal			0.000	-		-		26.252		-		26.252	-	-	0.000	
Project Cost Totals			0.000	-		0.000		35.132		-		35.132	-	-	0.000	
Remarks																

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Missile Defense (LTAMD) Capability	Project (Number/Name) EX2 / Lower Tier Missile Defense (LTAMD) Capability
--	---	---

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 A									MS A																							
(2) TMRR Contract Award													TMRR CA																			
Preliminary Design Review																	PDR															
Technology Maturation and Risk Reduction																	TMRR															
(3) Milestone B																	MS B															

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Missile Defense (LTAMD) Capability	Project (Number/Name) EX2 / Lower Tier Missile Defense (LTAMD) Capability

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone A	3	2016	4	2016
TMRR Contract Award	3	2017	4	2017
Preliminary Design Review	3	2017	4	2017
Technology Maturation and Risk Reduction	3	2017	3	2019
Milestone B	3	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 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 0604115A / <i>TECHNOLOGY MATURATION INITIATIVES</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	-	43.083	35.917	70.047	-	70.047	57.378	67.152	70.078	75.270	Continuing	Continuing
DS3: <i>TECHNOLOGY MATURATION INITIATIVES</i>	-	43.083	35.917	70.047	-	70.047	57.378	67.152	70.078	75.270	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) funds prototyping and demonstration of selected technology enabled capabilities to support advanced ground, aviation systems, command, control, communications & reconnaissance systems and equipment, precision weapons, and Soldier equipment. Funding facilitates maturation and demonstration of advanced technologies and systems in relevant environments and tactical/operational scenarios, taking technologies to a goal of Technology Readiness Level (TRL) 7 and reducing risk for acquisition programs of record. Efforts include competitive prototyping earlier in development to facilitate transition of new capabilities into acquisition programs. In Project DS3, efforts are directed by an Army Senior Executive Steering Group to ensure that demonstrations have high potential for filling capability gaps and transition. Project EX3 funds prototyping and demonstration of ground vehicles to assess future concepts and designs against selected capability trades and future technologies for current and future combat vehicles across the combat vehicle portfolio. This PE provides the Army an improved mechanism for fulfilling the goals of the Weapon Systems Acquisition Reform Act (WSARA) of 2009 by enabling greater competition in the latter stages of technology maturation and establishes a closer alignment between Science and Technology (S&T) programs and acquisition programs.

The cited work is consistent with the Assistant Secretary of Defense, Research and Engineering science and technology priority focus areas and the Army Modernization Strategy.

Work in this PE is performed by the Research, Development and Engineering Command (RDECOM), Engineering Research Development Center (ERDC), and Space and Missile Defense Command (SMDC).

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	44.214	40.917	47.819	-	47.819
Current President's Budget	43.083	35.917	70.047	-	70.047
Total Adjustments	-1.131	-5.000	22.228	-	22.228
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-5.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.131	-			
• Adjustments to Budget Years	-	-	22.228	-	22.228

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 4: Advanced Component Development & Prototypes (ACD&P)*

R-1 Program Element (Number/Name)
PE 0604115A / *TECHNOLOGY MATURATION INITIATIVES*

Change Summary Explanation

FY 2017 increase in funds attributed to the start of the following Planed Programs: Vehicle Survivability Subsystem Demonstrator, Advanced Powertrain Subsystem Demonstrator, and Modular Active Protection System (MAPS) Demonstration.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604115A / <i>TECHNOLOGY MATURATION INITIATIVES</i>				Project (Number/Name) DS3 / <i>TECHNOLOGY MATURATION INITIATIVES</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
DS3: <i>TECHNOLOGY MATURATION INITIATIVES</i>	-	43.083	35.917	70.047	-	70.047	57.378	67.152	70.078	75.270	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2017 increase in funds attributed to the start of the following Planned Programs: Vehicle Survivability Subsystem Demonstrator, Advanced Powertrain Subsystem Demonstrator, and Modular Active Protection System (MAPS) Demonstration.

A. Mission Description and Budget Item Justification

This Project funds the prototyping and demonstration of selected technology enabled capabilities to support advanced Soldier, ground, aviation, and command, control, communication & reconnaissance systems and equipment. Demonstration of these advanced technologies and systems are conducted in relevant environments and performing tactical/operational scenarios, taking technologies to a goal of Technology Readiness Level (TRL) 7 and reducing risk for acquisition programs. Efforts are typically 1-3 years in duration, and may include early competitive prototyping to facilitate transition of new capabilities into acquisition programs of record. Efforts are directed by an Army Senior Executive Steering Group (ESG) based on program priority and opportunity, to ensure that demonstrations have high potential for filling capability gaps and transitioning. This Project provides the Army an improved mechanism for fulfilling the goals of the Weapon Systems Acquisition Reform Act (WSARA) of 2009 by enabling greater competition in the latter stages of technology maturation and establishing a closer alignment between Science and Technology (S&T) and acquisition programs.

The cited work is consistent with the Assistant Secretary of Defense, Research and Engineering science and technology priority focus areas and the Army Modernization Strategy.

Work in the Project is performed by the Research, Development and Engineering Command (RDECOM), Engineering Research Development Center (ERDC), the Space and Missile Defense Command (SMDC).

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

	FY 2015	FY 2016	FY 2017
Title: Maturation and Prototyping for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Systems	27.539	20.682	31.687
Description: This effort selects technologies that show high promise for advancing command, control, communication and reconnaissance capabilities required under acquisition programs; prototypes, evaluates, and demonstrates integrated technologies within a high fidelity and realistic operating environment, and transitions them to a formal program of record at reduced cost and/or risk.			
FY 2015 Accomplishments:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604115A / <i>TECHNOLOGY MATURATION INITIATIVES</i>	Project (Number/Name) DS3 / <i>TECHNOLOGY MATURATION INITIATIVES</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Completed demonstration, validation and testing of Pseudolite prototypes and legacy receiver software, and transitioned to Assured PNT program of record; matured and prototyped Assured PNT devices for mounted and dismounted applications, reducing size, weight and power for protection in all environments; accelerated integration and testing of dismounted capability with Nett Warrior end-user device and military GPS; developed and validated Anti-Jam GPS Antenna performance specifications and A-Kit to enable off-the-shelf, Assured PNT for mounted applications. Demonstrated mature critical optical elements, coating, and assembly technologies for prototype integration, addressing performance requirements of the Improved Forward-Looking Infrared (I-FLIR) at reduced cost and risk prior to program Engineering and Manufacturing Development (EMD) phase. Demonstrated a next generation Command Post data foundation interoperable with the Mounted and Mobile Handheld Computing Environments and the tactical cloud to critically inform the implementation of the Army Common Operation Environment V3. Matured and demonstrated spectrum assignment and frequency reuse software for incorporation into Joint Enterprise Network Manager to alleviate Software Radio Waveform spectrum congestion.</p> <p>FY 2016 Plans: Mature and prototype Assured PNT devices for mounted and dismounted applications; accelerate the integration and validation of mounted capability with ground vehicle platforms and military GPS; continue the development and validation of Anti-Jam GPS Antenna performance specifications and A-Kit to enable off-the-shelf, Assured PNT for mounted applications. Integrate, validate and transition mature Improved Forward-Looking Infrared (I-FLIR) prototype solution, addressing program performance requirements at reduced cost and risk prior to Engineering and Manufacturing Development (EMD) phase.</p> <p>FY 2017 Plans: Will complete demonstration and validation of Assured PNT Mounted solutions in support of Assured PNT Program of Record milestone decisions. Will mature Mounted sub-systems for transition and fabrication, and will characterize performance of Assured PNT Mounted solutions both with and without Anti-Jam GPS Antennas.</p>				
<p>Title: Maturation and Prototyping for Ground Systems</p> <p>Description: This effort selects ground maneuver technologies in areas such as mobility, survivability, vehicle architecture, lethality and systems integration, that show high promise for advancing capabilities required under acquisition programs; prototypes, evaluates, and demonstrates integrated technologies within a high fidelity and realistic operating environment, and transitions them to a formal program of record at reduced cost and/or risk. In order to add clarity for the work being conducted in FY17 and beyond, this bullet has been broken into three new bullets: Vehicle Survivability Subsystem Demonstrator, Advanced Powertrain Subsystem Demonstrator, and the Modular Active Protection System (MAPS) Demonstration.</p> <p>FY 2015 Accomplishments: Finalized and demonstrated VICTORY ground vehicle architecture and performance specifications in a realistic operational environment, reducing technology risk, non-recurring engineering, and production costs that hinder the transition of the VICTORY</p>		3.365	12.985	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604115A / TECHNOLOGY MATURATION INITIATIVES	Project (Number/Name) DS3 / TECHNOLOGY MATURATION INITIATIVES		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
standards into ground vehicle platforms; matured and productized open-source VICTORY Adapter component for integration and evaluation in major vehicle systems. FY 2016 Plans: Begin multi-year effort to mature, demonstrate, and test modular Active Protection System (APS) common architecture, components, and controller that will provide future fighting vehicles with increased protection against current and emerging advanced threats, while maintaining or reducing vehicle weight. Verify APS common architecture performance and flexibility in soft-kill configurations by installing and testing interchangeable soft-kill sensors and countermeasures; conduct maturation testing of these components for performance in realistic and operational environments and to ensure their ability to operate across all relevant scenarios; evaluate APS subsystem.				
Title: Vehicle Survivability Subsystem Demonstrator Description: The Vehicle Survivability Subsystem effort will integrate and demonstrate, cost effective, lightweight designs for the optimization of hull, frame, body, cab and armor technologies to achieve survivability systems weight reductions of 10-15% and increased vehicle survivability against advanced and emerging threats. This effort is coordinated with efforts in PE 0603005A. FY 2017 Plans: Will begin fabrication and integration of components and subsystems for a survivability subsystem demonstrator targeting tracked combat vehicles with limited ground standoff. Will integrate blast components & subsystems such as; floors, seats, lightweight hull, and active blast mitigation systems into a blast demonstrator for underbody blast and structural evaluation. Will exploit subsystem design optimization conducted in 0603005A to achieve system level performance metrics and improve upon subsystem performance specifications.		-	-	13.918
Title: Advanced Powertrain Subsystem Demonstrator Description: The Advanced Powertrain Subsystem Demonstrator effort will fabricate, integrate and demonstrate next generation, scalable combat vehicle powertrain technologies into a high power dense and more fuel efficient combat vehicle prototype powertrain. This powertrain will demonstrate advancements in engine and transmission subsystem components specific for military platforms in order to provide an integrated advanced propulsion system in a high fidelity and realistic military operating environment. This effort is coordinated with efforts in PE 0603005A. FY 2017 Plans: Will continue integration of powertrain technologies such as advanced multi-cylinder engine, transmission, thermal management, and integrated starter generator into a subsystem powertrain demonstrator. Will begin evaluations of integrated powertrain		-	-	9.065

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604115A / <i>TECHNOLOGY MATURATION INITIATIVES</i>	Project (Number/Name) DS3 / <i>TECHNOLOGY MATURATION INITIATIVES</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
subsystems and system level designs in a laboratory environment. Will mature subsystem performance specifications for powertrain technologies such as advanced multi-cylinder engine and thermal management systems.				
<p>Title: Modular Active Protection System (MAPS) Demonstration</p> <p>Description: This effort will develop prototype subsystems and conduct active protection system (APS) component and subsystem technology maturation, integration, demonstration, test, and adaption, aligned with US Army's Active Protection System Strategy, as well as Expedited APS activity, to increase component reliability, comply with the Army's modular approach to active protection, resolve component installation challenges; will integrate subsystem prototypes, and conduct technology demonstrations of soft-kill and hard-kill APS capability to verify APS performance within the modular and safe design approach and to reduce technical risk for APS transition via prototyping for the current and future vehicle combat and tactical platforms.</p> <p>FY 2017 Plans: Will implement a modular active protection system architecture configuration using sensors and countermeasures that are matured and compliant with the Modular APS Framework interfaces and protocols. Will integrate subsystems and develop a prototype of a modular APS through platform installation of a soft-kill APS. Will integrate, mature, install and test prototype APS; will conduct advanced performance and safety testing of APS sensors and countermeasures to verify durability and reliability in relevant environmental conditions and operating environments; will characterized performance and evaluate APS interoperability of a soft-kill APS configuration during system-level tests and demonstrations. Will develop soft-kill component performance specifications using the results of the APS component testing completed. Will evaluate APS installation on current Army platforms such as Abrams, Bradley, and Stryker.</p>		-	-	15.377
<p>Title: Maturation and Prototyping for Soldier Systems</p> <p>Description: This effort selects technologies that show high promise for advancing required soldier system capabilities required under acquisition programs; prototypes, evaluates, and demonstrates integrated technologies within a high fidelity and realistic operating environment, and transitions them to a formal program of record at reduced cost and/or risk.</p> <p>FY 2015 Accomplishments: Accelerated, and began integration and demonstration of targeting software for the Mobile Handheld Fires Application, providing a timely, advanced Government Purpose Rights software solution for the Pocket-sized Forward Entry Device (PFED) Inc 2 program. Prototyped and demonstrated a competitive materiel solution to meet Improved Military Combat Eye Protection objective requirements; transitioned specifications for improved transparent, ballistic fragmentation-resistant materials and coating to material vendors. Matured, prototyped, and demonstrated advanced counter-defilade grenade to inform and expedite requirements for Increased Range Anti-Personnel (Low Velocity) and reduce future acquisition risks.</p> <p>FY 2016 Plans:</p>		7.654	1.000	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604115A / TECHNOLOGY MATURATION INITIATIVES	Project (Number/Name) DS3 / TECHNOLOGY MATURATION INITIATIVES

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Complete the maturation, demonstration and validation of targeting software for the Mobile Handheld Fires Application; Integrate Government Purpose Rights software into full prototype solution and transition to the Pocket-sized Forward Entry Device (PFED) Inc 2 Program of Record.			
Title: Maturation and Prototyping for Logistics and Sustainment Systems	4.525	1.250	-
Description: This effort selects logistics and/or sustainment technologies that show high promise for advancing mobility capabilities required under acquisition programs; prototypes, evaluates, and demonstrates integrated technologies within a high fidelity and realistic operating environment, and transitions them to a formal program of record at reduced cost and/or risk.			
FY 2015 Accomplishments: Advanced government-owned Transparent Armor 3a design to meet Rock Strike requirements; conducted integration and testing on Joint Light Tactical Vehicle (JLTV). Completed component qualification and developed competitive procurement specification for a common Army Vehicle Fire Extinguisher, reducing procurement and life-cycle costs due to low-volume manufacturing of 50-plus unique configurations.			
FY 2016 Plans: Complete the demonstration and validation the advanced Transparent Armor 3a design against Rock Strike requirements; complete integration and testing of the government-own design on Joint Light Tactical Vehicle (JLTV) and transition to materiel vendors for increased competition.			
Accomplishments/Planned Programs Subtotals	43.083	35.917	70.047

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
• RDT&E,A: RDT&E,A PE 0604120A	11.447	30.058	83.279	-	83.279	108.847	87.914	37.847	28.851	Continuing	Continuing

Remarks
PE Title: Assured Positioning, Navigation and Timing (A-PNT)

D. Acquisition Strategy
Multiple competitive contracts will be awarded based on selection of efforts from the Senior ESG. The various developmental programs in this project will continue to exercise competitively awarded contracts using best value source selection procedures.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604115A / <i>TECHNOLOGY MATURATION INITIATIVES</i>	Project (Number/Name) DS3 / <i>TECHNOLOGY MATURATION INITIATIVES</i>

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604115A / <i>TECHNOLOGY MATURATION INITIATIVES</i>	Project (Number/Name) DS3 / <i>TECHNOLOGY MATURATION INITIATIVES</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
Maturation and Prototyping for C4ISR Systems																												
Maturation and Prototyping for Ground Systems																												
Vehicle Survivability Subsystem Demonstrator																												
Advanced Powertrain Subsystem Demonstrator																												
Modular Active Protection Systems (MAPS) Demonstrations																												
Maturation and Prototyping for Soldier Systems																												
Maturation and Prototyping for Logistics and Sustainment Systems																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604115A / <i>TECHNOLOGY MATURATION INITIATIVES</i>	Project (Number/Name) DS3 / <i>TECHNOLOGY MATURATION INITIATIVES</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Maturation and Prototyping for C4ISR Systems	3	2014	4	2017
Maturation and Prototyping for Ground Systems	3	2014	4	2016
Vehicle Survivability Subsystem Demonstrator	1	2017	4	2019
Advanced Powertrain Subsystem Demonstrator	1	2017	4	2019
Modular Active Protection Systems (MAPS) Demonstrations	1	2017	4	2018
Maturation and Prototyping for Soldier Systems	1	2015	4	2016
Maturation and Prototyping for Logistics and Sustainment Systems	1	2015	4	2016

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</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	-	11.447	30.058	83.279	-	83.279	108.847	87.914	37.847	28.851	Continuing	Continuing
ED5: <i>Assured Positioning, Navigation and Timing (PNT)</i>	-	11.447	9.700	11.116	-	11.116	23.809	19.820	19.829	19.826	Continuing	Continuing
EH8: <i>DISMOUNTED</i>	-	0.000	0.000	3.200	-	3.200	13.700	0.400	0.000	0.000	0.000	17.300
EH9: <i>PSEUDOLITES</i>	-	0.000	20.358	57.411	-	57.411	30.130	7.774	0.000	0.000	0.000	115.673
EJ2: <i> MOUNTED</i>	-	0.000	0.000	11.552	-	11.552	41.208	53.220	15.028	9.025	Continuing	Continuing
EJ3: <i>ANTI-JAM ANTENNA</i>	-	0.000	0.000	0.000	-	0.000	0.000	6.700	2.990	0.000	0.000	9.690

Note

0604120/ED5 funding has transitioned into four (4) separate project lines for each Assured PNT subprogram.

A. Mission Description and Budget Item Justification

Assured Positioning, Navigation and Timing (PNT) will provide Army forces with unhindered access to trusted PNT information under conditions where space based PNT (Global Positioning System (GPS)) may be limited or denied. Joint Requirements Oversight Council Memo (JROCM) 049-10, dated April 5th 2010, approved the Positioning, Navigation and Timing Assurance Initial Capabilities Document and designated the Army as the Lead Component for Assured PNT. The Material Development Decision (MDD) was approved on July 30th 2013. The Assured PNT draft Capabilities Development Document was validated by the Army Requirements Oversight Council (AROC) on July 28th 2014.

PNT is a critical enabler of many Army systems. The current capability, GPS, is a fixed frequency system vulnerable to current and emerging threats and field conditions, which means Warfighter assured access and integrity to PNT is not guaranteed. This situation degrades mission performance to an unacceptable level. Therefore, current Army systems cannot operate at the required PNT Assurance Levels with GPS alone.

Assured PNT is a family of solutions which includes four subprograms: (EH9) The Pseudolites subprogram provides PNT Assurance in GPS denied environments by providing terrestrial radio navigation (GPS-like) service in electronically or physically challenged environments using a higher power signal. (EJ2) The Mounted PNT subprogram is the integration of multiple sensors and provides PNT platform distribution. The Mounted PNT subprogram incorporates a System of Systems architecture that acquires, protects and distributes secure PNT on stationary and vehicular platforms. (EH8) The Dismounted PNT subprogram is the integration of multiple sensors for platform distribution of PNT on the Soldier. The Dismounted PNT subprogram incorporates a System of Systems architecture that acquires, protects and distributes secure PNT on the soldier. (EJ3) The Anti-Jam Antenna subprogram provides GPS signal protection and PNT Assurance in challenged environments through anti-jam technologies. Anti-jam enables tactical capabilities through assured signal acquisition in challenged environments.

0604120/ED5 funding line continues as the Assured PNT parent funding line. However, four (4) separate project lines were created for the Assured PNT subprograms; EH8 – Dismounted PNT subprogram; EH9 – Pseudolite subprogram; EJ2 – Mounted PNT subprogram; EJ3 - Anti-Jam Antenna subprogram.

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>
---	---

FY 2017 Base funds in the total amount of \$83.279 million are provided to continue the development of the A-PNT program. The ED5 funding line accounts for \$11.116 million for PNT System of Systems Architecture (SOSA) Testing and enhancements of Army PNT capabilities against emerging threats. The EH8 funding line accounts for \$3.200 million for risk reduction activities and program documentation in preparation for Milestone B of the Dismounted PNT subprogram. The EH9 funding line accounts for \$57.411 million for the continuation of the TMRR competitive prototyping effort and program documentation in preparation for Milestone B for the Pseudolite subprogram. The EJ2 funding line accounts for \$11.552 million for Technology Maturation and Risk Reduction (TMRR) and program documentation in preparation for Milestone B of the Mounted PNT subprogram.

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	9.925	30.058	27.957	-	27.957
Current President's Budget	11.447	30.058	83.279	-	83.279
Total Adjustments	1.522	0.000	55.322	-	55.322
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.522	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	55.322	-	55.322

Change Summary Explanation

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

FY 2017 Base funds increased by \$55.322 million to support requirements contained in the Milestone A affordability assessment.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)				Project (Number/Name) ED5 / Assured Positioning, Navigation and Timing (PNT)			
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
ED5: Assured Positioning, Navigation and Timing (PNT)	-	11.447	9.700	11.116	-	11.116	23.809	19.820	19.829	19.826	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

0604120/ED5 funding line continues as the Assured PNT parent funding line. However, four (4) separate project lines were created for the Assured PNT subprograms: EH8 – Dismounted PNT subprogram; EH9 – Pseudolite subprogram; EJ2 – Mounted PNT subprogram; EJ3 - Anti-Jam Antenna subprogram.

ED5 - Assured PNT FY 2015 funds in the amount of \$11.447 million are associated with EH9 – Pseudolites Subprogram. FY 2015 funds were provided to initiate the development of Pseudolites. FY 2016 funds of \$9.700 million support Military GPS User Equipment (MGUE) Precision Guided Munitions. FY 2017 funds of \$11.116 million support Positioning, Navigation and Timing (PNT) System of Systems Architecture (SOSA) Testing and enhancements of Army PNT capabilities against emerging threats.

A. Mission Description and Budget Item Justification

Assured Positioning, Navigation and Timing will provide Army forces with unhindered access to trusted Positioning, Navigation, and Timing (PNT) information under conditions where space based PNT (Global Positioning System (GPS)) may be limited or denied. Joint Requirements Oversight Council Memo (JROCM) 049-10, dated April 5th 2010, approved the Positioning, Navigation and Timing Assurance Initial Capabilities Document and designated the Army as the Lead Component for Assured PNT. The Material Development Decision (MDD) was approved on July 30th 2013. The Assured PNT draft Capabilities Development Document was validated by Army Requirements Oversight Council (AROC) on July 28th 2014.

FY 2017 Base funds are to support PNT System of Systems Architecture (SOSA) Testing and Resiliency and Software Assurance Modification (RSAM). The U.S. Army is required to operate in an ever growing Electronic Warfare contested environment. The PNT System of Systems Architecture (SOSA) Testing will allow for Army systems to be tested against emerging GPS threats and enable actions to be taken to ensure full operation of Army Forces through RSAM field patches, M-CODE implementation, and Assured PNT.

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

Title: Assured PNT	FY 2015	FY 2016	FY 2017
Description: Efforts include initiation of development effort for Pseudolite subprogram, preparation of Milestone documentation for the Assured PNT program, and associated Program Management Office (PMO) and support activities. Efforts also include Acceleration of MGUE (Military GPS User Equipment) Increment 2 for Precision Guided Munitions (AM2P). In addition, the effort supports testing of Positioning, Navigation and Timing (PNT) System of Systems Architecture (SOSA) of Army PNT capabilities against emerging threats.	11.447	9.700	11.116

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)	Project (Number/Name) ED5 / Assured Positioning, Navigation and Timing (PNT)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Efforts include initiation of development effort for Pseudolite subprogram, preparation of Milestone documentation for the Assured PNT program, and associated Program Management Office (PMO) and support activities.</p> <p><i>FY 2016 Plans:</i> FY 2016 Funds will further assess the technology maturity and Joint Common GPS Specification and Interface Control Document. These efforts include bench top component level testing of GPS receiver prototypes, integration of the GPS receivers into a Precision Guided Munition platform and live fire guide-to-hit (Technology Readiness Level 6) demonstration of the GPS receivers.</p> <p><i>FY 2017 Plans:</i> FY 2017 Funds will provide for Army GPS/Positioning, Navigation and Timing (PNT) test assets. These systems and assets will be utilized for System of Systems Architecture (SOSA) testing against emerging threats. The testing data will validate Resiliency and Software Assurance Modification (RSAM) and aid senior leadership in determining the most equitable path forward on PNT modernization.</p>			
Accomplishments/Planned Programs Subtotals	11.447	9.700	11.116

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
• EH8: <i>EH8: Dismounted PNT</i>	-	-	3.200	-	3.200	13.700	0.400	-	-	0	17.300
• EH9: <i>EH9: Pseudolites</i>	-	20.358	57.411	-	57.411	30.130	7.774	-	-	0	115.673
• EJ2: <i>EJ2: Mounted PNT</i>	-	-	11.552	-	11.552	41.208	53.220	15.028	9.025	Continuing	Continuing
• EJ3: <i>EJ3: Anti-Jam Antenna</i>	-	-	-	-	-	-	6.700	2.990	-	0	9.690

Remarks
ED5 - Assured PNT FY 2015 Base funds in the amount of \$11.447 million are associated with EH9 - Pseudolites Subprogram. FY 2015 funds were provided the Assured PNT Program to initiate the development of Pseudolites. FY 2016 funds of \$9.700 million support Military GPS User Equipment (MGUE) Precision Guided Munitions. FY 2017 funds of \$11.116 million support Positioning, Navigation and Timing (PNT) System of Systems Architecture (SOSA) Testing and enhancements of Army PNT capabilities against emerging threats.

D. Acquisition Strategy
FY15: The Planned Acquisition Strategy for the Pseudolite subprogram includes: 1) Technology maturation of the Transmitter segment through the use of two competitive prototyping, cost-plus fixed fee (CPFF) contracts. 2) Command and Control (C2) segment will leverage the development by other DoD agencies to the greatest extent possible, specifically, the Electronic Warfare Planning and Management Tool (EWPMT); this will be a Government Off the Shelf (GOTS) product. 3) Receiver segment will make the use of multiple contracts through existing vehicles for Pseudolite Receiver SW Prototype Development.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	Project (Number/Name) ED5 / <i>Assured Positioning, Navigation and Timing (PNT)</i>

FY16: The acquisition strategy includes the acceleration of Military GPS User Equipment (MGUE) Increment 2 for Precision Guided Munitions (AM2P). This will provide a technology maturity assessment of MGUE Increment 1 technology and increase supply chain competition for subsequent use by Joint Precision Guided Munitions (PGM) to avoid potential significant performance and operation risks. The Joint Common GPS Specification and Interface Control Document will be validated through live fire Technology Readiness Level 6 (TRL6) demonstration. The M-Code GPS enables essential PGM-based lethality capabilities in potential "M-Code Only" GPS combat scenarios and maintains combat overmatch enabled by Joint GPS-based PGMs.

FY17: The planned acquisition strategy for PNT System of Systems Architecture (SOSA) Testing and Resiliency and Software Assurance Modification (RSAM) implementation is to award sole source contracts to the original equipment manufacturers, utilize existing engineering support contracts, and leverage the Communications Electronics Research Development Engineering Center (CERDEC) to develop and evaluate solutions that will mitigate emerging threats.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)	Project (Number/Name) ED5 / Assured Positioning, Navigation and Timing (PNT)
--	---	---

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 Support	Allot	PM PNT : Various	0.000	0.485	Mar 2015	-		0.517	Dec 2016	-		0.517	0	1.002	0
Subtotal			0.000	0.485		-		0.517		-		0.517	0.000	1.002	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			
AM2P – DOTC GPS Receiver Prototypes	C/FFP	Rockwell Collins : Cedar Rapids, IA	0.630	-		-		-		-		-	0	0.630	0
AM2P – DOTC GPS Receiver Prototypes	C/CPFF	L-3 IEC : Anaheim, CA	0.600	-		-		-		-		-	0	0.600	0
AM2P – DOTC GPS Receiver Prototypes	C/CPFF	EOIR Technologies : Fredericksburg, VA	3.982	-		-		-		-		-	0	3.982	0
AM2P – DOTC GPS Receiver Prototypes	C/CPFF	SAVIT : Rockaway, NJ	0.286	-		-		-		-		-	0	0.286	0
AM2P – GPS/PGM Integration	MIPR	various : various	0.000	-		3.430	Jan 2016	-		-		-	0	3.430	0
Develop Pseudolite Competitive Prototype Contractor 1	C/CPIF	Datapath - Rockwell Collins : Various	0.000	3.615	Apr 2015	-		-		-		-	0	3.615	0
Develop Pseudolite Competitive Prototype Contractor 2	C/CPIF	L-3 : Various	0.000	3.237	Apr 2015	-		-		-		-	0	3.237	0
Subtotal			5.498	6.852		3.430		-		-		-	0.000	15.780	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			
SETA Support	C/FFP	Various : Various	0.000	0.920	Mar 2015	-		-		-		-	0	0.920	0

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)	Project (Number/Name) ED5 / Assured Positioning, Navigation and Timing (PNT)
--	---	---

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	MIPR	Various : Various	0.000	1.290	Mar 2015	-		-		-		-	0	1.290	0
AM2P – Government Eng	MIPR	ARDEC : Picatinny, NJ	0.702	1.174	Jul 2015	2.500	Jan 2016	-		-		-	0	4.376	0
AM2P- Joint PGM SME	MIPR	Various : Various	1.300	0.726	Aug 2015	2.740	Jan 2016	-		-		-	0	4.766	0
Subtotal			2.002	4.110		5.240		-		-		-	0.000	11.352	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			
AM2P – Bench Top Component Level Test	MIPR	Various : Various	0.000	-		0.190	Mar 2016	-		-		-	0	0.190	0
AM2P – Flight Tests	MIPR	Various : Yuma Proving Ground, AZ	0.000	-		0.840	Jun 2016	-		-		-	0	0.840	0
SOSA Testing/RSAM - Government Eng Support	MIPR	Various : Various	0.000	-		-		3.038	Dec 2016	-		3.038	0	3.038	0
SOSA Testing/RSAM - SETA Support	Various	Various : Various	0.000	-		-		3.800	Dec 2016	-		3.800	0	3.800	0
SOSA Testing/RSAM - Receiver acquisition	Various	Various : Various	0.000	-		-		1.211	Dec 2016	-		1.211	0	1.211	0
SOSA Testing/RSAM - Test PNT system modifications against emerging threats	Various	Various : Various	0.000	-		-		2.550	Dec 2016	-		2.550	0	2.550	0
Subtotal			0.000	-		1.030		10.599		-		10.599	0.000	11.629	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		7.500	11.447	9.700	11.116	-	11.116	0.000	39.763	0.000

Remarks

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	Project (Number/Name) ED5 / <i>Assured Positioning, Navigation and Timing (PNT)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AM2P Technology Maturation and Demonstration	1	2015	2	2017
AM2P Develop Receiver Prototypes	1	2015	4	2015
AM2P Platform Integration	1	2016	4	2016
AM2P Bench Top Component Testing	3	2016	4	2016
AM2P Flight Testing	4	2016	2	2017
PNT System of Systems Architecture (SOSA) Testing	1	2017	4	2021
Receiver: Resiliency and Software Assurance Modification (RSAM)	1	2017	4	2021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)				Project (Number/Name) EH8 / DISMOUNTED			
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
EH8: DISMOUNTED	-	0.000	0.000	3.200	-	3.200	13.700	0.400	0.000	0.000	0.000	17.300
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

ED5 funding has been transitioned into four (4) separate project lines for each Assured PNT subprogram: EH8 – Dismounted PNT subprogram; EH9 – Pseudolite subprogram; EJ2 – Mounted PNT subprogram; EJ3 - Anti-Jam Antenna subprogram.

A. Mission Description and Budget Item Justification

The Dismounted Positioning, Navigation and Timing (PNT) subprogram:

- > Acquires, protects, and distributes wired and wirelessly secure PNT on Dismounted Platforms
- > Enabling capability for applications under development in the Mobile Hand Held Computing Environment, PEO Soldier and NETT Warrior
- > Development and integration of multiple sensors for non-GPS augmentation
- > Modular, Scalable Form-Factor that paces the threats
- > Migration Path to M-code & other future technologies
- > Receiver software can be upgraded to acquire Pseudolite signals to provide additional protection for military GPS in denied environments

FY 2017 Base funds in the amount of \$3.200 million are provided to continue risk reduction activities in support of the Dismounted PNT subprogram. These efforts include prototype development, technical evaluation of the Assured PNT sub-system architecture development, and preparation of the acquisition documents necessary to conduct a Milestone B review.

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

	FY 2015	FY 2016	FY 2017
Title: Dismounted PNT Technology Maturation	-	-	3.200
Description: Technology Risk Reduction associated with the Dismounted PNT subprogram to determine set of technologies to be integrated into the full system.			
FY 2017 Plans: FY 2017 funds will transition the Communications Electronics Research Development and Engineering Center (CERDEC) Technology Maturation Initiative (TMI) efforts and continue the risk reduction activities for the Dismounted PNT subprogram. Efforts will focus on implementation of wireless technology e.g. Intra-Soldier Wireless (ISW), analyzing non-GPS augmentation to optimize Assured PNT, and preparation of Milestone B documentation.			
Accomplishments/Planned Programs Subtotals	-	-	3.200

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	Project (Number/Name) EH8 / <i>DISMOUNTED</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: 0604115A:: <i>PE: 0604115A</i> <i>Technology Maturation Initiative - Dismounted PNT</i>	6.500	5.500	-	-	-	-	-	-	-	0.000	12.000

Remarks

D. Acquisition Strategy

The Assured Positioning, Navigation and Timing (PNT) Acquisition Strategy is focused on the acquisition of a family of solutions required to achieve the Assured PNT capability. The materiel solutions are partitioned into subprograms (Pseudolites, Mounted PNT, Dismounted PNT, and Anti-jam Antenna) to allow for the optimization of solutions for various Army formations. EH8 is specifically for the acquisition of Dismounted PNT.

The Dismounted PNT acquisition strategy will begin at Milestone B in FY18. After a successful MS B approval the proposed strategy is to award a single Engineering and Manufacturing Development (EMD) contract through full and open competition with priced options for Low Rate Initial Production (LRIP) and for the procurement of all technical data relevant to the performance of this contract or life cycle of this program.

FY15-FY17:

The planned Dismounted subprogram acquisition strategy uses Small Business Innovation Research (SBIR) Science and Technology (S&T) funding and Budget Activity (BA) 4 funding for the technology maturation and risk reduction phase (SBIR Phase I and II). Phase I will reduce associated risks, overall development costs, and develop the technology to Technical Readiness Level (TRL) 6 prior to Milestone B and enables incremental development prototyping in support of transition to planned program of record. Phase II will provide funding for key features and functionality desired by PM PNT to significantly advance the design for a clear transition to Engineering Manufacturing Development.

FY18 and beyond:

During Engineering and Manufacturing Development, the chosen vendor will develop the Dismounted PNT system.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)	Project (Number/Name) EH8 / DISMOUNTED
--	---	--

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				
Dismounted PNT Prototype Testing																																
(1) Dismounted PNT Risk Reduction Activities Decision																																
(2) Dismounted PNT Development RFP Release Decision																																
(3) Dismounted PNT Milestone B Decision																																
(4) Dismounted PNT EMD Contract Award																																
Dismounted PNT Developmental Testing																																
(5) Dismounted PNT Milestone C Decision																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	Project (Number/Name) EH8 / <i>DISMOUNTED</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Dismounted PNT Prototype Testing	4	2016	4	2016
Dismounted PNT Risk Reduction Activities Decision	2	2017	2	2017
Dismounted PNT Development RFP Release Decision	2	2017	2	2017
Dismounted PNT Milestone B Decision	1	2018	1	2018
Dismounted PNT EMD Contract Award	2	2018	2	2018
Dismounted PNT Developmental Testing	3	2019	4	2019
Dismounted PNT Milestone C Decision	1	2020	1	2020

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)	Project (Number/Name) EH9 / PSEUDOLITES
--	---	---

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
EH9: PSEUDOLITES	-	0.000	20.358	57.411	-	57.411	30.130	7.774	0.000	0.000	0.000	115.673
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

0604120/ED5 funding line continues as the Assured PNT parent funding line. However, four (4) separate project lines were created for the Assured PNT subprograms: EH8 – Dismounted PNT subprogram; EH9 – Pseudolite subprogram; EJ2 – Mounted PNT subprogram; EJ3 - Anti-Jam Antenna subprogram.

EH9 - Pseudolites subprogram funds prior to FY16 are associated with ED5 – Assured PNT. FY 2016-2019 funds are to continue the development of Pseudolites.

A. Mission Description and Budget Item Justification

Highly accurate Positioning, Navigation and Timing (PNT) data is a key enabler and a cross cutting capability for Army forces to execute their mission. Army Forces require unhindered access to trusted PNT information under conditions where space based PNT may be limited or denied to maintain its Global Positioning System military advantage on the battlefield. The current capability, Global Positioning System (GPS), is a fixed frequency system which is vulnerable to current and emerging threats and field condition.

Pseudolites (satellite – like transmitters) assure GPS access and integrity by providing PNT via terrestrial and airborne based radio navigation GPS transmitters in electronically or physically challenged environments using a higher power signal. Area protection is provided through the deployment of Pseudolite transmitters supporting a Brigade Combat Team area of operations. The Pseudolites subprogram enables continued operations of PNT-enabled systems such as Blue Force Tracker, Communications Networks and Precision Guided Munitions. The PNT Pseudolite subprogram will consist of three segments:

1. Pseudolite Transmitter segment provides terrestrial and airborne radio navigation (GPS-like) service in electronically or physically challenged environments using a high power signal.
2. Command and Control (C2) segment to control the Pseudolites transmitters on the battlefield.
3. Receiver segment, which will develop software upgrades to current and future military GPS receivers to receive and process the Pseudolite signals.

FY 2017 Base funds in the amount of \$57.411 million are provided for the continuation of the Pseudolite subprogram. These efforts include the laboratory and field testing of Pseudolite prototypes; platform integration development; integration of M-Code in accordance with Public Law 111-383 Sec 913; participation in various Navigation Warfare (NAVWAR) test events; and documentation preparation to support the Development RFP Release Decision.

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

	FY 2015	FY 2016	FY 2017
Title: Pseudolites Technology Maturation and Risk Reduction	-	20.358	57.411
Description: Technology Maturation and Risk Reduction associated with the Pseudolite subprogram, to reduce technology risk and to determine the appropriate set of technologies to be integrated into the full system.			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	Project (Number/Name) EH9 / <i>PSEUDOLITES</i>
--	---	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2016 Plans:</i> FY16 Funds will continue the Technology Maturation and Risk Reduction phase of the Pseudolite subprogram. These efforts include Pseudolite Transmitter competitive prototyping, with two (2) contractors; and prototype software for legacy GPS receiver(s). Additionally, funds will be used for Assured PNT system architecture development to include: design trades and requirements trades analysis; mature and validate requirements; and performance of Cost Benefit analysis.</p> <p><i>FY 2017 Plans:</i> FY17 Funds will continue the Technology Maturation and Risk Reduction competitive prototyping and testing effort for the Pseudolite transmitter. Develop prototype software code for the remote Command and Control of Pseudolites over a tactical network. Continue the software upgrades to legacy receivers (e.g. DAGR) and develop software for Precision Guided Munitions to communicate with the Pseudolite transmitter. Efforts will focus on laboratory and field testing of Pseudolite prototypes; integration efforts with Pseudolite host platforms; finalization of design and requirements trades analysis; finalization of Cost Benefit analysis; and documentation preparation to support the Development RFP Release Decision.</p>			
Accomplishments/Planned Programs Subtotals	-	20.358	57.411

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>
• ED5: <i>ED5: Assured PNT</i>	11.447	9.700	-	-	-	-	-	-	-	0.000	21.147
• PE: 0604115A: <i>PE: 0604115A Technology Maturation Initiative - Pseudolites</i>	4.300	-	-	-	-	-	-	-	-	0	4.300

Remarks
EH9 - Pseudolites Sub-program funds prior to FY16 are associated with ED5 – Assured PNT. FY 2017 funds are to continue the development of Pseudolites.

D. Acquisition Strategy
The Assured Positioning, Navigation and Timing (PNT) Acquisition Strategy is focused on the acquisition of a family of solutions required to achieve the Assured PNT capability. The materiel solutions are partitioned into subprograms (Pseudolites, Mounted PNT, Dismounted PNT, and Anti-jam Antenna) to allow for the optimization of solutions for various Army formations. EH9 is specifically for the acquisition of Pseudolites.

The acquisition strategy was approved by the Milestone Decision Authority and Milestone A was successfully completed in May 2015. The Pseudolite subprogram is currently in the Technology Maturation and Risk Reduction Phase of the acquisition life-cycle.

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 / 4	PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	EH9 / <i>PSEUDOLITES</i>

The TMRR Acquisition Strategy for the Pseudolite subprogram includes: 1) Technology maturation of the Transmitter segment through the use of two competitive prototyping, cost-plus fixed fee (CPFF) contracts. 2) Command and Control (C2) segment will leverage the development by other DoD agencies to the greatest extent possible, specifically, the Electronic Warfare Planning and Management Tool (EWPMT); 3) Receiver segment will make the use of multiple contracts through existing vehicles for Pseudolite Receiver SW Prototype Development.

Pseudolite Milestone B is planned for FY 2018. After a successful MS B approval, the proposed strategy is to award a single Engineering and Manufacturing Development (EMD) contract with priced options for Low Rate Initial Production (LRIP) and for the procurement of all technical data relevant to the performance of this contract or life cycle of this program.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)	Project (Number/Name) EH9 / PSEUDOLITES
--	---	---

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 Support	Various	PM PNT : APG, MD	0.000	-		0.800	Dec 2015	0.670	Dec 2016	-		0.670	0	1.470	0
FFRDC	SS/CR	Various : Various	0.000	-		0.700	Jan 2016	0.586	Dec 2016	-		0.586	0	1.286	0
Contractor Support	C/CPFF	Various : Various	0.000	-		0.228	Jan 2016	0.191	Dec 2016	-		0.191	0	0.419	0
Subtotal			0.000	-		1.728		1.447		-		1.447	0.000	3.175	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			
Develop Pseudolite Competitive Prototype - Transmitter Contractor 1 (incremental funding)	C/CPFF	Datapath - Rockwell Collins : Various	0.000	-		5.663	Feb 2016	6.285	Jan 2017	-		6.285	0	11.948	0
Develop Pseudolite Competitive Prototype - Transmitter Contractor 2 (incremental funding)	C/CPFF	L-3 Communications : Various	0.000	-		5.663	Feb 2016	6.285	Jan 2017	-		6.285	0	11.948	0
Develop Pseudolite Receiver Contractor (incremental funding)	C/CPFF	Various : Various	0.000	-		1.200	Mar 2016	4.784	Jan 2017	-		4.784	0	5.984	0
Develop Pseudolite Command & Control	C/CPFF	Various : Various	0.000	-		-		3.200	Jan 2017	-		3.200	0	3.200	0
OEM Platform Integration Development for Air Platform	SS/CPFF	Various : Various	0.000	-		-		14.543	Jan 2017	-		14.543	0	14.543	0
OEM Platform Integration Development for Ground Platform 1, Platform 2, and Platform 3	SS/CPFF	Various : Various	0.000	-		-		11.654	Jan 2017	-		11.654	0	11.654	0
PM Platform Integration Development	MIPR	Various : Various	0.000	-		-		2.000	Dec 2016	-		2.000	0	2.000	0

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016				
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)				Project (Number/Name) EH9 / PSEUDOLITES								
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	
Subtotal			0.000	-		12.526		48.751		-		48.751	0.000	61.277	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 and Technical Services	Various	C4ISR : Various	0.000	-		2.653	Jan 2016	2.222	Dec 2016	-		2.222	0	4.875	0	
Engineering and Technical Contracting Services	C/CPFF	Various : Various	0.000	-		3.451	Jan 2016	2.891	Dec 2016	-		2.891	0	6.342	0	
Subtotal			0.000	-		6.104		5.113		-		5.113	0.000	11.217	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	
Pseudolite Prototype Lab and Field Testing	MIPR	Various : Various	0.000	-		-		2.100	Jan 2017	-		2.100	0	2.100	0	
Subtotal			0.000	-		-		2.100		-		2.100	0.000	2.100	0.000	
Project Cost Totals			0.000	-		20.358		57.411		-		57.411	0.000	77.769	0.000	
Remarks																

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)	Project (Number/Name) EH9 / PSEUDOLITES
--	---	---

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 A Decision (Project started under ED5)	<div style="position: absolute; top: 50px; left: 50px; font-size: 24px;">▲</div> Milestone A Decision																											
Pseudolite (PL) Prototype Development Contractor 1 (Project started under ED5)									PL Prototype Dev Ctr 1																			
Pseudolite (PL) Prototype Development Contractor 2 (Project started under ED5)									PL Prototype Dev Ctr 2																			
Pseudolite (PL) Command and Control Development (Project started under ED5)									PL Command and Control Dev																			
Pseudolite (PL) Receiver Development (Project started under ED5)									PL Receiver Development																			
(2) Pseudolite (PL) Preliminary Design Review (PDR)					<div style="position: absolute; top: 50px; left: 50px; font-size: 24px;">▲</div> PDR																							
Pseudolite (PL) Prototype Testing									Prototype Testing																			
(3) Pseudolite (PL) Technical Readiness Review									<div style="position: absolute; top: 50px; left: 50px; font-size: 24px;">▲</div> Technical Readiness Review																			
(4) Pseudolite (PL) Development RFP Release Decision													<div style="position: absolute; top: 50px; left: 50px; font-size: 24px;">▲</div> Development RFP Release Decision															
(5) Pseudolite (PL) Milestone B Decision													<div style="position: absolute; top: 50px; left: 50px; font-size: 24px;">▲</div> Milestone B Decision															
(6) Pseudolite (PL) EMD Contract Award																	<div style="position: absolute; top: 50px; left: 50px; font-size: 24px;">▲</div> EMD Contract Award											
Pseudolite (PL) Developmental Testing																	Developmental Testing											
(7) Pseudolite (PL) Milestone C Decision																					<div style="position: absolute; top: 50px; left: 50px; font-size: 24px;">▲</div> Milestone C Decision							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	Project (Number/Name) EH9 / <i>PSEUDOLITES</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone A Decision (Project started under ED5)	3	2015	3	2015
Pseudolite (PL) Prototype Development Contractor 1 (Project started under ED5)	3	2015	2	2018
Pseudolite (PL) Prototype Development Contractor 2 (Project started under ED5)	3	2015	2	2018
Pseudolite (PL) Command and Control Development (Project started under ED5)	3	2015	4	2019
Pseudolite (PL) Receiver Development (Project started under ED5)	3	2015	4	2019
Pseudolite (PL) Preliminary Design Review (PDR)	3	2016	3	2016
Pseudolite (PL) Prototype Testing	2	2017	4	2017
Pseudolite (PL) Technical Readiness Review	3	2017	3	2017
Pseudolite (PL) Development RFP Release Decision	4	2017	4	2017
Pseudolite (PL) Milestone B Decision	1	2018	1	2018
Pseudolite (PL) EMD Contract Award	2	2018	2	2018
Pseudolite (PL) Developmental Testing	3	2019	4	2019
Pseudolite (PL) Milestone C Decision	1	2020	1	2020

Note

*Note: Program started under project ED5 in FY 15.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>				Project (Number/Name) EJ2 / <i>MOUNTED</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
EJ2: <i>MOUNTED</i>	-	0.000	0.000	11.552	-	11.552	41.208	53.220	15.028	9.025	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

0604120/ED5 funding line continues as the Assured PNT parent funding line. However, four (4) separate project lines were created for the Assured PNT subprograms: EH8 – Dismounted PNT subprogram; EH9 – Pseudolite subprogram; EJ2 – Mounted PNT subprogram; EJ3 - Anti-Jam Antenna subprogram.

A. Mission Description and Budget Item Justification

The Mounted Positioning, Navigation and Timing (PNT) subprogram:

Highly accurate Positioning, Navigation and Timing (PNT) data is a key enabler and a cross cutting capability for Army forces to execute their mission. Army Forces require unhindered access to trusted PNT information under conditions where space based PNT may be limited or denied to maintain its Global Positioning System military advantage on the battlefield. The current capability, Global Positioning System (GPS), is a fixed frequency system which is vulnerable to current and emerging threats and field condition.

The Mounted A-PNT System is a scalable form-factor that distributes PNT data to multiple devices (client systems) via the PNT System of Systems Architecture (SOSA) in a mounted environment by using GPS signals coupled with non-GPS augmentation while minimizing the redundant costs for Anti-Jam Antennas in GPS degraded or denied environments. The Mounted A-PNT System is the integration of multiple sensors for platform distribution of PNT, which allows the Soldier to operate in a GPS denied environment. The Mounted A-PNT System implements a SOSA that acquires, protects and distributes secure PNT on stationary and/or mobile platforms. The mounted materiel solution paces the threats and is a migration path to future technologies, including M-Code.

FY 2017 Base funds in the amount of \$11.552 million is for the initiation of the Technology Maturation and Risk Reduction (TMRR) phase to support the Mounted PNT subprogram. These efforts include the development, testing and integration activities to demonstrate sufficient technical maturity to support the entrance into the EMD phase. It will also include the integration of M-Code in accordance with Public Law 111-383 Sec 913 and documentation preparation to support the Milestone A Decision.

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

	FY 2015	FY 2016	FY 2017
Title: Mounted PNT Technology Maturation and Risk Reduction	-	-	11.552
Description: Technology Maturation and Risk Reduction associated with the Mounted PNT subprogram, to reduce technology risk and to determine the appropriate set of technologies to be integrated into the full system.			
FY 2017 Plans: FY 2017 funds will transition the Communications Electronics Research Development and Engineering Center (CERDEC) Technology Maturation Initiative (TMI) efforts to the Mounted PNT subprogram. In addition, after a successful Milestone A			

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	Project (Number/Name) EJ2 / <i>MOUNTED</i>
--	---	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
decision, the Technology Maturation and Risk Reduction phase of the Mounted PNT subprogram will proceed. Efforts will focus on sensor fusion and PNT distribution architecture. It will also include finalization of design and requirement trades analysis and integration efforts on host platforms; finalization of Cost Benefit analysis; and documentation preparation to support the Milestone A Decision.			
Accomplishments/Planned Programs Subtotals	-	-	11.552

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: 0604115A:: <i>PE: 0604115A Technology Maturation Initiative - Mounted PNT</i>	2.000	7.200	6.700	-	6.700	-	-	-	-	0.000	15.900

Remarks

D. Acquisition Strategy
 The Assured Positioning, Navigation and Timing (PNT) Acquisition Strategy is focused on the acquisition of a family of solutions required to achieve the Assured PNT capability. The materiel solutions are partitioned into subprograms (Pseudolites, Mounted PNT, Dismounted PNT, and Anti-jam Antenna) to allow for the optimization of solutions for various Army formations. EJ2 is specifically for the acquisition of Mounted PNT.

Based upon a successful Milestone A Decision, the program funding will be used to continue the Technology Maturation and Risk Reduction phase utilizing two contractors developing prototype-construct alternatives; demonstrate and assess the functionality of integrated Anti-Jam Antenna Systems.

Milestone B is planned for FY 2018. After a successful MS B approval the proposed strategy is to award a single Engineering and Manufacturing Development (EMD) contract through full and open competition with priced options for Low Rate Initial Production (LRIP) and for the procurement of all technical data relevant to the performance of this contract or life cycle of this program.

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 / 4				PE 0604120A / Assured Positioning, Navigation and Timing (PNT)				EJ2 / MOUNTED								
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	
FFRDC	SS/CR	Various : Various	0.000	-		-		0.339	Dec 2016	-		0.339	0	0.339	0	
Project Management Support	Various	PM PNT : APG, MD	0.000	-		-		0.386	Dec 2016	-		0.386	0	0.386	0	
Contractor Support	C/CPFF	Various : Various	0.000	-		-		0.110	Dec 2016	-		0.110	0	0.110	0	
Subtotal			0.000	-		-		0.835		-		0.835	0.000	0.835	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	
Mounted PNT Prototype Development Contractor 1	C/CPFF	Various : Various	0.000	-		-		3.885	Nov 2016	-		3.885	0	3.885	0	
Mounted PNT Prototype Development Contractor 2	C/CPFF	Various : Various	0.000	-		-		3.885	Nov 2016	-		3.885	0	3.885	0	
Subtotal			0.000	-		-		7.770		-		7.770	0.000	7.770	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 and Technical Services	Various	C4ISR : various	0.000	-		-		1.281	Dec 2016	-		1.281	0	1.281	0	
Engineering and Technical Contracting Services	C/CPFF	Various : Various	0.000	-		-		1.666	Dec 2016	-		1.666	0	1.666	0	
Subtotal			0.000	-		-		2.947		-		2.947	0.000	2.947	0.000	
Project Cost Totals			0.000	-		0.000		11.552		-		11.552	0.000	11.552	0.000	

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / Assured Positioning, Navigation and Timing (PNT)	Project (Number/Name) EJ2 / MOUNTED
--	---	---

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) Mounted PNT Milestone A Decision									▲ 1 Milestone A Decision																			
Mounted PNT Prototype Development Contractor 1																	Mounted PNT Ctr 1											
Mounted PNT Prototype Development Contractor 2									Mounted PNT Ctr 2																			
(2) Mounted PNT Preliminary Design Review (PDR)													▲ 2 PDR															
(3) Mounted PNT Development RFP Release Decision													▲ 3 Development RFP Release Decision															
(4) Mounted PNT Milestone B Decision													▲ 4 Milestone B Decision															
(5) Mounted PNT Milestone C Decision																	▲ 5 Milestone C Decision											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	Project (Number/Name) EJ2 / <i>MOUNTED</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Mounted PNT Milestone A Decision	1	2017	1	2017
Mounted PNT Prototype Development Contractor 1	1	2017	3	2018
Mounted PNT Prototype Development Contractor 2	1	2017	3	2018
Mounted PNT Preliminary Design Review (PDR)	1	2018	1	2018
Mounted PNT Development RFP Release Decision	1	2018	1	2018
Mounted PNT Milestone B Decision	4	2018	4	2018
Mounted PNT Milestone C Decision	4	2020	4	2020

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604120A / <i>Assured Positioning, Navigation and Timing (PNT)</i>	Project (Number/Name) EJ3 / <i>ANTI-JAM ANTENNA</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
EJ3: <i>ANTI-JAM ANTENNA</i>	-	0.000	0.000	0.000	-	0.000	0.000	6.700	2.990	0.000	0.000	9.690
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Anti-Jam Antenna subprogram:

- > Enables continuous GPS signal acquisition and tracking in a navigation warfare (jamming) environment
- > Deployed as a scalable component accessory to Positioning, Navigation and Timing User Equipment

There are no FY 2017 Base funds for EJ3 - Anti-Jam Antenna.

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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604319A / <i>Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)</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	-	92.475	155.361	0.000	-	0.000	40.003	80.004	120.004	120.006	0.000	607.853
DU3: <i>IFPC2</i>	-	92.475	155.361	0.000	-	0.000	40.003	80.004	120.004	120.006	0.000	607.853

Note

Funding for FY17 and out for Block 1 activities has been realigned from BA4, PE 0604319/DU3 to BA5, PE 0605052/EY7.

A. Mission Description and Budget Item Justification

This program supports the overall Air and Missile Defense (AMD) architecture and provides a robust intercept capability against Cruise Missiles (CM), Unmanned Aircraft System (UAS) and Rocket, Artillery, and Mortar (RAM) threats for deployed forces. The Indirect Fire Protection Capability Increment 2 - Intercept (IFPC Inc 2-I) is a ground-based weapon system that will be designed to acquire, track, engage, and defeat UAS, CM, and RAM. The System will provide 360-degree protection and will simultaneously engage threats arriving from different azimuths. A block acquisition approach will be used to provide this capability. The Block 1 system will consist of an existing interceptor and sensor and development of fire control software and a Multi-Mission Launcher (MML) to support the UAS and CM mission. The IFPC Inc 2-I System will be compatible with the Army Integrated Air and Missile Defense (IAMD) Command and Control (C2) architecture. The IFPC Inc 2-I System will be transportable by Army common mobile platforms. Development of a second Interceptor for Block 1 begins in FY18.

The FY 2017 funding request was reduced by \$5.000 million to account for the availability of prior year execution balances.

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	96.131	155.361	90.323	-	90.323
Current President's Budget	92.475	155.361	0.000	-	0.000
Total Adjustments	-3.656	0.000	-90.323	-	-90.323
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.656	-			
• Under-Execution Adjustment	-	-	-5.000	-	-5.000
• Other Adjustments 2	-	-	-85.323	-	-85.323

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604319A / <i>Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)</i>	Project (Number/Name) DU3 / <i>IFPC2</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
DU3: <i>IFPC2</i>	-	92.475	155.361	0.000	-	0.000	40.003	80.004	120.004	120.006	0.000	607.853
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Funding for FY17 and out has been realigned for Block 1 activities from BA4, PE 0604319/DU3 to BA5, PE 0605052/EY7.

A. Mission Description and Budget Item Justification

This program supports the overall Air and Missile Defense (AMD) architecture and provides a robust intercept capability against Cruise Missiles (CM), Unmanned Aircraft System (UAS) and Rocket, Artillery, and Mortar (RAM) threats for deployed forces. The Indirect Fire Protection Capability Increment 2 - Intercept (IFPC Inc 2-I) is a ground-based weapon system that will be designed to acquire, track, engage, and defeat UAS, CM, and RAM. The System will provide 360-degree protection and will simultaneously engage threats arriving from different azimuths. A block acquisition approach will be used to provide this capability. The Block 1 system will consist of an existing interceptor and sensor and development of fire control software and a Multi-Mission Launcher (MML) to support the UAS and CM mission. The IFPC Inc 2-I System will be compatible with the Army Integrated Air and Missile Defense (IAMD) Command and Control (C2) architecture. The IFPC Inc 2-I System will be transportable by Army common mobile platforms. Development of a second Interceptor for Block 1 begins in FY18.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Indirect Fire Protection Capability Increment 2 - Intercept (IFPC Inc 2-I) System Engineering & Program Management</p> <p>Description: Funding is provided for the following efforts:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued Research, Development, Test, & Evaluation (RDT&E) efforts associated with Engineering Demonstration - Performed system engineering, logistics engineering, system test and evaluation management, technical control, and business management activities - Conducted system and program reviews - Performed technical assessments, concept studies, cost reduction, risk reduction, and required documentation <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue RDT&E efforts associated with Engineering Demonstration - Perform system engineering, logistics engineering, system test and evaluation management, technical control, and business management activities 	26.972	28.580	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604319A / <i>Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)</i>	Project (Number/Name) DU3 / <i>IFPC2</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Conduct system and program reviews - Perform technical assessments, concept studies, cost reduction, risk reduction, and required documentation - Conduct Milestone B preparation, documentation, and execution activities - Transition from Technology Maturation and Risk Reduction (TMRR) to Engineering and Manufacturing Development (EMD) phase - Begin Interceptor Pre-Milestone preparation and documentation activities 					
<p>Title: IFPC Inc 2-I Engineering and Technical Support</p> <p>Description: Funding is provided for the following efforts:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued engineering and technical support for design of system hardware, software, and integration requirements and definition - Participated in system and program reviews - Performed technical assessments, concept studies, cost reduction, risk reduction, launch demonstration, and required documentation <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue engineering and technical support for design of system hardware, software, and integration requirements and definition, to include all Major End Items (MEIs) - Participate in system and program reviews - Perform technical assessments, concept studies, cost reduction, risk reduction, Engineering Demonstration, and required documentation 	50.549	48.655	-	-	-
<p>Title: IFPC Inc 2-I System/Subsystem Development, Integration, and Testing</p> <p>Description: Funding is provided for the following efforts:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued system component hardware, software, and integration development activities - Participated in system and program reviews - Continued development of technical data documentation - Performed technical assessments, concept studies, cost reduction, required documentation, and integration, component, and system level risk reduction 	14.954	78.126	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604319A / <i>Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)</i>	Project (Number/Name) DU3 / <i>IFPC2</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continued system/subsystem hardware, software, integration, and test activities and launch demonstration					
<i>FY 2016 Plans:</i>					
- Continue system component hardware, software, and integration development activities					
- Participate in system and program reviews					
- Continue development of technical data package					
- Perform technical assessments, concept studies, cost reduction, required documentation, and integration, component, and system level risk reduction					
- Continue system/subsystem hardware, software, and integration test activities					
- Complete manufacturing, assembly, and integration of Multi-Mission Launcher (MML) prototypes					
- Conduct Engineering Demonstration					
- Purchase test assets, components, and risk reduction items					
Accomplishments/Planned Programs Subtotals	92.475	155.361	-	-	-

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, Proj PA3: <i>PAC-3/MSE MISSILE</i>	33.709	2.272	-	-	-	-	-	-	-	0.000	35.981
• SSN C53101: <i>MSE Missile</i>	532.605	514.946	423.201	-	423.201	459.040	497.009	529.839	520.513	Continuing	Continuing
• PE 0205456A, Proj 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
• PE 0604114A, Proj EX2: <i>Lower Tier Air Missile Defense (LTAMD) Capability</i>	-	-	35.132	-	35.132	93.208	78.820	87.128	84.826	Continuing	Continuing
• SSN C50016: <i>Lower Tier Air and Missile Defense (AMD)</i>	110.300	115.075	126.470	-	126.470	112.888	122.768	150.444	120.006	Continuing	Continuing
• PE 0202429A, Proj EP8: <i>JLENS COCOM EXERCISE</i>	43.248	10.565	45.482	-	45.482	6.746	-	-	-	0	106.041
• PE 0605052A, Proj EY7: <i>IFPC Increment 2 - Block 1</i>	-	-	83.995	-	83.995	63.370	43.204	109.323	133.326	Continuing	Continuing
• SSN C62002: <i>IFPC Inc 2-I Block 1 Missile</i>	-	-	-	-	-	73.552	123.106	186.480	146.300	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604319A / <i>Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)</i>	Project (Number/Name) DU3 / <i>IFPC2</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
• SSN C62001: <i>IFPC Inc 2-I Block 1 System</i>	-	-	19.319	-	19.319	47.289	138.547	174.760	287.325	Continuing	Continuing
• PE 0604820A, Proj E10: <i>Sentinel</i>	5.022	12.309	15.983	-	15.983	20.844	20.612	30.106	41.402	Continuing	Continuing
• PE 0605457A, Proj S40: <i>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
• SSN BZ5075: <i>IAMD Battle Command System</i>	-	20.917	204.969	-	204.969	287.220	372.916	440.567	439.780	Continuing	Continuing
• PE 604741A, Proj 146, 149: <i>Air Defense C2I Eng Dev</i>	15.294	34.569	36.256	-	36.256	20.141	19.658	17.738	11.651	Continuing	Continuing
• SSN AD50700: <i>AIR & MSL Defense Planning & Control Sys</i>	27.374	28.176	54.376	69.958	124.334	17.005	17.960	6.366	6.951	Continuing	Continuing

Remarks

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

D. Acquisition Strategy

The Materiel Development Decision (MDD) was completed in fourth quarter Fiscal Year (FY) 2011, allowing for the initiation of an Analysis of Alternatives (AoA) to determine materiel solution approach; establishment of requirement baseline; initiation of development of required Milestone documents and execution of the Milestone decision to continue with Research, Development, Test, & Evaluation (RDT&E) efforts associated with conducting an Engineering Demonstration.

The Government will fund the Aviation and Missile Research Development and Engineering Center (AMRDEC) for the development and demonstration of the Multi-Mission Launcher (MML) during the Technology Maturation and Risk Reduction (TMRR) phase of the program. An independent Cost Benefit Analysis (CBA) was completed, and the recommendation was made to continue organic development through the Engineering and Manufacturing Development (EMD) Phase.

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 / 4				PE 0604319A / Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)				DU3 / IFPC2							
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 Admin	MIPR	Cruise Missile Defense Systems Project Office : Huntsville, Alabama	10.216	8.440		9.988	Jan 2016	-		-		-	Continuing	Continuing	Continuing
Subtotal			10.216	8.440		9.988		-		-		-	-	-	-
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 & Integration	MIPR	Cruise Missile Defense Systems Project Office : Huntsville, AL	19.385	18.532		18.592	Jan 2016	-		-		-	Continuing	Continuing	Continuing
Engineering and Technical Support	MIPR	Multiple Activities : Multiple Locations	43.666	50.549		48.655	Jan 2016	-		-		-	Continuing	Continuing	Continuing
System/Subsystem Development, Integration, and Test	MIPR	Multiple Activities : Multiple Locations	29.002	14.954		78.126	Jan 2016	-		-		-	Continuing	Continuing	Continuing
Subtotal			92.053	84.035		145.373		-		-		-	-	-	-
Project Cost Totals			102.269	92.475		155.361		-		-		-	-	-	-
Remarks															

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604319A / <i>Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)</i>	Project (Number/Name) DU3 / IFPC2
--	--	---

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 1 Pre-Milestone B Activities	Blk 1 Pre-Milestone B Activities																											
Engineering Demonstration (ED)	ED																											
(1) Block 1 Milestone B	Blk 1 Milestone B																											
(2) Blk 1 Interceptor 2 Materiel Development Decision (MDD)	Interceptor 2 MDD																											
(3) Blk 1 Interceptor 2 Milestone Decision	Interceptor 2 Milestone Decision																											
Blk 1 Interceptor 2 Development	Interceptor 2 Dev																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604319A / <i>Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)</i>	Project (Number/Name) DU3 / <i>IFPC2</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Block 1 Pre-Milestone B Activities	1	2014	3	2016
Engineering Demonstration (ED)	2	2016	2	2016
Block 1 Milestone B	3	2016	3	2016
Blk 1 Interceptor 2 Materiel Development Decision (MDD)	1	2017	1	2017
Blk 1 Interceptor 2 Milestone Decision	3	2019	3	2019
Blk 1 Interceptor 2 Development	3	2019	4	2023

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 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0305251A / Cyberspace Operations Forces and Force Support
--	--

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	40.510	-	40.510	56.509	52.820	52.128	53.625	Continuing	Continuing
FA8: Cyberspace Operations Forces and Force Support	-	0.000	0.000	40.510	-	40.510	56.509	52.820	52.128	53.625	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Persistent Training Environment (PTE) will provide the Department of Defense (DoD) cyber forces with a capability that uses a combination of loosely affiliated or independent virtual environments with varied capabilities that are not scalable or extensible. The current environment constrains training capabilities and capacity, but lack a joint or standard approach consistent with a broader vision of PTE. PTE system approaches are aligned to the outputs of the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (OUSD AT&L) and Chairman of the Joint Chiefs of Staff (CJCS) J6 led, "Cyber Range Evaluation of Alternatives (EOA) Findings and Issue Paper Deliberations," dated 17 November 2015. The US Army acknowledges it is the lead candidate service to perform as the Executive Agent (EA) for Cyber Training Ranges and DoD Acquisition Lead for the PTE.

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	40.510	-	40.510
Total Adjustments	0.000	0.000	40.510	-	40.510
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	40.510	-	40.510

Change Summary Explanation

FY 2017 Plans: Funds support the initial Pilot activities within a materiel development strategy to deliver capabilities which will duplicate, emulate, and simulate cyberspace operational environments with associated missions of the DoD cyber force.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0305251A / <i>Cyberspace Operations Forces and Force Support</i>				Project (Number/Name) FA8 / <i>Cyberspace Operations Forces and Force 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
FA8: <i>Cyberspace Operations Forces and Force Support</i>	-	0.000	0.000	40.510	-	40.510	56.509	52.820	52.128	53.625	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

NEW START

A. Mission Description and Budget Item Justification

The Persistent Training Environment (PTE) will provide the Department of Defense (DoD) cyber force with a capability that uses a combination of loosely affiliated or independent virtual environments with varied capabilities that are not scalable or extensible. The current environment constrains training capabilities and capacity, but lack a joint or standard approach consistent with a broader vision of PTE. PTE system approaches are aligned to the outputs of the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (OUSD AT&L) and Chairman of the Joint Chiefs of Staff (CJCS) J6 led, "Cyber Range Evaluation of Alternatives (EOA) Findings and Issue Paper Deliberations," dated 17 November 2015. The US Army acknowledges it is the lead candidate service to perform as the Executive Agent (EA) for Cyber Training Ranges and DoD Acquisition Lead for the PTE.

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

	FY 2015	FY 2016	FY 2017
Title: Event Management	-	-	10.510
Description: EVENT MANAGEMENT: Dedicated event scheduling, allocation, and management functions for event design, planning and execution, supported by standardized training assessment tools and capabilities.			
FY 2017 Plans:			
EVENT MANAGEMENT: Dedicated event scheduling, allocation, and management functions for event design, planning and execution, supported by standardized training assessment tools and capabilities.			
a.) OPFOR Environment: Capability to provide environment to support live and automated OPFOR capability which is realistically tailored to the training audience.			
b.) System Capacity: Capability to support individual and collective training, certification and recertification activities within definitive timelines.			
c.) Modeling and Simulations: Capability to provide training event data collection for event replay and archiving to include operation of the cyber range and instrumentation and tools.			
d.) Assessments and Management: Capability to provide assessment and analysis support to include analytics, metrics, and Master Scenario Event List (MSEL) execution.			
Title: Environment	-	-	10.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0305251A / <i>Cyberspace Operations Forces and Force Support</i>	Project (Number/Name) FA8 / <i>Cyberspace Operations Forces and Force Support</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Operate the PTE with realistic vignettes/scenarios as part of a system (syllabus) of individual and collective training that includes certification and real-world mission rehearsals.</p> <p>FY 2017 Plans: 2.) ENVIRONMENT: Operate the PTE with realistic vignettes/scenarios as part of a system (syllabus) of individual and collective training that includes certification and real-world mission rehearsals. a.) Interoperability: Capability to generate a training network that is able to emulate an operational network. b.) System Capacity: Capability to reconstitute the environment from a given save point. Incorporates pre-determined standardized environment constructs and scenarios. c.) Modeling and Simulations: Capability to replicate current/future requirements and threats.</p>				
<p>Title: Connectivity</p> <p>Description: On-Demand reliable, secure physical and virtual global access from wherever participants are geographically located. A core cyber exercise network and event management platform with access to the full suite of DoD, Service, Interagency, Multinational, and States' distributed systems.</p> <p>FY 2017 Plans: 3.) CONNECTIVITY: On-Demand reliable, secure physical and virtual global access from wherever participants are geographically located. A core cyber exercise network and event management platform with access to the full suite of DoD, Service, Interagency, Multinational, and States' distributed systems. a.) System Accessibility: Capability to provide user interface as well as to facilitate user provided assets (crew training facility, system under test, and other user assets). b.) System Capacity: Capability to support network capacity for multiple engagements from multiple sites and connections (to include intra-range entities, between ranges, cross-domain solutions, and other resources) c.) Interoperability: Capability to ensure interoperability standards for integration of environments and service assets at geographically separated locations. d.) Cybersecurity Measures: Capability to ensure continuous enforcement of security policies to prevent successful intrusions, protect data at rest, and eradicate the threat to and cause of any incident.</p>		-	-	10.000
<p>Title: TRAINING SITES</p> <p>Description: TRAINING SITES: Capability to enable and provide the CMF to connect to the PTE from Base, Post, Camp, Station, or Deployed Locations for distributed cyber training, certification, and major training events.</p> <p>FY 2017 Plans:</p>		-	-	10.000

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0305251A / <i>Cyberspace Operations Forces and Force Support</i>	Project (Number/Name) FA8 / <i>Cyberspace Operations Forces and Force Support</i>
--	---	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>TRAINING SITES: Capability to enable and provide the CMF to connect to the PTE from Base, Post, Camp, Station, or Deployed Locations for distributed cyber training, certification, and major training events.</p> <p>a.) System Capacity: Capability to connect training sites to PTE (Unclassified through Top Secret and SAP)</p> <p>b.) System Accuracy: Capability to develop foundational documentation or continuous rework of documentation to include team TTPs and Validation.</p>			
Accomplishments/Planned Programs Subtotals	-	-	40.510

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

N/A

Remarks

D. Acquisition Strategy

Acquisition strategy is awaiting approval by the governance structure to include Army, USCYBERCOM, USD (P&R), Joint Staff, and the Services.

E. Performance Metrics

N/A

UNCLASSIFIED

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0305251A / <i>Cyberspace Operations Forces and Force Support</i>	Project (Number/Name) FA8 / <i>Cyberspace Operations Forces and Force 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
Event Management									Event Management																			
Environment									Environment																			
Connectivity									Connectivity																			
Training Sites									Training Sites																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0305251A / <i>Cyberspace Operations Forces and Force Support</i>	Project (Number/Name) FA8 / <i>Cyberspace Operations Forces and Force Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Event Management	2	2017	2	2021
Environment	2	2017	2	2021
Connectivity	2	2017	2	2021
Training Sites	2	2017	2	2021