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**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 5

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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.

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**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.

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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

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

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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
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RDT&E Management Support	1,166,015	1,070,581		1,070,581	1,136,134		1,136,134
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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

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

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	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

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Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	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

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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

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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

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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

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Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	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

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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

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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

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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

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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

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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

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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

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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	

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Army Integrated Air and Missile Defense (AIAMD)	0605457A	128	05.....	1248
Army Tactical Command & Control Hardware & Software	0604818A	102	05.....	812
Artillery Systems - EMD	0604854A	107	05.....	984
Automatic Test Equipment Development	0604746A	93	05.....	373
Aviation Ground Support Equipment	0605830A	133	05.....	1296
Brigade Analysis, Integration and Evaluation	0604798A	96	05.....	443
Combat Feeding, Clothing, and Equipment	0604713A	89	05.....	283

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Combined Arms Tactical Trainer (CATT) Core	0604780A	95	05.....	416
Command, Control, Communications Systems - Eng Dev	0604805A	99	05.....	728
Common Infrared Countermeasures (CIRCM)	0605035A	117	05.....	1117
Constructive Simulation Systems Development	0604742A	92	05.....	356
Defensive CYBER Tool Development	0605041A	119	05.....	1150
Distributive Interactive Simulations (DIS) - Eng Dev	0604760A	94	05.....	394
Electronic Warfare Development	0604270A	75	05.....	20
Electronic Warfare Development	0304270A	136	05.....	1328
Family of Heavy Tactical Vehicles	0604622A	83	05.....	181
Firefinder	0604823A	105	05.....	944
General Fund Enterprise Business System (GFEBS)	0604822A	104	05.....	927
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Indirect Fire Protection Capability Increment 2	0605052A	123	05.....	1202
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Integrated Ground Security Surveillance Response Capability (IGSSR-C)	0605029A	111	05.....	1064
Integrated Personnel and Pay System-Army (IPPS-A)	0605018A	109	05.....	1041
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Joint Light Tactical Vehicle - ED	0605812A	132	05.....	1285
Joint Tactical Network (JTN)	0605031A	113	05.....	1083
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Joint Tactical Radio	0604280A	76	05.....	44
LIGHT TACTICAL WHEELED VEHICLES	0604642A	86	05.....	227
Landmine Warfare/Barrier - Eng Dev	0604808A	101	05.....	772
Logistics and Engineer Equipment - Eng Dev	0604804A	98	05.....	626
Manned Ground Vehicle	0605625A	129	05.....	1259
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Mid-tier Networking Vehicular Radio (MNVR)	0604290A	77	05.....	54
National Capabilities Integration (MIP)	0605766A	131	05.....	1277
Night Vision Systems - Eng Dev	0604710A	88	05.....	239
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Soldier Systems - Warrior Dem/Val	0604827A	106	05.....	960

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Program Element Title	Program Element Number	Line #	BA	Page
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Tactical Network Radio Systems (Low-Tier)	0605042A	120	05.....	1162
Tactical Security System (TSS)	0605034A	116	05.....	1110
WIN-T Increment 3 - Full Networking	0605350A	124	05.....	1209
Weapons and Munitions - Eng Dev	0604802A	97	05.....	551

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604201A / <i>Aircraft Avionics</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	39.583	18.639	83.248	-	83.248	90.386	61.627	7.480	14.292	Continuing	Continuing
C97: <i>ACFT Avionics</i>	-	5.372	1.858	0.798	-	0.798	5.849	5.864	5.942	5.645	Continuing	Continuing
VU3: <i>Networking And Mission Planning</i>	-	34.211	16.781	82.450	-	82.450	84.537	55.763	1.538	8.647	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Fiscal Year (FY) 2017 budget request funds the development of Aircraft Avionics systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this Program Element support research, development, and test efforts in the Engineering and Manufacturing Development phases of these systems.

The Airborne Maritime Fixed-Aviation (AMF-A) is the transformational system that provides Army Aviation interoperability capability for Future Force and Joint Force operations. The AMF-A integration effort provides for the non-recurring engineering required to integrate and qualify the AMF-A certified radios with Link 16 and/or other advanced networking waveforms into the Apache AH-64E and Unmanned Aircraft Systems (UAS). Specifically, the PRC-152A radio will be incorporated into the Shadow UAS Communications Relay Payload mission equipment package.

The Doppler Global Positioning System Navigation Set (DGNS) Upgrade program completes system engineering trade studies to reduce space, weight, and power with the introduction of new navigation support capabilities such as inertial sensor, MIL-STD-1553 interface card, and Instrument Flight Rules map display. It also prepares Engineering Change Proposals (ECP) to the existing DGNS ASN-128D Line Replaceable Units (LRU) as a result of those trade studies. The effort also derives DGNS compliance matrices for current and planned Global Air Traffic Management (GATM) capabilities for the upcoming decade. The DGNS upgrade continues with execution of Non-Recurring Engineering for Computer Display Unit (CDU) and Signal Data Converter LRU ECP packages. The ASN-128D CDU upgrade replaces the current CDU faceplate with a touch screen display, provides a moving navigation map capability and optimizes pilot interface to augment existing Instrument Flight Rules capability promoting safer flight operations. The CDU upgrade will support Assured-Position Navigation and Time (A-PNT) operations in conjunction with additional system LRU upgrades and supports Department of Defense (DoD) and Army's requirement to maintain A-PNT throughout operations. This will require assessment and follow-on upgrade to the DGNS navigation system. The CDU upgrade will perform an assessment of A-PNT assurance levels to understand system performance, associated PNT capability gaps, and evaluate candidate solutions to cover any identified gaps.

The Enhanced Aviation GATM Localizer Performance with Vertical Guidance (LPV) Embedded GPS Inertial (EGI) Navigation System (EAGLE) A-PNT integration program assesses current capabilities in identified operational PNT environment levels and tests identified upgrades to existing EGI hardware in order to accommodate A-PNT in identified operational environments and incorporates M-Code. It supports DoD and Army's requirement to maintain A-PNT throughout operations and requires assessment and follow-on upgrade to the EGI navigation system. The EAGLE upgrade will perform an assessment of A-PNT assurance levels to understand system performance, associated PNT capability gaps, and evaluate candidate solutions to cover any identified gaps.

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604201A / <i>Aircraft Avionics</i>	
<p>The Brownout Rotorcraft Enhancement System (BORES) addresses tactical operations and training missions within Degraded Visual Environments (DVE) which restricts or severely reduces the aircrew's visibility due to atmospheric obscurants. BORES will initiate the use of DVE as a tactical advantage for Army Aviation. In addition, BORES will improve safety, reduce risk and add flexibility to aviation units by enhancing aircrew situational awareness through real-time detection and warning of terrain, obstacles and hazards. BORES will consist of integrated rotorcraft pilotage augmentation systems, sensor(s), software, software related fireware, and pilot to system interfaces and cueing devices. BORES will combine obscurant penetrating sensor(s) with aircraft state data via a fusion/synthetic vision system to provide an initial capability for ground taxi, hover, takeoff and landing modes of flight during brownout conditions.</p> <p>The Aviation Data Exploitation Capability (ADEC) is an Army aviation automated information system program providing specific capabilities needed at the aviation unit level to implement and support improvements within aviation operations, safety, and training to increase operational effectiveness and situational awareness at all command echelons. ADEC provides a common and interoperable capability required to implement the DoD mandated Military Flight Operations Quality Assurance processes. ADEC will standardize flight scheduling/management, risk management, mission approval, and flight data analysis and visualization. ADEC provides interfaces to Centralized Aviation Flight Records System (CAFRS) to reduce data entry and the information technology footprint while enabling disconnected and split based operations.</p> <p>The Aircraft Notebook (ACN) is an Army aviation automated information system program required to streamline the completion of aviation maintenance activities and the documentation required to maintain airworthiness for all Army aircraft. ACN implements The Army Maintenance Management System - Aviation (TAMMS-A) digital logbook functionality and integrates with CAFRS to reduce manual entries and increase data accuracy. ACN reduces the information technology footprint within an aviation unit by integrating multiple software applications such as platform software applications, interactive electronic technical manuals, and condition based maintenance plus tools onto one hardware platform.</p> <p>The Aviation Logistics Enterprise - Platform (ALE-P) is the single logistics information system for all of Army aviation and serves as an extension to Global Combat Support System-Army (GCSS-Army). ALE-P replaces the Unit Level Logistics System-Aviation (Enhanced) (ULLS-A[E]) and the Unmanned Aviation Systems-Initiative (UAS-I) systems. ALE-P provides necessary interfaces to GCSS-Army and other enterprise systems at Logistics Support Activity, Aviation and Missile Command, and Program Executive Office Aviation. ALE-P interfaces with the ACN and ADEC at the unit level to maintain continuous airworthiness and aircraft historical records and provides the maintenance/readiness posture to the commander.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604201A / <i>Aircraft Avionics</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	41.236	12.939	2.210	-	2.210
Current President's Budget	39.583	18.639	83.248	-	83.248
Total Adjustments	-1.653	5.700	81.038	-	81.038
• Congressional General Reductions	-	-9.300			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	15.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.653	-			
• Adjustments to Budget Years	-	-	81.038	-	81.038

Change Summary Explanation

FY16: \$15,000K Congressional increase for DVE
 -\$9,300K Army requested transfer of ALE-P funding to Global Combat Support System
 FY17: \$81,038K Increase for BORES/DVE development

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

Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics				Project (Number/Name) C97 / ACFT Avionics			
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
C97: ACFT Avionics	-	5.372	1.858	0.798	-	0.798	5.849	5.864	5.942	5.645	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Fiscal Year (FY) 2017 budget request funds the development of Aircraft Avionics systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this Project support research, development, and test efforts in the Engineering and Manufacturing Development phases of these systems.

The Airborne Maritime Fixed-Aviation (AMF-A) is the transformational system that provides Army Aviation interoperability capability for Future Force and Joint Force operations. The AMF-A integration effort provides for the non-recurring engineering required to integrate and qualify the AMF-A certified radios with Link 16 and/or other advanced networking waveforms into the Apache AH-64E and Unmanned Aircraft Systems (UAS). Specifically, the PRC-152A radio will be incorporated into the Shadow UAS Communications Relay Payload mission equipment package.

The Doppler Global Positioning System Navigation Set (DGNS) Upgrade program completes system engineering trade studies to reduce space, weight, and power with the introduction of new navigation support capabilities such as inertial sensor, MIL-STD-1553 interface card, and Instrument Flight Rules map display. It also prepares Engineering Change Proposals (ECP) to the existing DGNS ASN-128D Line Replaceable Units (LRU) as a result of those trade studies. The effort also derives DGNS compliance matrices for current and planned Global Air Traffic Management (GATM) capabilities for the upcoming decade. The DGNS upgrade continues with execution of Non-Recurring Engineering for Computer Display Unit (CDU) and Signal Data Converter LRU ECP packages. The ASN-128D CDU upgrade replaces the current CDU faceplate with a touch screen display, provides a moving navigation map capability and optimizes pilot interface to augment existing Instrument Flight Rules capability promoting safer flight operations. The CDU upgrade will support Assured-Position Navigation and Time (A-PNT) operations in conjunction with additional system LRU upgrades and supports Department of Defense (DoD) and Army's requirement to maintain A-PNT throughout operations. This will require assessment and follow-on upgrade to the DGNS navigation system. The CDU upgrade will perform an assessment of A-PNT assurance levels to understand system performance, associated PNT capability gaps, and evaluate candidate solutions to cover any identified gaps.

The Enhanced Aviation GATM Localizer Performance with Vertical Guidance (LPV) Embedded Global Positioning System (GPS) Inertial (EGI) Navigation System (EAGLE) A-PNT integration program assesses current capabilities in identified operational PNT environment levels and tests identified upgrades to existing EGI hardware to accommodate A-PNT in identified operational environments and incorporates M-Code. It supports DoD and Army's requirement to maintain A-PNT throughout operations and requires assessment and follow-on upgrade to the EGI navigation system. The EAGLE upgrade will perform an assessment of A-PNT assurance levels to understand system performance, associated PNT capability gaps, and evaluate candidate solutions to cover any identified gaps.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: Airborne Maritime Fixed (AMF-A) integration and qualification for Apache AH-64E and PRC-152A Radio for UAS platforms.	1.994	1.858	0.050

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) C97 / ACFT Avionics

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: The AMF-A integration effort provides for the non-recurring engineering required to integrate and qualify the PRC-152A compliant radios and/or other advanced networking waveforms into the Apache AH-64E and UAS platforms for both production cut-in and retrofit activities.</p> <p>FY 2015 Accomplishments: Developed a catalogue of qualified airborne AMF-A antennas for use on multiple platforms. Supported multiple SALT and SANR working groups.</p> <p>FY 2016 Plans: Continue development of AMF-A antennas and associated Co-Site Analysis tasks.</p> <p>FY 2017 Plans: Complete catalogue development of AMF-A antennas and associated Co-Site Analysis tasks.</p>			
<p>Title: Doppler Global Positioning System Navigation Set (DGNS) Upgrade/Assured-Position Navigation and Time (A-PNT) Assessment</p> <p>Description: The DGNS Upgrade program completes system engineering trade studies to reduce space, weight, and power with the introduction of new navigation support capabilities such as inertial sensor, MIL-STD-1553 interface card, and Instrument Flight Rules (IFR) map display. It also prepares ECPs to the existing DGNS ASN-128D LRU as a result of those trade studies. The effort also derives DGNS compliance matrices for current and planned GATM capabilities for the upcoming decade. The DGNS upgrade continues with execution of Non-Recurring Engineering for CDU and Signal Data Converter LRU ECP packages. The ASN-128D CDU Upgrade replaces the current CDU faceplate with a touch screen display, provides a moving navigation map capability and optimized pilot interface to augment existing IFR capability and promote safer flight operations. It also enables CDU support for A-PNT operations in conjunction with additional system LRU upgrades.</p> <p>FY 2015 Accomplishments: Continued CDU Upgrade non-recurring engineering effort with software implementation, hardware fabrication, DGNS system integration, and full airworthiness component level qualification testing.</p> <p>FY 2017 Plans: Complete assessments and feasibility studies performed on the CDU Upgrade equipment to identify hardware and software changes required to meet A-PNT requirements.</p>	3.378	-	0.200
<p>Title: Enhanced Aviation GATM Localizer Performance with Vertical Guidance (LPV) Embedded GPS Inertial (EGI) Navigation System (EAGLE)</p>	-	-	0.548

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) C97 / ACFT Avionics
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Description: The EAGLE Navigation System A-PNT integration program assesses current capabilities in identified operational PNT environment levels and tests identified upgrades to existing EGI hardware to accommodate A-PNT in identified operational environments.			
FY 2017 Plans: Initiate assessments and feasibility studies on the current EGI and EAGLE equipment to identify hardware and software changes required to meet A-PNT requirements and to incorporate M-Code.			
Accomplishments/Planned Programs Subtotals	5.372	1.858	0.798

C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2017</u>						
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Base</u>	<u>OCO</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>
• AA0723: COMMS, NAV Surveillance	115.795	82.904	69.960	-	69.960	94.516	85.628	77.985	72.766	Continuing	Continuing
• AA0704: GATM Rotary Wing	41.821	33.890	45.302	-	45.302	60.647	29.808	30.131	18.920	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project is comprised of multiple systems supporting aircraft avionics. While the detailed acquisition strategy varies from program to program, the general strategy is for each individual program to complete the development and testing efforts in coordination with the aircraft platforms on integration issues, use the various contracts of the aircraft platforms original equipment manufacturers on integration efforts, and utilize the Aviation & Missile Research, Development, and Engineering Center for software development. This requires the use of various contract methods and types to accomplish the aircraft avionics development efforts. All required acquisition program documentation is prepared.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) C97 / ACFT Avionics
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PM Services (EAGLE)	Allot	PM AME : Redstone Arsenal, AL	0.000	-		-		0.200	Oct 2016	-		0.200	Continuing	Continuing	Continuing
PM Services (DGNS Upgrade/ DGNS A-PNT)	Allot	PM AME : Redstone Arsenal, AL	0.000	0.063	Oct 2014	-		-		-		-	0	0.063	0
PM Services (AMF-A)	Allot	PM AME : Redstone Arsenal, AL	1.222	0.641	Oct 2014	0.676	Oct 2015	-		-		-	0	2.539	0
Subtotal			1.222	0.704		0.676		0.200		-		0.200	-	-	-

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			
AMF-A Common Radio Control Software Development	Various	AMRDEC Software Engineering Directorate : Redstone Arsenal, AL	8.265	-		-		-		-		-	0	8.265	8.265
AMF-A Antenna Development and Co-Site Analysis	Various	AMRDEC, Prototype Integration Facility/ CERDEC Flight Activity : Redstone Arsenal, AL/ Lakehurst, NJ	4.084	0.050	Mar 2015	1.182	Mar 2016	0.050	Mar 2017	-		0.050	0	5.366	0
PRC-152A Radio Shadow Communication Relay Package	C/FFP	AMS : Huntsville, AL	5.245	-		-		-		-		-	0	5.245	9.958
DGNS Upgrade	C/CPFF	BAE Systems : Wayne, NJ	30.640	3.315	Mar 2015	-		-		-		-	0	33.955	0
DGNS A-PNT Assessment	SS/CPFF	BAE Systems : Wayne, NJ	0.000	-		-		0.200	Feb 2017	-		0.200	0	0.200	0
AMF-A Link-16 and Wide Band Networking Waveform Integration and Qualification onto AH-64E	SS/CPFF	Boeing : Mesa, AZ	29.989	-		-		-		-		-	0	29.989	0

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) C97 / ACFT Avionics
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AMF-A AH-64E Link 16 and WNW Integration Qualification AH-64																												
DGNS AN/ASN-128D Upgrade																												
DGNS AN/ASN-128D A-PNT Assessment																												
EAGLE A-PNT Assessment / M-Code Integration																												
AMF-A Antenna Development and Co-Site Analysis																												
AMF-A Common Radio Control Software Development and Qualification																												
PRC-152A Radio Shadow Communications Relay Package																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / <i>Aircraft Avionics</i>	Project (Number/Name) C97 / <i>ACFT Avionics</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AMF-A AH-64E Link 16 and WNW Integration Qualification AH-64	1	2015	2	2015
DGNS AN/ASN-128D Upgrade	4	2014	2	2016
DGNS AN/ASN-128D A-PNT Assessment	2	2017	1	2018
EAGLE A-PNT Assessment / M-Code Integration	2	2017	2	2021
AMF-A Antenna Development and Co-Site Analysis	2	2011	1	2018
AMF-A Common Radio Control Software Development and Qualification	1	2011	2	2015
PRC-152A Radio Shadow Communications Relay Package	1	2012	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics				Project (Number/Name) VU3 / Networking And Mission Planning			
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
VU3: <i>Networking And Mission Planning</i>	-	34.211	16.781	82.450	-	82.450	84.537	55.763	1.538	8.647	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Aviation Logistics Enterprise-Platform (ALE-P) requirement has been transferred to Program Manager Army Enterprise Systems Integration Program (PM AESIP) Global Combat Support System (GCSS) Army effective Fiscal Year (FY) 2016.

A. Mission Description and Budget Item Justification

The Fiscal Year (FY) 2017 budget request funds the development of Networking and Mission Planning systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this Project support research, development, and test efforts in the Engineering and Manufacturing Development (EMD) phases of these systems.

The Brownout Rotorcraft Enhancement System (BORES) addresses tactical operations and training missions within Degraded Visual Environment (DVE) which restricts or severely reduces the aircrew's visibility due to atmospheric obscurants. BORES will initiate the use of DVE as a tactical advantage for Army Aviation. In addition, BORES will improve safety, reduce risk and add flexibility to aviation units by enhancing aircrew situational awareness through real-time detection and warning of terrain, obstacles and hazards. BORES will consist of integrated rotorcraft pilotage augmentation systems, sensor(s), software, software related firmware, and pilot to system interfaces and cueing devices. BORES will combine obscurant penetrating sensor(s) with aircraft state data via a fusion/synthetic vision system to provide an initial capability for ground taxi, hover, takeoff and landing modes of flight during brownout conditions.

The Aviation Data Exploitation Capability (ADEC) is an Army aviation automated information system program providing specific capabilities needed at the aviation unit level to implement and support improvements within aviation operations, safety, and training to increase operational effectiveness and situational awareness at all command echelons. ADEC provides a common and interoperable capability required to implement the DoD mandated Military Flight Operations Quality Assurance processes. ADEC will standardize flight scheduling/management, risk management, mission approval, and flight data analysis and visualization. ADEC provides interfaces to Centralized Aviation Flight Records System (CAFRS) to reduce data entry and the information technology footprint while enabling disconnected and split based operations.

The Aircraft Notebook (ACN) is an Army aviation automated information system program required to streamline the completion of aviation maintenance activities and the documentation required to maintain airworthiness for all Army aircraft. ACN implements The Army Maintenance Management System - Aviation (TAMMS-A) digital logbook functionality and integrates with CAFRS to reduce manual entries and increase data accuracy. ACN reduces the information technology footprint within an aviation unit by integrating multiple software applications such as platform software applications, interactive electronic technical manuals, and condition based maintenance plus tools onto one hardware platform.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) VU3 / Networking And Mission Planning
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The Aviation Logistics Enterprise-Platform (ALE-P) is the single logistics information system for all of Army aviation and serves as an extension to GCSS Army. ALE-P replaces the Unit Level Logistics System-Aviation (Enhanced) (ULLS-A[E]) and the Unmanned Aviation Systems-Initiative (UAS-I) systems. ALE-P provides necessary interfaces to GCSS-Army and other enterprise systems at Logistics Support Activity (LOGSA), Aviation and Missile Command (AMCOM), and Program Executive Office (PEO) Aviation. ALE-P interfaces with the ACN and ADEC at the unit level to maintain continuous airworthiness and aircraft historical records and provides the maintenance/readiness posture to the commander.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Brownout Rotorcraft System (BORES)/Degraded Visual Environment (DVE)</p> <p>Description: The BORES addresses tactical operations and training missions within DVE which restricts or severely reduces the aircrew's visibility due to atmospheric obscurants. BORES will initiate the use of DVE as a tactical advantage for Army Aviation. In addition, BORES will improve safety, reduce risk and add flexibility to aviation units by enhancing aircrew situational awareness through real-time detection and warning of terrain, obstacles and hazards. BORES will consist of integrated rotorcraft pilotage augmentation systems, sensor(s), software, software related firmware, and pilot to system interfaces and cueing devices. BORES will combine obscurant penetrating sensor(s) with aircraft state data via a fusion/synthetic vision system to provide an initial capability for ground taxi, hover, takeoff and landing modes of flight during brownout conditions.</p> <p>FY 2015 Accomplishments: Conducted technical design and development of DVE.</p> <p>FY 2016 Plans: Continue design and develop the initial technical system and sub-system specifications for the DVE/BORES. The DVE/BORES program will focus on the development of an Airworthiness Qualification Package, initiate identified aircraft trade studies with original equipment manufacturers, initiate program documentation, identify and begin modeling and simulation activities. Additionally, a Limited User Assessment will be conducted to inform the DVE/BORES program.</p> <p>FY 2017 Plans: Continue the design and develop the technical system and sub-system specifications for the DVE/BORES. The DVE/BORES program will identify airworthiness requirements for hardware and software, complete identified aircraft trade studies with original equipment manufacturers, continue the development of program documentation, and initiate modeling and simulation as risk reduction activities. Program efforts include the issuance of a contract request for proposal with subsequent source selection evaluation of proposals.</p>	20.000	15.000	80.541
<p>Title: Aviation Data Exploitation Capability (ADEC)</p> <p>Description: The ADEC is an Army aviation automated information system program providing specific capabilities needed at the aviation unit level to implement and support improvements within aviation operations, safety, and training to increase operational effectiveness and situational awareness at all command echelons. ADEC provides a common and interoperable capability required to implement the DoD mandated Military Flight Operations Quality Assurance processes. ADEC will standardize flight</p>	8.950	1.781	1.909

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) VU3 / Networking And Mission Planning
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>scheduling/management, risk management, mission approval, and flight data analysis and visualization. ADEC provides interfaces to CAFRS to reduce data entry and the information technology footprint while enabling disconnected and split based operations.</p> <p>FY 2015 Accomplishments: Initiated ADEC design, development, integration, and developmental and operational testing of the hardware and software version 1.0. Conducted ADEC design, development, and integration of software version 2.0.</p> <p>FY 2016 Plans: Continue ADEC design, development, integration, and developmental testing of software version 2.0.</p> <p>FY 2017 Plans: Complete ADEC development, integration, and developmental and operational testing of software version 2.0.</p>			
<p>Title: Aircraft Notebook (ACN)</p> <p>Description: The ACN is an Army aviation automated information system program required to streamline the completion of aviation maintenance activities and the documentation required to maintain airworthiness for all Army aircraft. ACN implements TAMMS-A digital logbook functionality and integrates with CAFRS to reduce manual entries and increase data accuracy. ACN reduces the information technology footprint within an aviation unit by integrating multiple software applications such as platform software applications, interactive electronic technical manuals, and condition based maintenance plus tools onto one hardware platform.</p> <p>FY 2015 Accomplishments: Performed development and integration of ACN hardware and software and Operational Test and Evaluation activities. Completed formal qualification software development testing and software user test.</p>	5.261	-	-
Accomplishments/Planned Programs Subtotals	34.211	16.781	82.450

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>	
• AA0712: Network and Mission Plan	102.930	108.807	74.752	-	74.752	139.458	144.555	120.898	135.305	Continuing	Continuing
• AA0723: Degraded Visual Environment	-	-	-	-	-	-	-	56.082	59.171	Continuing	Continuing

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / <i>Aircraft Avionics</i>	Project (Number/Name) VU3 / <i>Networking And Mission Planning</i>
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D. Acquisition Strategy

This project is comprised of multiple systems supporting aircraft avionics. While the detailed acquisition strategy varies from program to program, the general strategy is for each individual program to complete the development and testing efforts in coordination with the aircraft platforms on integration issues, use the various contracts of the aircraft platforms original equipment manufacturers on integration efforts, and utilize the Aviation & Missile Research, Development, and Engineering Center for software development. This requires the use of various contract methods and types to accomplish the aircraft avionics development efforts. All required acquisition program documentation is prepared.

E. Performance Metrics

N/A

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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 / 5				PE 0604201A / Aircraft Avionics				VU3 / Networking And Mission Planning							
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Support (ADEC)	Various	Program Manager Aviation Networks Mission Planning : Redstone Arsenal, AL	2.334	1.712	Jan 2015	-		-		-		-	0	4.046	0
PM Support (ACN)	Various	Program Manager Aviation Mission Networks Planning : Redstone Arsenal, AL	3.022	0.926	Feb 2015	-		-		-		-	0	3.948	0
PM Support (BORES/DVE)	Various	AMCOM : Redstone Arsenal, AL	2.196	0.800	Sep 2015	0.506	Sep 2016	3.649	Oct 2016	-		3.649	Continuing	Continuing	Continuing
Subtotal			7.552	3.438		0.506		3.649		-		3.649	-	-	-
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
Qualify ADEC software and hardware	Various	Aviation Missile Research Development Engineering Center (AMRDEC) : Redstone Arsenal, AL	6.746	4.603	Jun 2015	1.781	Apr 2016	1.028	Apr 2017	-		1.028	0	14.158	0
Qualify ACN software and hardware	Various	Aviation Missile Research Engineering Center (AMRDEC) : Redstone Arsenal, AL	6.935	2.003	Dec 2015	-		-		-		-	0	8.938	0
Develop and qualify the software and hardware for BORES/DVE	C/Various	Various : Various	0.000	-		-		61.182	Mar 2017	-		61.182	Continuing	Continuing	Continuing
Subtotal			13.681	6.606		1.781		62.210		-		62.210	-	-	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) VU3 / Networking And Mission Planning
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Engineering, Logistics, and Technical Support (ADEC)	Various	Army Test & Evaluation (ATEC), Aberdeen, MD; AMRDEC : Redstone Arsenal, AL	0.635	0.558	Feb 2015	-		0.480	Apr 2016	-		0.480	0	1.673	0
System Engineering, Logistics, and Technical Support (ACN)	Various	Army Test & Evaluation (ATEC), Aberdeen, MD; AMRDEC : Redstone Arsenal, AL	0.335	0.831	Mar 2015	-		-		-		-	0	1.166	0
System Engineering, Logistics, and Technical Support (BORES/DVE)	Various	Various : Various	2.000	2.857	Sep 2015	6.911	Sep 2016	1.098	Sep 2017	-		1.098	Continuing	Continuing	Continuing
Subtotal			2.970	4.246		6.911		1.578		-		1.578	-	-	-

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			
ADEC	Various	Army Test & Evaluation Command (ATEC), Aberdeen MD; AMRDEC : Redstone Arsenal, AL	1.880	2.077	Feb 2015	-		0.401	Apr 2016	-		0.401	0	4.358	0
ACN	Various	Army Test & Evaluation Command (ATEC), Aberdeen MD; AMRDEC : Redstone Arsenal, AL	3.423	1.501	Oct 2015	-		-		-		-	0	4.924	0
BORES/DVE	Various	Army Aviation & Missile Research Development & Engineering Center(AMRDEC) :	20.800	16.343	Sep 2015	7.583	Sep 2016	14.612	Sep 2017	-		14.612	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics				Project (Number/Name) VU3 / Networking And Mission Planning							
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
		Redstone Arsenal, AL													
Subtotal			26.103	19.921		7.583		15.013			-	15.013	-	-	-
			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			50.306	34.211		16.781		82.450			-	82.450	-	-	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) VU3 / Networking And Mission Planning
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Brownout Rotorcraft Enhancement System (BORES)/Degraded Visual E																												
Develop hardware and software (ADEC)																												
(1) Milestone B/C (ADEC)									▲																			
Develop hardware and software (ACN)																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) VU3 / Networking And Mission Planning
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Brownout Rotorcraft Enhancement System (BORES)/Degraded Visual Environment (DVE)	4	2011	4	2021
Develop hardware and software (ADEC)	2	2011	4	2017
Milestone B/C (ADEC)	3	2016	3	2016
Develop hardware and software (ACN)	1	2012	4	2016

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	5.792	18.843	34.642	-	34.642	61.215	82.223	83.159	49.061	Continuing	Continuing
<i>DX5: Electronic Warfare And Management Tool</i>	-	1.913	8.641	19.440	-	19.440	22.408	20.664	20.878	0.330	Continuing	Continuing
<i>DX6: Multi-Function Electronic Warfare (MFEW)</i>	-	0.000	0.000	1.369	-	1.369	24.525	47.194	49.437	36.322	Continuing	Continuing
<i>ET7: Radio Frequency Interference Mitigation</i>	-	0.000	0.000	4.151	-	4.151	4.309	4.220	2.528	1.926	Continuing	Continuing
<i>VS6: Integrated Electronic Warfare Systems</i>	-	3.879	10.202	9.682	-	9.682	9.973	10.145	10.316	10.483	Continuing	Continuing

Note

Projects DX6 and ET7 are new start programs in FY17.

A. Mission Description and Budget Item Justification

FY 2017 budget request funds Electronic Warfare Development. This program element (PE) encompasses engineering and manufacturing development for tactical electronic warfare (EW). The Integrated Electronic Warfare System (IEWS) is a system of systems capability set that integrates electronic attack, protect and support functions to dramatically improve the ability to seize, retain, and exploit an advantage within the electromagnetic spectrum (EMS). It is based on a modular, scalable and open architecture to allow Army Brigade Combat Team (BCT) and Joint Force Commander's to tailor capability responses against a variety of EW threats/scenarios.

The IEWS capability set is structured along three program lines of effort: 1) Project DX5 is Electronic Warfare Planning and Management Tools (EWPMT), 2) Project DX6 is Multi-Function EW (MFEW), and 3) Project VS6 Counter Radio-Controlled Improvised Explosive Devices (RCIED) Electronic Warfare (CREW) which provides current defensive electronic attack capability. Project ET7 is Radio Frequency Interference Mitigation (RIM) to resolve radio frequency interference and electromagnetic fratricide and enable electronic warfare and communications compatibility.

Project DX5 - EWPMT will provide the Electronic Warfare Officer (EWO) planning capabilities to coordinate, manage, and deconflict the use of the Electromagnetic Spectrum and synchronize spectrum operations within the Cyber Electromagnetic Activities (CEMA) cell. EWPMT will integrate data elements from Mission Command, Intelligence, and Fires to achieve a Common Operating Picture (COP) of the Electromagnetic Operational Environment.

Project DX6 - Multi-Function EW Airborne (MFEW-Air) is a 3 variant system of systems EW payload that will provide Offensive Electronic Attack (OEA) and Electronic Warfare Support (ES) from Tactical to Operational levels. MFEW will provide commanders from BCT to CORPS with an organic EW capability that dramatically improves a land force's ability to seize, retain, and exploit an advantage within the electromagnetic spectrum (EMS) in order to execute successful unified land operations. These

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>
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capabilities give the commander a competitive advantage by denying, degrading or modifying the enemy's ability to conduct command and control, ISR, and targeting, and allows the commander to optimize effects within the EMS at the time and place of their choosing.

Project ET7 – RIM will provide a cross cutting capability to centrally manage and provide oversight to identify, define, test, and coordinate development of Radio Frequency (RF) interference mitigation material solutions to resolve mutual RF interference and electromagnetic fratricide for SDS.

Project VS6 - Counter Radio Controlled Improvised Explosive Device (RCIED) Electronic Warfare (CREW) provides for protection for ground forces operating in vehicle convoys, single vehicle operations and fixed locations in all theatres of operations. It is programmable to migrate with the evolving threat and provides non-lethal capabilities which enable freedom of movement across depth/breadth of the operational environment.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	5.999	18.843	16.413	-	16.413
Current President's Budget	5.792	18.843	34.642	-	34.642
Total Adjustments	-0.207	0.000	18.229	-	18.229
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-0.207	-	18.229	-	18.229

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>				Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</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>DX5: Electronic Warfare And Management Tool</i>	-	1.913	8.641	19.440	-	19.440	22.408	20.664	20.878	0.330	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Electronic Warfare Planning and Management Tool (EWPMT) will provide the Electronic Warfare Officer (EWO) and Spectrum Manager the ability to control and manage the Electromagnetic Spectrum (EMS). EWPMT will provide: capabilities to plan, coordinate, manage, and deconflict electronic warfare (EW) activities, the ability to employ assets to conduct offensive EW targeting, use of the Electromagnetic Spectrum and the ability to synchronize EW spectrum operations within the Cyber Electromagnetic Activities (CEMA) cell. EWPMT is a suite of software tools and applications that will provide a spectrum Common Operating Picture for the EWO and Spectrum Manager. EWPMT will integrate data elements from Mission Command, Intelligence, and Fires to achieve a Common Operating Picture of the Electromagnetic Operational Environment.

Justification:

FY2017 funds in the amount of \$19.440 million will provide Capability Drop 2 (CD2) development, initial test and support activities for the EWPMT program.

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

	FY 2015	FY 2016	FY 2017
Title: EWPMT	1.913	8.641	19.440
Description: EWPMT is a suite of software tools and applications that will allow the Commander and staff a mission command capability to plan, coordinate, manage, and de-conflict unit EW and spectrum management activities.			
FY 2015 Accomplishments: Funds provide for test support activities and Product Management office operations for the EWPMT program.			
FY 2016 Plans: Funds provide for next Capability Drop (CD) development, integration, test support activity and Product Management Office operations for EWPMT program.			
FY 2017 Plans: Funds provided for CD2 software development, test support activities, integration and program management office operations for the EWPMT program			
Accomplishments/Planned Programs Subtotals	1.913	8.641	19.440

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</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: <i>K00002 - EW Planning & Management Tools (EWPMT)</i>	-	2.556	3.235	-	3.235	5.805	5.947	6.061	19.135	Continuing	Continuing

Remarks

D. Acquisition Strategy

EWPMT is an Automated Information System (AIS) that will follow an evolutionary acquisition strategy using an Incrementally Deployed Software Intensive Program for rapid development and continuous product improvements. The overall strategy is to deploy software Capability Drops (CDs) to allow an incremental merger of the Electronic Warfare and Spectrum Management software tools.

E. Performance Metrics

N/A

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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 / 5				PE 0604270A / <i>Electronic Warfare Development</i>				DX5 / <i>Electronic Warfare And Management Tool</i>								
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	
PMO Staff/Travel	Allot	PM Electronic Warfare & Cyber : Aberdeen Proving Ground, MD	0.013	0.148	Mar 2015	0.804	Oct 2015	1.112	Dec 2016	-		1.112	Continuing	Continuing	0	
Subtotal			0.013	0.148		0.804		1.112		-		1.112	-	-	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	
EMD Contract - EWPMT CD2	C/IDIQ	Raytheon : Fort Wayne, IN	0.000	-		6.000	Feb 2016	14.170	Feb 2017	-		14.170	Continuing	Continuing	0	
Subtotal			0.000	-		6.000		14.170		-		14.170	-	-	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	
EWPMT Technical and Engineering Support	Allot	Various : Various	0.000	1.765	Dec 2015	-		3.432	Dec 2016	-		3.432	Continuing	Continuing	0	
Subtotal			0.000	1.765		-		3.432		-		3.432	-	-	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	
EWPMT Test support	MIPR	Various : Various	0.000	-		1.837	Nov 2015	0.726	Aug 2017	-		0.726	Continuing	Continuing	0	
Subtotal			0.000	-		1.837		0.726		-		0.726	-	-	0.000	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>				Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</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	0.013	1.913	8.641		19.440	-	19.440	-	-	0.000	

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
EWPMT Contract																																
Development and Test of CD 1																																
(1) Test CD 1 (Government Confidence test)									▲ 1																							
(2) MSC / Limited Fielding Decision of CD1									▲ 2																							
CD1 Fielding																																
Development and Test of CD2																																
(3) Test CD2 (Government Confidence test)																	▲ 3															
Development and Test of Additional CDs																																
Fielding of Additional CDs																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EWPMT Contract	1	2014	1	2020
Development and Test of CD 1	4	2014	2	2016
Test CD 1 (Government Confidence test)	2	2016	2	2016
MSC / Limited Fielding Decision of CD1	3	2016	3	2016
CD1 Fielding	4	2016	4	2017
Development and Test of CD2	2	2016	2	2018
Test CD2 (Government Confidence test)	4	2017	4	2017
Development and Test of Additional CDs	1	2018	4	2021
Fielding of Additonal CDs	1	2018	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>				Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</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
DX6: <i>Multi-Function Electronic Warfare (MFEW)</i>	-	0.000	0.000	1.369	-	1.369	24.525	47.194	49.437	36.322	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY2017.

A. Mission Description and Budget Item Justification

Multi-Function EW Airborne (MFEW-Air) is a 3 variant system of systems EW payload that will provide Offensive Electronic Attack (OEA) and Electronic Warfare Support (ES) from Tactical to Operational levels. MFEW will provide commanders from BCT to CORPS with an organic EW capability that dramatically improves a land force's ability to seize, retain, and exploit an advantage within the electromagnetic spectrum (EMS) in order to execute successful unified land operations. These capabilities give the commander a competitive advantage by denying, degrading or modifying the enemy's ability to conduct command and control, ISR, and targeting, and allows the commander to optimize effects within the EMS at the time and place of their choosing.

Through a remote operated networked, layered, and integrated approach MFEW Air provides decisive non-lethal OEA capabilities against adversary C2, PNT, ISR, and Radar systems. MFEW Air will also provide the capability to sense the EME enabling the detection, location, and identification of friendly and adversary emitters operating within the Electromagnetic Environment (EME) significantly enhancing the commanders understanding of the EME within their AOR. MFEW Air variants will consist of Air Large (Class IV UAS), Air Small (Class III), and Rotary wing payloads that retain the capability to operate independently but when integrated into a system of systems layered approach that also include the MFEW Ground variants will provide extended target frequency range coverage, increased target geolocation precision, increased target standoff range, and increased persistence on target in all weather conditions day or night.

Justification:

FY2017 Base dollars in the amount of \$1.369 million will fund statutory and regulatory Milestone/Contract documentation preparation and Program Management Support. This project is a new start in FY2017.

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

	FY 2015	FY 2016	FY 2017
Title: Multi-Function EW (MFEW) is a System of Systems that will provide the BCT Commander with an offensive Electronic Attack (EA) and Electronic Support (ES).	-	-	1.369
Description: MFEW: Develop MS B documentation in support of FY2018 Milestone B.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
MFEW: Develop MS B documentation in support of FY2018 Milestone B.			
Accomplishments/Planned Programs Subtotals	-	-	1.369

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

N/A

Remarks

D. Acquisition Strategy

The Multi-Function EW (MFEW) is a System of Systems that will provide the BCT Commander with an organic offensive Electronic Attack (EA), and Electronic Support (ES), and Defensive Electronic Attack (DEA) capability and some defensive electronic attack. Initially, an air large variant payload will be developed. MFEW will deliver scalable non-lethal effects to support Unified Land Operations and protect personnel, equipment and facilities.

A competitive contract award is planned for 3QFY18.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Office Support	Sub Allot	PM Electronic Warfare & Cyber : Aberdeen Proving Ground, MD	0.000	-		-		0.126	Jan 2017	-		0.126	0	0.126	0
Subtotal			0.000	-		-		0.126		-		0.126	0.000	0.126	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Engineering	TBD	TBD : Aberdeen Proving Ground, MD	0.000	-		-		0.500	Jan 2017	-		0.500	0	0.500	0
Government Engineering	MIPR	TBD : Aberdeen Proving Ground, MD	0.000	-		-		0.500	Jan 2017	-		0.500	0	0.500	0
Technical Support	TBD	TBD : Aberdeen Proving Ground, MD	0.000	-		-		0.243	Jan 2017	-		0.243	0	0.243	0
Subtotal			0.000	-		-		1.243		-		1.243	0.000	1.243	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	1.369	-	1.369	0.000	1.369	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
MS B Documentation Preparation (Air Large)																																				
(1) Request For Proposal (RFP) Decision Point (Air Large)																																				
(2) Milestone B (Air Large)																																				
(3) Development Contract Award (Air Large)																																				
MFEW Development (Air Large)																																				
(4) Milestone C (Air Large)																																				
Developmental Test (DT)/Flight Testing (Air Large)																																				
Operational Assessment (OA) (Air Large)																																				
IOTE (Air Large)																																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MS B Documentation Preparation (Air Large)	3	2017	3	2018
Request For Proposal (RFP) Decision Point (Air Large)	1	2018	1	2018
Milestone B (Air Large)	3	2018	3	2018
Development Contract Award (Air Large)	3	2018	3	2018
MFEW Development (Air Large)	4	2018	1	2021
Milestone C (Air Large)	1	2021	1	2021
Developmental Test (DT)/Flight Testing (Air Large)	4	2019	3	2021
Operational Assessment (OA) (Air Large)	3	2020	3	2020
IOTE (Air Large)	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>				Project (Number/Name) ET7 / <i>Radio Frequency Interference Mitigation</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>ET7: Radio Frequency Interference Mitigation</i>	-	0.000	0.000	4.151	-	4.151	4.309	4.220	2.528	1.926	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This project is a new start in FY17.

A. Mission Description and Budget Item Justification

Radio Frequency Interference Mitigation (RIM) is a cross cutting capability to centrally manage and provide oversight to identify, define, test, and coordinate development of Radio Frequency (RF) interference mitigation material solutions to resolve mutual RF interference and electromagnetic fratricide for Spectrum Dependent Systems (SDS).

Centralized management of RIM offers a holistic approach for identification, system of systems engineering, developmental testing, and maturing of RIM solutions to address current and evolving RF interference issues. User and acquisition communities will synchronize, integrate, and codify RIM requirements to facilitate the cross cutting approach necessary for the efficient procurement of common RIM products. This approach will eliminate the need for separate hardware and platform integration research and development efforts for SDS and platforms. An integrated approach will eliminate the need for separate hardware and platform integration research and development efforts for SDS and platform Program Managers. RIM products are intended to preserve the investment that the Army has made in current Electronic Warfare (EW) and Mission Command Transport SDS and provide a strategy for future efforts for new SDS development with integrated RIM solutions.

Justification:

FY 2017 Base funds in the amount of \$4.151 million will provide engineering support activities to develop tunable filters to mitigate interference between Force Protection and Communication systems. This project is a new start in FY17.

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

	FY 2015	FY 2016	FY 2017
Title: RF Interference Mitigation	-	-	4.151
Description: RIM is a System of Systems Enterprise approach that will allow Spectrum Dependent Systems to co-exist with Force Protection assets.			
FY 2017 Plans: Funds provide engineering support activities to develop tunable filters to mitigate interference between Force Protection and Communication systems.			
Accomplishments/Planned Programs Subtotals	-	-	4.151

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) ET7 / <i>Radio Frequency Interference Mitigation</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy Radio Frequency (RF) Interference Mitigation (RIM) will follow a System of Systems, enterprise strategy to develop integrated hardware filters and mounts to mitigate RF interference on Army platforms. RIM is developing materiel solutions (test articles) for designated platforms to ensure compatibility among electronic warfare and communication systems. Designated platforms will procure and integrate RIM material solutions within their Weapon System technologies.		
E. Performance Metrics N/A		

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) ET7 / <i>Radio Frequency Interference Mitigation</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	MIPR	PM Electronic Warfare & Cyber : APG, MD	0.000	-		-		0.400	Jan 2017	-		0.400	Continuing	Continuing	0
Subtotal			0.000	-		-		0.400		-		0.400	-	-	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			
Test Articles	TBD	TBD : TBD	0.000	-		-		2.295	Jun 2017	-		2.295	Continuing	Continuing	0
Subtotal			0.000	-		-		2.295		-		2.295	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	Allot	Various : Various	0.000	-		-		1.456	Mar 2017	-		1.456	Continuing	Continuing	0
Subtotal			0.000	-		-		1.456		-		1.456	-	-	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	4.151	-	4.151	-	-	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) ET7 / <i>Radio Frequency Interference Mitigation</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Development for Tunable Filters (Test Articles)									Develop Tunable Filters																			
(1) Developmental Testing for Tunable Filters																					▲ 1							
Development for Interference Cancellation Technologies (ICT)																	Develop ICT											
(2) Developmental Testing for ICT																					▲ 2							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) ET7 / <i>Radio Frequency Interference Mitigation</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Development for Tunable Filters (Test Articles)	3	2017	4	2019
Developmental Testing for Tunable Filters	2	2018	2	2019
Development for Interference Cancellation Technologies (ICT)	2	2018	4	2021
Developmental Testing for ICT	2	2019	2	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>				Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
VS6: <i>Integrated Electronic Warfare Systems</i>	-	3.879	10.202	9.682	-	9.682	9.973	10.145	10.316	10.483	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Counter Radio Controlled Improvised Explosive Device (RCIED) Electronic Warfare (CREW) provides for protection for ground forces operating in vehicle convoys, single vehicle operations and fixed locations in all theatres of operations. It is programmable to migrate with the evolving threat and provides non-lethal capabilities which enable freedom of movement across depth/breadth of the operational environment.

Justification: FY2017 Base dollars in the amount of \$9.682 million continues to support the development of CREW relevancy, hardware/software, including incorporation of advanced techniques development against emerging and global threats, enhanced networking capability, incorporate Systems Security Engineering (SSE), integrating Electronic Warfare Planning Capability, and Program Management Support.

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

	FY 2015	FY 2016	FY 2017
Title: IEWS	3.879	10.202	9.682
Description: The IEW System (IEWS) Systems of Systems (SoS) will consist of Electronic Warfare Planning and Management Tool (EWPMT), Multi-Function EW (MFEW), and Defensive Electronic Attack (DEA).			
FY 2015 Accomplishments: CREW Relevancy: Operational Testing of DTI hardware and develop contract documentation in support of relevancy contract.			
FY 2016 Plans: CREW Relevancy: Award development contract and begin developing Hardware/Software solutions to ensure systems remain relevant against Global Threats.			
FY 2017 Plans: CREW Relevancy: Continue the development and testing of HW/SW solutions for CREW-2 Duke.			
Accomplishments/Planned Programs Subtotals	3.879	10.202	9.682

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
• CREW: VA8000 CREW	-	2.960	-	-	-	-	-	-	-	0	2.960

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</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>
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Remarks

D. Acquisition Strategy

CREW Relevancy will provide for the continued growth and conduct of research, development and testing against emerging Radio Controlled Improvised Explosive Device (RCIED) threats. Continuing research, development and testing will allow the technology to remain relevant and responsive to all approved user requirements.

A five year indefinite delivery indefinite quantity contract will be awarded on a competitive basis. This will enable maximum flexibility as the technology matures and as the threat changes.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMO Staff/Travel for EWPMT	Allot	PM Electronic Warfare & Cyber : Aberdeen Proving Ground, MD	4.956	-		-		-		-		-	0	4.956	0
Program and Technical Assistance support	C/CPFF	TBD : Aberdeen Proving Ground, MD	3.789	-		-		-		-		-	0	3.789	0
PMO Staff/Travel for CREW-2 Program Office	Allot	PM Electronic Warfare & Cyber : Aberdeen Proving Ground, MD	0.498	0.361	Oct 2014	0.822	Oct 2015	0.675	Oct 2016	-		0.675	0	2.356	0
Subtotal			9.243	0.361		0.822		0.675		-		0.675	0.000	11.101	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			
EMD Contract - EWPMT	C/CPIF	SOTERA Defense Solutions Herndon, VA : RAYTHEON Fort Wayne, IN	38.318	-		-		-		-		-	0	38.318	0
IEWS Engineering and Development	MIPR	I2WD : Aberdeen MD	5.557	-		-		-		-		-	0.000	5.557	0.000
Risk Reduction Studies for MFEW	MIPR	Various : Various	7.969	-		-		-		-		-	0.000	7.969	0
Develop CREW H/W and S/W solutions	C/CPFF	TBD : TBD	0.000	0.297	Feb 2016	7.635	Feb 2016	6.066	Feb 2017	-		6.066	0	13.998	0
Subtotal			51.844	0.297		7.635		6.066		-		6.066	0.000	65.842	0.000

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>
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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			
MFEW Technical/ Engineering Support - Contractor	C/CPFF	GTRI : Atlanta, GA	2.046	-		-		-		-		-	0	2.046	0
Government Engineering Support	MIPR	CERDEC : Aberdeen Proving Ground, MD	3.314	0.855	Dec 2014	-		-		-		-	0	4.169	0
EWPMT Architecture Study	MIPR	Various : Various	1.194	-		-		-		-		-	0	1.194	0
CREW-2 Engineering support	C/CPFF	Various : Various	0.125	0.992	Dec 2014	0.822	Nov 2015	1.278	Nov 2016	-		1.278	0	3.217	0
CREW-2 Government Engineering	MIPR	Various : Various	0.427	0.859	Feb 2015	0.923	Nov 2015	0.538	Nov 2016	-		0.538	0	2.747	0
Subtotal			7.106	2.706		1.745		1.816		-		1.816	0.000	13.373	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			
EWPMT Test support	MIPR	Various : TBD	1.096	-		-		-		-		-	0.000	1.096	0
Operational Assessment (OA) of DV4 systems	MIPR	Yuma Proving Ground : Yuma, AZ	1.950	-		-		-		-		-	0	1.950	0
Continous evaluation of CREW-2 technologies	MIPR	Yuma Proving Ground Yuma, AZ : YPG, AZ	0.000	0.515	Apr 2015	-		1.125	Mar 2017	-		1.125	0	1.640	0
Subtotal			3.046	0.515		-		1.125		-		1.125	0.000	4.686	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	71.239	3.879	10.202	9.682	-	9.682	0.000	95.002	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CREW Relevancy Development Contract Award					Award																							
CREW Relevancy Task Order 1																												
CREW Relevancy Task Order 2																												
CREW Relevancy Task Order 3																												
Continuous evaluation of CREW Relevancy																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CREW Relevancy Development Contract Award	2	2016	2	2016
CREW Relevancy Task Order 1	2	2016	2	2018
CREW Relevancy Task Order 2	2	2018	2	2020
CREW Relevancy Task Order 3	2	2020	2	2021
Continuous evaluation of CREW Relevancy	2	2017	4	2021

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604280A / <i>Joint Tactical Radio</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	9.454	4.546	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.000
DZ5: <i>Handheld, Manpack and Small Form Fit (JTRS HMS)</i>	-	9.454	4.546	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.000

Note

In coordination with G8 and the Army Budget Office, HMS funding PE 0604280A was realigned under PE 0605042A in PB17. The HMS program will execute funding under two separate project codes for Manpack Radio (Project Code FA1) and Rifleman Radio (Project Code FA2) in FY17 and out.

A. Mission Description and Budget Item Justification

Handheld, Manpack, and Small Form Fit (HMS) is a materiel solution meeting the requirements for a Software Communications Architecture (SCA) compliant hardware system hosting SCA-compliant Government purpose rights software waveforms (applications). HMS is an Acquisition Category (ACAT) ID Program that encompasses specific requirements to support the US Army, US Air Force, US Navy, US Marine Corps and the Special Operations Command (SOCOM) communication needs.

HMS provides voice and data communications to the tactical edge/most disadvantaged Warfighter with an on the move, at the halt, and stationary Line of Sight (LOS)/ Beyond Line of Sight (BLOS) capability for both dismounted personnel and platforms. HMS radios are software re-programmable, networkable multi-mode system (of systems) capable of simultaneous voice, data and video communications. The embedded Small Form Fit (SFF) versions of HMS may be used for Unmanned Vehicles and other platform applications.

HMS is structured as a single program of record. The program has completed the Engineering Manufacturing and Development Phase and received Milestone C approval on 17 June 2011 with Low Rate Initial Production configured radios.

HMS is currently executing a May 2014 approved acquisition strategy to procure modified Non-Developmental Items (NDI) through full and open competition open to all potential industry partners. Two contracts will be awarded in support of this effort. The first contract will procure NDI Secret and Below Rifleman Radios (RR) for use in a classified environment. It was awarded on 29 April 2015. The RR ports the Soldier Radio Waveform (SRW)-Army managed waveform. The second contract will procure Manpack (MP) radios for use in a classified environment. Waveforms to be ported to the MP include: SRW, Single Channel Ground and Airborne Radio System (SINCGARS)-Army managed waveform, Satellite Communications (SATCOM)-Army managed waveform, and Mobile-User Objective System (MUOS)-Navy managed waveform.

The Army will award Firm Fixed-Price (FFP) Indefinite Delivery Indefinite Quantity (IDIQ) Contracts through a multiple step selection process:

- a. Award FFP Contracts and initial delivery orders to all qualified vendors based on technical acceptability and demonstrations (3QFY15 for RR and 3QFY16 for MP).
- b. Award second delivery orders based on qualification test results (4QFY15 for RR and 1QFY17 for MP)
- c. Award FRP delivery orders based on operational assessments and best value trade off construct (2QFY17 for RR and 4QFY18 for MP).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604280A / <i>Joint Tactical Radio</i>
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The FY 2017 budget will provide funding that is necessary to execute the required full and open competition contract strategy for the RR and MP products. Specifically, the funding is needed to conduct testing for the MP candidate products to demonstrate compliance with program requirements; assess effectiveness, suitability, and survivability; to obtain material release for FRP; and to fully fund the full and open competition Operational Evaluation on the MP candidate radios as laid out in the HMS Acquisition Strategy approved May 2014. The funding will also support safety, spectrum supportability, and other certifications necessary to prepare the products for fielding.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	9.827	9.861	6.154	-	6.154
Current President's Budget	9.454	4.546	0.000	-	0.000
Total Adjustments	-0.373	-5.315	-6.154	-	-6.154
• Congressional General Reductions	-0.373	-			
• Congressional Directed Reductions	-	-5.315			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Realignment under new PE	-	-	-6.154	-	-6.154

Change Summary Explanation

FY2015 funding decreased from previous President's Budget to Current BES/President's Budget because of a congressional general reduction. A FY2016 \$5.315M Congressional Mark was assessed against HMS RDTE funding due to a delay in schedule of the Rifleman Radio Operational Test. The funding associated with FY2017 was realigned to PE 0605042A.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604280A / Joint Tactical Radio				Project (Number/Name) DZ5 / Handheld, Manpack and Small Form Fit (JTRS HMS)			
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
DZ5: Handheld, Manpack and Small Form Fit (JTRS HMS)	-	9.454	4.546	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In coordination with G8 and the Army Budget Office, HMS funding PE 0604280A was realigned under PE 0605042A in PB17. The HMS program will execute funding under separate project codes for Manpack Radio (Project Code FA1) and Rifleman Radio (Project Code FA2) in FY17 and out.

A. Mission Description and Budget Item Justification

Handheld, Manpack, and Small Form Fit (HMS) is a materiel solution meeting the requirements for a Software Communications Architecture (SCA) compliant hardware system hosting SCA-compliant Government purpose rights software waveforms (applications). HMS is an Acquisition Category (ACAT) ID Program that encompasses specific requirements to support the US Army, US Air Force, US Navy, US Marine Corps and the Special Operations Command (SOCOM) communication needs.

HMS provides voice and data communications to the tactical edge/most disadvantaged Warfighter with an on the move, at the halt, and stationary Line of Sight (LOS)/ Beyond Line of Sight (BLOS) capability for both dismounted personnel and platforms. HMS radios are software re-programmable, networkable multi-mode system (of systems) capable of simultaneous voice, data and video communications. The embedded Small Form Fit (SFF) versions of HMS may be used for Unmanned Vehicles and other platform applications.

HMS is structured as a single program of record. The program has completed the Engineering Manufacturing and Development Phase and received Milestone C approval on 17 June 2011 with Low Rate Initial Production configured radios.

HMS is currently executing a May 2014 approved acquisition strategy to procure modified Non-Developmental Items (NDI) through full and open competition open to all potential industry partners. Two contracts will be awarded in support of this effort. The first contract will procure NDI Secret and Below Rifleman Radios (RR) for use in a classified environment. It was awarded on 29 April 2015. The RR ports the Soldier Radio Waveform (SRW)-Army managed waveform. The second contract will procure Manpack (MP) radios for use in a classified environment. Waveforms to be ported to the MP include: SRW, Single Channel Ground and Airborne Radio System (SINCGARS)-Army managed waveform, Satellite Communications (SATCOM)-Army managed waveform, and Mobile-User Objective System (MUOS)-Navy managed waveform.

The Army will award Firm Fixed-Price (FFP) Indefinite Delivery Indefinite Quantity (IDIQ) Contracts through a multiple step selection process:

- a. Award FFP Contracts and initial delivery orders to all qualified vendors based on technical acceptability and demonstrations (3QFY15 for RR and 3QFY16 for MP).
- b. Award second delivery orders based on qualification test results (4QFY15 for RR and 1QFY17 for MP)
- c. Award FRP delivery orders based on operational assessments and best value trade off construct (2QFY17 for RR and 4QFY18 for MP).

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604280A / <i>Joint Tactical Radio</i>	Project (Number/Name) DZ5 / <i>Handheld, Manpack and Small Form Fit (JTRS HMS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: HMS</p> <p>Description: Handheld, Manpack, and Small Form Fit (HMS) is a materiel solution meeting the requirements for a Software Communications Architecture (SCA) compliant hardware system hosting SCA-compliant Government purpose rights software waveforms (applications). HMS is an Acquisition Category (ACAT) ID Program that encompasses specific requirements to support the US Army, US Air Force, US Navy, US Marine Corps and the Special Operations Command (SOCOM) communication needs.</p> <p>HMS provides voice and data communications to the tactical edge/most disadvantaged Warfighter with an on the move, at the halt, and stationary Line of Sight (LOS)/ Beyond Line of Sight (BLOS) capability for both dismounted personnel and platforms. HMS radios are software re-programmable, networkable multi-mode system (of systems) capable of simultaneous voice, data and video communications. The embedded Small Form Fit (SFF) versions of HMS may be used for Unmanned Vehicles and other platform applications.</p> <p>HMS is structured as a single program of record. The program has completed the Engineering Manufacturing and Development Phase and received Milestone C approval on 17 June 2011 with Low Rate Initial Production configured radios.</p> <p>HMS is currently executing a May 2014 approved acquisition strategy to procure modified Non-Developmental Items (NDI) through full and open competition open to all potential industry partners. Two contracts will be awarded in support of this effort. The first contract will procure NDI Secret and Below Rifleman Radios (RR) for use in a classified environment. It was awarded on 29 April 2015. The RR ports the Soldier Radio Waveform (SRW)-Army managed waveform. The second contract will procure Manpack (MP) radios for use in a classified environment. Waveforms to be ported to the MP include: SRW, Single Channel Ground and Airborne Radio System (SINCGARS)-Army managed waveform, Satellite Communications (SATCOM)-Army managed waveform, and Mobile-User Objective System (MUOS)-Navy managed waveform.</p> <p>The Army will award Firm Fixed-Price (FFP) Indefinite Delivery Indefinite Quantity (IDIQ) Contracts through a multiple step selection process:</p> <ol style="list-style-type: none"> Award FFP Contracts and initial delivery orders to all qualified vendors based on technical acceptability and demonstrations (3QFY15 for RR and 3QFY16 for MP). Award second delivery orders based on qualification test results (4QFY15 for RR and 1QFY17 for MP) Award FRP delivery orders based on operational assessments and best value trade off construct (2QFY17 for RR and 4QFY18 for MP). <p>FY 2015 Accomplishments:</p>	9.454	4.546	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604280A / <i>Joint Tactical Radio</i>	Project (Number/Name) DZ5 / <i>Handheld, Manpack and Small Form Fit (JTRS HMS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
The FY 2015 budget provided funding to continue executing the full and open competition testing strategy for the Rifleman and Manpack products. The remaining funding is being used primarily to support the Rifleman Radio Operational Test.			
FY 2016 Plans: The FY 2016 budget will provide funding to continue executing the full and open competition testing strategy for the Rifleman and Manpack products. Specifically, the funding is needed to conduct the Rifleman Radio Operational Test and the Manpack Radio Qualification Test.			
Accomplishments/Planned Programs Subtotals	9.454	4.546	-

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: 0605042A, FA1: <i>Manpack Radio</i>	-	-	14.819	-	14.819	0.108	1.570	2.129	3.825	Continuing	Continuing
• RDTE: 0605042A, FA2: <i>Rifleman Radio</i>	-	-	4.005	-	4.005	5.309	5.437	7.466	17.716	Continuing	Continuing
• OPA: B90000, B90210: <i>JTRS Cluster 5 (Handheld)</i>	14.200	34.910	-	-	-	-	-	-	-	0.000	49.110
• OPA: B90000, B90215: <i>JTRS (Manpack)</i>	26.511	29.730	-	-	-	-	-	-	-	0.000	56.241
• OPA: B95004, B95006: <i>Handheld Radio</i>	-	-	43.903	-	43.903	52.782	53.490	54.959	50.294	Continuing	Continuing
• OPA: B95004, B95007: <i>Manpack Radio</i>	-	-	230.803	-	230.803	353.716	360.177	360.289	388.711	Continuing	Continuing

Remarks
HMS RDTE FY16 and prior year funding is held under PE 0604280A Joint Tactical Radios. Due to a request to provide more transparency into the program, HMS RDTE funding will move to PE: 0605042A Tactical Network Radio Systems (Low-Tier): FA1 Manpack Radio and FA2 Rifleman Radio. HMS procurement funding can be found under Standard Study Number (SSN) B90210 JTRS Cluster 5 (Handheld) and SSN B90215 JTRS (Manpack) for FY16 & prior. Procurement funding for FY17 and beyond will be found in SSN B95004: SSN B95006 Handheld and SSN B95007 Manpack.

D. Acquisition Strategy
HMS is currently executing a May 2014 approved acquisition strategy to procure modified Non-Developmental Items (NDI) through full and open competition open to all potential industry partners. Two contracts will be awarded in support of this effort. The first contract will procure NDI Secret and Below Rifleman Radios for use in a classified environment. It was awarded on 29 April 2015. The Rifleman Radio ports the Soldier Radio Waveform (SRW)-Army managed waveform. The second

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604280A / Joint Tactical Radio	Project (Number/Name) DZ5 / Handheld, Manpack and Small Form Fit (JTRS HMS)

contract will procure NDI Manpack radios for use in a classified environment. Waveforms to be ported to HMS Manpack include: SRW, Single Channel Ground and Airborne Radio System (SINCGARS)-Army managed waveform, Satellite Communications (SATCOM)-Army managed waveform, and Mobile-User Objective System (MUOS)-Navy managed waveform.

E. Performance Metrics

N/A

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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 / 5				PE 0604280A / Joint Tactical Radio				DZ5 / Handheld, Manpack and Small Form Fit (JTRS HMS)								
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	Award Date	Cost To Complete	Total Cost	Target Value of Contract
Project Management Office Support	Various	PEO C3T & CECOM: : APG, MD	0.280	0.532		0.156		-		-		-		0	0.968	0.820
Subtotal			0.280	0.532		0.156		-		-		-		0.000	0.968	0.820
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	Award Date	Cost To Complete	Total Cost	Target Value of Contract
HMS JTRS System, Design & Development	C/CPAF	General Dynamics D4 Systems: : Scottsdale, AZ	21.720	-		-		-		-		-		0	21.720	21.720
Subtotal			21.720	-		-		-		-		-		0.000	21.720	21.720
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	Award Date	Cost To Complete	Total Cost	Target Value of Contract
HMS JTRS Engineering/ Technical Support	Various	PEO C3T, ARL, ESP, CECOM, CERDEC, LCMC, Various: : APG, MD; Various	0.300	0.446		-		-		-		-		0	0.746	1.605
Subtotal			0.300	0.446		-		-		-		-		0.000	0.746	1.605
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	Award Date	Cost To Complete	Total Cost	Target Value of Contract
Follow on Delta Development & Testing	Various	EPG, AEC, MBL, ARLSLAD, CERDEC, OTC, JITC, Various: : Ft	1.952	8.476		4.390		-		-		-		0	14.818	19.795

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604280A / <i>Joint Tactical Radio</i>	Project (Number/Name) DZ5 / <i>Handheld, Manpack and Small Form Fit (JTRS HMS)</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Huachuca, AZ; Ft Benning, GA; APG, MD; Various													
Subtotal			1.952	8.476		4.390		-		-		-	0.000	14.818	19.795
			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			24.252	9.454	4.546	-	-	-	0.000	38.252	43.940				

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604280A / Joint Tactical Radio	Project (Number/Name) DZ5 / Handheld, Manpack and Small Form Fit (JTRS HMS)
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
RR Customer Test (CT)					RRCT																							
Manpack (MP) Qualification Test (QT)					MPQT																							
RR Operational Test (OT) - FRP					RROT																							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604280A / <i>Joint Tactical Radio</i>	Project (Number/Name) DZ5 / <i>Handheld, Manpack and Small Form Fit (JTRS HMS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
RR Customer Test (CT)	4	2015	3	2016
Manpack (MP) Qualification Test (QT)	4	2016	1	2017
RR Operational Test (OT) - FRP	4	2016	1	2017

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604290A / Mid-tier Networking Vehicular Radio (MNVR)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	9.355	8.763	12.172	-	12.172	10.700	0.000	8.000	1.700	Continuing	Continuing
DW1: Mid-Tier Wideband Networking Vehicular Radio Mnvr	-	9.355	8.763	12.172	-	12.172	10.700	0.000	8.000	1.700	Continuing	Continuing

Note

Milestone C (MS C) moved from 4QFY 2015 to 3QFY 2016 to conduct Vice Chief of Staff, Army (VCSA) directed Mid-Tier Assessment at Network Integration Evaluation (NIE) 16.2.

A. Mission Description and Budget Item Justification

The Mid-tier Networking Vehicular Radios (MNVR) enables the extension of data services within the tactical network through seamless integration of the upper and lower tiers; providing software-defined, multi-channel networking radios for a wide variety of Army tactical vehicles to meet the Army's requirement for the Mid-tier Wideband Networking (MWN) capability. The MNVR provides self-forming and self-healing communication networks from the brigade to the platoon level throughout the full range of military operations.

The MNVR, a modified Non-Developmental Item (NDI), supports Army Mission Command operational requirements with a multi-channel, Type 1 (supporting multiple independent levels of security), vehicular mounted radio hosting networking waveforms Wideband Networking Waveform (WNW) and Soldier Radio Waveform (SRW). The MNVR narrows the data capability gap at the Brigade Combat Team (BCT) company level and provides the capability to build a data extension to the lowest echelons, and then enables the extension of services from the Forward Operating Base (FOB) to the platform. MNVR provides a dynamic, scalable, On-the-Move (OTM) network architecture, connecting the Soldier to the Mission Command (MC) Network and enhances capability to exchange voice and data simultaneously and faster than current systems. The advanced network waveforms provide rapid distribution of data and imagery with increased information assurance protection and automatic routing across complex terrain. The system operates Internet Protocol (IP) based networking waveforms offering increased data throughput through self-forming, self-healing, managed communication networks. Its route and retransmit functionality links waveforms in different frequency bands, within the 2 Megahertz (MHz) to 2 Gigahertz (GHz) range, to form one coherent network. MNVR nomenclature has been designated as AN/VRC-118(V)1.

A single award contract was awarded on 24 September 2013, Indefinite Delivery Indefinite Quantity (IDIQ), firm fixed price, 3-year ordering period. Production of 232 radios for Test & Evaluation and certification purposes was completed in 3QFY 2014. Upon successful MS C decision in 3QFY 2016, Product Manager (PdM) MNVR will prepare for Initial Operational Test and Evaluation (IOT&E) of the current system, and procure platform integration assets.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	9.725	8.763	7.432	-	7.432
Current President's Budget	9.355	8.763	12.172	-	12.172
Total Adjustments	-0.370	0.000	4.740	-	4.740
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-0.370	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	4.740	-	4.740

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>				Project (Number/Name) DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</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
DW1: <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>	-	9.355	8.763	12.172	-	12.172	10.700	0.000	8.000	1.700	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Milestone C (MS C) moved from 4QFY 2015 to 3QFY 2016 to conduct Vice Chief of Staff, Army (VCSA) directed Mid-Tier Assessment at Network Integration Evaluation (NIE) 16.2.

A. Mission Description and Budget Item Justification

The Mid-tier Networking Vehicular Radios (MNVR) enables the extension of data services within the tactical network through seamless integration of the upper and lower tiers; providing software-defined, multi-channel networking radios for a wide variety of Army tactical vehicles to meet the Army's requirement for the Mid-tier Wideband Networking (MWN) capability. The MNVR provides self-forming and self-healing communication networks from the brigade to the platoon level throughout the full range of military operations.

The MNVR, a modified Non-Developmental Item (NDI), supports Army Mission Command operational requirements with a multi-channel, Type 1 (supporting multiple independent levels of security), vehicular mounted radio hosting networking waveforms, Wideband Networking Waveform (WNW) and Soldier Radio Waveform (SRW). The MNVR narrows the data capability gap at the Brigade Combat Team (BCT) company level and provides the capability to build a data extension to the lowest echelons, and then enables the extension of services from the Forward Operating Base (FOB) to the platform. MNVR provides a dynamic, scalable, On-the-Move (OTM) network architecture, connecting the Soldier to the Mission Command (MC) Network and enhances capability to exchange voice and data simultaneously and faster than current systems. The advanced network waveforms provide rapid distribution of data and imagery with increased information assurance protection and automatic routing across complex terrain. The system operates Internet Protocol (IP) based networking waveforms offering increased data throughput through self-forming, self-healing, managed communication networks. Its route and retransmit functionality links waveforms in different frequency bands, within the 2 Megahertz (MHz) to 2 Gigahertz (GHz) range, to form one coherent network. MNVR nomenclature has been designated as AN/VRC-118(V)1.

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

	FY 2015	FY 2016	FY 2017
Title: Mid-tier Networking Vehicular Radio (MNVR)	9.355	8.763	12.172
Description: RDTE funding supports efforts to test and certify industry solutions for a modified NDI radio; contract management, and test & certification efforts through IOT&E.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	Project (Number/Name) DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> FY 2015 supports efforts needed to execute the modified NDI strategy for a mid-tier networking vehicular radio capability; focus is on test, system certification and initial sustainment planning for the AN/VRC-118(V)1 MNVR. Planned activities, in accordance with the MNVR acquisition plan include: Counter-Remote Control Improvised Explosive Device Electronic Warfare (CREW) testing; conduct of Limited User Test (LUT) at Network Integration Evaluation (NIE) 15.2, from which an Operational Test Agency Milestone Assessment Report (OMAR) will be developed to inform a MS C decision; Government Regression Testing (GRT); Logistics Demonstration (Log Demo); and Tropical Testing.</p> <p><i>FY 2016 Plans:</i> FY 2016 supports efforts needed to execute the modified NDI strategy for a mid-tier networking vehicular radio capability; focus is on continued test and system certification efforts for the AN/VRC-118(V)1 MNVR. Planned activities include participation in a VCSA directed Mid-Tier Assessment at NIE 16.2, ongoing GRT, System of System (SoS) Risk Reduction Testing, range testing in a dense foliage environment, and preparation for IOT&E.</p> <p><i>FY 2017 Plans:</i> FY 2017 supports system test and evaluation efforts needed to execute the modified NDI strategy for a mid-tier networking vehicular radio capability; focus is on continued test and system certification efforts for the AN/VRC-118(V)1 MNVR. Planned activities include conduct of IOT&E, from which an OMAR will be developed to inform a Full-Rate Production (FRP) decision in 3QFY 2018; development of a Request for Proposal (RFP) for follow-on radio contract award; Initial Operating Capability (IOC); and continued MNVR Systems Test and Evaluation efforts.</p>			
Accomplishments/Planned Programs Subtotals	9.355	8.763	12.172

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
• OPA Funding - B51001: <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	4.692	27.762	25.017	-	25.017	41.658	50.892	46.053	50.408	Continuing	Continuing

Remarks

D. Acquisition Strategy

The MNVR is a modified NDI industry solution for a multi-channel vehicular radio hosting networking waveforms. This modified NDI approach takes advantage of competitively priced, mature and producible technology that meets technical specifications.

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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 / 5	PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>

An Acquisition Decision Memorandum (ADM) was signed on 20 September 2013 by the Defense Acquisition Executive (DAE), approving a Materiel Development Decision (MDD). The ADM designated MNVR as an ACAT 1D Special Interest Program under the continued oversight of the DAE. The ADM also approved the award of a competitive contract, and authorized the procurement of up to 232 modified NDI radios for Test & Evaluation, Platform Integration and Certification purposes in order to inform a MS C decision.

In 3QFY 2016, the MNVR program will provide all statutory and regulatory documentation in requesting a MS C decision, which will allow the program to move forward into Low Rate Initial Production (LRIP). PdM MNVR will proceed to IOT&E in order to obtain a FRP decision in FY 2018.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604290A / Mid-tier Networking Vehicular Radio (MNVR)	Project (Number/Name) DW1 / Mid-Tier Wideband Networking Vehicular Radio MnvR
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management Services - PMO	Various	Aberdeen Proving Ground : Maryland	35.935	0.489		0.105		0.316		-		0.316	Continuing	Continuing	0
Subtotal			35.935	0.489		0.105		0.316		-		0.316	-	-	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			
System Development Analysis and Product Source Selection	C/FFP	Aberdeen Proving Ground : Maryland	14.301	-		-		-		-		-	Continuing	Continuing	0
Subtotal			14.301	-		-		-		-		-	-	-	0.000

Remarks
Initial Operational Test & Evaluation (IOT&E) has been shifted to start 3QFY 2017. IOT&E assets will be procured with OPA funds, post MS C, now scheduled for 3QFY 2016.

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			
Systems Test and Evaluation	RO	Multiple : Various	21.873	8.866		8.658		11.856		-		11.856	Continuing	Continuing	0
Subtotal			21.873	8.866		8.658		11.856		-		11.856	-	-	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			72.109	9.355	8.763	12.172	-	12.172	-	-	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	Project (Number/Name) DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Developmental Test (Govt Integration Test) 1																												
Limited User Test (LUT) at NIE 15.2																												
Logistics Demonstration																												
Government Regression Testing (GRT) 1.2																												
Mission Command Network Refinement (MCNR) at NIE 16.2																												
(1) Milestone C (MS C)																												
Low Rate Initial Production / Limited Deployment									LRIP / LD																			
Log Demonstration																												
Initial Operational Test and Evaluation (IOT&E)																												
Request for Proposal (RFP) Release Follow-on Contract																												
Source Selection Performance Demonstrations (SSPDs)													SSPDs															
Initial Operating Capability (IOC)																												
(2) Full Rate Production (FRP) Decision																					FRP Decision							

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	Project (Number/Name) DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
(1) Contract Award																																
Full Rate Production (FRP)																																
Government Integration Test (GIT)																																
Follow-On Operational Test & Evaluation (FOT&E)																																
FOT&E Gov't Regression Testing																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	Project (Number/Name) DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Developmental Test (Govt Integration Test) 1	1	2015	1	2015
Limited User Test (LUT) at NIE 15.2	3	2015	3	2015
Logistics Demonstration	4	2015	4	2015
Government Regression Testing (GRT) 1.2	1	2016	2	2016
Mission Command Network Refinement (MCNR) at NIE 16.2	3	2016	3	2016
Milestone C (MS C)	3	2016	3	2016
Low Rate Initial Production / Limited Deployment	4	2016	4	2018
Log Demonstration	2	2017	2	2017
Initial Operational Test and Evaluation (IOT&E)	3	2017	3	2017
Request for Proposal (RFP) Release Follow-on Contract	3	2017	3	2017
Source Selection Performance Demonstrations (SSPDs)	1	2018	4	2018
Initial Operating Capability (IOC)	3	2017	4	2017
Full Rate Production (FRP) Decision	3	2018	3	2018
Contract Award	1	2019	1	2019
Full Rate Production (FRP)	1	2019	4	2022
Government Integration Test (GIT)	2	2019	4	2019
Follow-On Operational Test & Evaluation (FOT&E)	2	2020	3	2020
FOT&E Gov't Regression Testing	4	2020	4	2020

Note

06 May 2013: Joint Requirements Review Council (JROC) approved the MNVR Capability Production Document (CPD)
 09 May 2013: Defense Acquisition Executive (DAE) changed basis of the program from Directed Requirement to the MNVR CPD
 - Directed that MNVR would not field until all MS C requirements met. Delayed fielding from Capability Set (CS) 15 to CS 17
 20 Sept 2013: DAE signs MNVR Milestone Decision Document (MDD)

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	Project (Number/Name) DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>
24 Sept 2013: Army Contracting Command (ACC) awards MNVR contract to Harris Corporation; executed delivery order of 232 radios. May 2015: MNVR conducted a successful LUT at Network Integration Evaluation (NIE) 15.2 in preparation for MS C.		

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604321A / <i>All Source Analysis System</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	5.532	4.309	3.958	-	3.958	4.923	3.084	3.167	3.561	Continuing	Continuing
B41: <i>CI/HUMINT Software Products (MIP)</i>	-	1.139	3.242	2.782	-	2.782	3.115	1.224	1.257	1.613	Continuing	Continuing
B51: <i>Machine - Foreign Language Translation System</i>	-	4.393	1.067	1.176	-	1.176	1.808	1.860	1.910	1.948	Continuing	Continuing

A. Mission Description and Budget Item Justification

The All Source Analysis System (ASAS) provided US Army commanders at all echelons from battalion to Army Service Component Command (ASCC) with automated support to the management and planning, processing and analysis, and dissemination of intelligence, counterintelligence, and electronic warfare. ASAS provided the means to enhance the commander's timely and comprehensive understanding of enemy deployments, capabilities, and potential courses of action. The system used standard joint and Army protocols and message formats to interface with selected National, joint, theater, and tactical intelligence, surveillance, and reconnaissance systems and preprocessors and Army, joint, and coalition battle command systems. The ASAS Family of Systems migrated into the Distributed Common Ground System-Army (DCGS-A) program and the Army is using it as the initial platform to provide accelerated DCGS-A capabilities to the force.

The Counterintelligence (CI) and Human Intelligence (HUMINT) Automated Reporting and Collection System (CHARCS) is the Army's CI and HUMINT tactical collection and reporting system. CHARCS provides automation support for information collection, reporting, investigations, source & interrogation operations and document exploitation. The CHARCS automation architecture extends from the individual HUMINT team soldier or CI agent to the Corps Analysis and Control Element (ACE). CHARCS reports digital data such as maps, overlays, images, video, biometrics, scanned documents and audio files. These media are transmitted through secure networks and interfaces with the DCGS-A for detailed analysis and creation of finished intelligence products. Collection and reporting teams at Military Intelligence (MI) battalions and their operational managers are equipped with one of two CHARCS systems. The first is the AN/PYQ-8 Individual Tactical Reporting Tool (ITRT) which provides collection and processing devices for individual HUMINT team member or CI agents. The second is the AN/PYQ-3 CI/HUMINT Automated Tool Set (CHATS) which provides the team leader tools to process and manage team-collected information and a robust set of devices such as printers, scanners, cameras and audio recorders to assist the collection mission. Each CHATS has an associated Mission Support Peripheral Sets and Kits (MS-PSK) or Collection Peripheral Sets and Kits (C-PSK).

The Machine Foreign Language Translation System (MFLTS), formerly named Sequoyah, develops, fields, and sustains a basic automated foreign speech and text translation capability for Army tactical systems to augment and compliment limited human linguistic resources. These integrated automated translation capabilities will be applicable across three different system configurations; a hand-held/wearable portable device, a laptop/mobile device, and in a networked/web-enabled system. The software modules will translate English from a prioritized list of languages in a prioritized collection of domains (e.g. medical, intelligence, base security). MFLTS is interoperable with Commercial Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) automation equipment to include the Distributed Common Ground System-Army (DCGS-A) and Nett Warrior, and will be interoperable with a future version of the CI/HUMINT Automated Reporting and Collection System (CHARCS).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604321A / <i>All Source Analysis System</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	5.532	4.309	3.804	-	3.804
Current President's Budget	5.532	4.309	3.958	-	3.958
Total Adjustments	0.000	0.000	0.154	-	0.154
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	0.154	-	0.154

Change Summary Explanation

FY2017 Base adjustment amount of \$.154 million increased for the planning toward incremental development of MFLTS requirements.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604321A / All Source Analysis System				Project (Number/Name) B41 / CI/HUMINT Software Products (MIP)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
B41: CI/HUMINT Software Products (MIP)	-	1.139	3.242	2.782	-	2.782	3.115	1.224	1.257	1.613	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Counterintelligence (CI) and Human Intelligence (HUMINT) Automated Reporting and Collection System (CHARCS) is the Army's CI and HUMINT tactical collection and reporting system. CHARCS provides automation support for information collection, reporting, investigations, source & interrogation operations and document exploitation. The CHARCS automation architecture extends from the individual HUMINT team soldier or CI agent to the Corps. CHARCS reports digital data such as maps, overlays, images, video, biometrics, scanned documents and audio files. These media are transmitted through secure networks and interfaces with the Distributed Common Ground System-Army (DCGS-A) for detailed analysis and creation of finished intelligence products. Collection and reporting teams at Military Intelligence (MI) battalions and their operational managers are equipped with one of two CHARCS systems. The first is the AN/PYQ-8 Individual Tactical Reporting Tool (ITRT) which provides collection and processing devices for individual HUMINT team member or CI agents. The second is the AN/PYQ-3 CI/HUMINT Automated Tool Set (CHATS) which provides the team leader and Operational Management Team (OMT) tools to process and manage team-collected information and a robust set of devices such as printers, scanners, and cameras to assist the collection mission. Each CHATS has an associated Mission Support Peripheral Sets and Kits (MS-PSK) or Collection Peripheral Sets and Kits (C-PSK).

The C-PSK provides specialized collection component capabilities to support CI/HUMINT collection missions. C-PSK capabilities are commercial-off-the-shelf (COTS) technologies and include video and camera equipment, global positioning system (GPS), voice recording device and infrared strobe lights. The MS-PSK provides specialized collection component capabilities to support CI/HUMINT collection missions at the OMT. MS-PSK capabilities are COTS technologies and include night vision photography & video, captured materiel tracking, Credibility Assessment Capability, Digital Media Forensics software, and Document Exploitation software.

FY 2017 Base amount of \$2.782 million will fund efforts for the development of the single CI/HUMINT software baseline in coordination with DCGS-A, software testing, and system engineering management support.

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

	FY 2015	FY 2016	FY 2017
Title: Development and Integration toward a single CI/HUMINT Software baseline; software testing; increased software performance capability; security accreditation; and Hardware integration of Software.	1.139	3.242	2.782
Description: Development and Integration toward a single CI/HUMINT Software baseline; software testing of v1.0.4.2; software baseline enhancement and testing of v1.0.4.2.2 and v1.0.4.2.3; increased software (SW) performance capability; Hardware (HW) integration testing of CHARCS SW.			
FY 2015 Accomplishments:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604321A / All Source Analysis System	Project (Number/Name) B41 / CI/HUMINT Software Products (MIP)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Initiated efforts for CHARCS software increased performance capability, ease of use, incremental capability improvement, DIA policy updates, and interoperability updates. Developmental test (DT) and operational test (OT) for v1.0.4.2; continued efforts for testing related to AIC, RAM, and quality assurance. Preplanned product improvement of collection, force protection, and mission support capabilities.</p> <p>FY 2016 Plans: Development of the single CI/HUMINT software baseline in coordination with DCGS-A. Continuing effort for testing related to AIC and COE compliance for v1.0.4.2.2. Software baseline enhancement and testing for v1.0.4.2.3. Providing system engineering management support.</p> <p>FY 2017 Plans: Will continue efforts for the development of the single CI/HUMINT software baseline in coordination with DCGS-A. Will continue software baseline enhancement and testing for v1.0.4.2.3. Will integrate exploitation software onto M H/H platform. Will provide system engineering management support.</p>			
Accomplishments/Planned Programs Subtotals	1.139	3.242	2.782

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>
• CI HUMINT AUTO REPRTING AND COLL (C: BK5275)	14.302	11.402	14.891	-	14.891	7.815	8.092	8.250	8.424	Continuing	Continuing

Remarks

D. Acquisition Strategy

Program capability documentation was updated to include Capabilities Development Document (CDD) Increment 2 requirements in CHARCS Capabilities Production Document (CPD) Increment 1, Revision 1, which was signed 6 September 2012. CHARCS is a post-Milestone C program. CHARCS is leveraging Communications Electronic Command Software Engineering Center (CECOM SEC) to increase current capabilities and provide an increased performance capability version of the CHARCS software. CHARCS will leverage DCGS-A Increment 2 contract in coordination with DCGS-A Increment 2 to develop a single CI/HUMINT software baseline that meets integrated connected and disconnected CI/HUMINT requirements, which will save sustainment costs of maintaining multiple baselines. CHARCS will utilize competitively-awarded Task and Delivery Orders on Indefinite Deliverable, Indefinite Quantity contract vehicles to provide services. CHARCS software requires development to keep pace with incremental technology improvements, Defense Intelligence Agency compliance, and to meet AROC approved requirements documented in the CHARCS CPD Increment 1, Revision 1. CHARCS is continuously evaluating and assessing existing Commercial-off-the-shelf (COTS) and Government-off-the-shelf (GOTS) that support CHARCS CPD Increment 1, Revision 1.

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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 / 5	PE 0604321A / <i>All Source Analysis System</i>	B41 / <i>CI/HUMINT Software Products (MIP)</i>

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604321A / All Source Analysis System	Project (Number/Name) B41 / CI/HUMINT Software Products (MIP)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PD CHARCS PMO Government Engineering Direct Support	Allot	PD CHARCS : Ft Belvoir, VA	3.790	-		0.182	Oct 2015	0.098	Oct 2016	-		0.098	Continuing	Continuing	Continuing
Subtotal			3.790	-		0.182		0.098		-		0.098	-	-	-

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			
Single CI&HUMINT SW Baseline	MIPR	DCGS-A : APG, MD	0.000	0.644	Jan 2015	-		-		-		-	Continuing	Continuing	Continuing
CI?HUMINT Single SW Baseline	C/CPIF	TBD : TBD	0.000	-		2.300	Jun 2016	2.453	Jan 2016	-		2.453	Continuing	Continuing	0
Integration of exploitation SW onto M H/H platform	MIPR	Nett Warrior (NW), PEO Soldier : Ft Belvoir, VA	0.000	-		-		-		-		-	Continuing	Continuing	Continuing
CHARCS Software Development	MIPR	CECOM Software Engineering Center : Various Locations	16.119	-		-		-		-		-	Continuing	Continuing	Continuing
CHARCS Software Management/Development	MIPR	DCGS-A : APG, MD	1.044	-		-		-		-		-	Continuing	Continuing	Continuing
CHARC Software Development	MIPR	DCGS-A : APG, MD	0.520	-		-		-		-		-	Continuing	Continuing	Continuing
DOMEX Tools	MIPR	National Ground Intelligence Center : Charlottesville, VA	8.100	-		-		-		-		-	0	8.100	0
Subtotal			25.783	0.644		2.300		2.453		-		2.453	-	-	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604321A / All Source Analysis System	Project (Number/Name) B41 / CI/HUMINT Software Products (MIP)
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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			
Software Engineering & Testing Services - PD CHARCS PMO SETA	MIPR	CACI, Inc. : Arlington, VA	0.857	-		0.570	Mar 2016	0.131	Mar 2017	-		0.131	Continuing	Continuing	Continuing
Subtotal			0.857	-		0.570		0.131		-		0.131	-	-	-

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			
CTSF: Army Interoperability Certification (AIC), Common Operating environment (COE) compliance	MIPR	CECOM SEC : Ft Huachuca, AZ	0.000	0.295	Jan 2015	0.190	Jan 2016	0.100	Jan 2017	-		0.100	Continuing	Continuing	Continuing
Reliability, Availability, Maintainability (RAM)	MIPR	EPG : Ft Huachuca, AZ	0.000	0.100	Jan 2015	-		-		-		-	Continuing	Continuing	Continuing
Quality Assurance	MIPR	CECOM SEC : Ft Huachuca, AZ	0.000	0.100	Jan 2015	-		-		-		-	Continuing	Continuing	Continuing
Test Support and Interoperability	MIPR	CTSF, : Ft. Hood, TX	0.612	-		-		-		-		-	Continuing	Continuing	0
Test Support and Interoperability	MIPR	US Army EPG : Ft Huachuca, AZ	0.600	-		-		-		-		-	Continuing	Continuing	Continuing
Operational Test / Security Accreditation Testing / HW Integration Testing	MIPR	A TEC : Multiple	0.436	-		-		-		-		-	Continuing	Continuing	Continuing
Security Accreditation Collateral	MIPR	CECOM : Ft. Monmouth, NJ	0.381	-		-		-		-		-	Continuing	Continuing	0
Safety release	MIPR	CECOM : Ft. Monmouth, NJ	0.035	-		-		-		-		-	Continuing	Continuing	0
Subtotal			2.064	0.495		0.190		0.100		-		0.100	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604321A / <i>All Source Analysis System</i>				Project (Number/Name) B41 / <i>CI/HUMINT Software Products (MIP)</i>			
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	32.494	1.139	3.242	2.782	-	2.782	-	-	-		

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604321A / All Source Analysis System	Project (Number/Name) B41 / CI/HUMINT Software Products (MIP)
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
v1.0.4.2 Developmental Test (DT)				■																								
				v1.0.4.2 DT																								
v1.0.4.2 Operational Test (OT)				■																								
				v1.0.4.2 OT																								
v1.0.0.2 SP4 Conditional Materiel Release								■																				
								v1.0.0.2 SP4 CMR																				
v1.0.4.1.1 Software Release (SR), Fielding & Sustainment																												
									■																			
									v1.0.4.1.1 SR, Fielding & Sustainment																			
v1.0.4.2 Software Release (SR), Fielding & Sustainment									■																			
									v1.0.4.2 SR, Fielding & Sustainment																			
v1.0.4.2.2 Software Baseline Enhancement & Testing									■																			
									v1.0.4.2.2 SW Baseline Enhance & Testing																			
v1.0.4.2.2 Software Release (SR), Fielding & Sustainment													■															
													v1.0.4.2.2 SR, Fielding & Sustainment															
v1.0.4.2.3 Software Baseline Enhancement & Testing													■															
													v1.0.4.2.3 SW Baseline Enhance & Testing															
v1.0.4.2.3 Software Release (SR), Fielding & Sustainment													■															
													v1.0.4.2.3 SR, Fielding & Sustainment															
Single CI/HUMINT SW Baseline Development & Testing									■																			
									Single CI/HUMINT SW Development & Testing																			
Single CI/HUMINT SW Baseline Fielding & Sustainment																					■							
																					Single CI/HUMINT SW Fielding & Sustainment							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604321A / <i>All Source Analysis System</i>	Project (Number/Name) B41 / <i>CI/HUMINT Software Products (MIP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
v1.0.4.2 Developmental Test (DT)	4	2015	4	2015
v1.0.4.2 Operational Test (OT)	4	2015	4	2015
v1.0.0.2 SP4 Conditional Materiel Release	2	2016	2	2016
v1.0.4.1.1 Software Release (SR), Fielding & Sustainment	1	2015	1	2016
v1.0.4.2 Software Release (SR), Fielding & Sustainment	4	2015	4	2017
v1.0.4.2.2 Software Baseline Enhancement & Testing	4	2015	1	2017
v1.0.4.2.2 Software Release (SR), Fielding & Sustainment	1	2017	4	2018
v1.0.4.2.3 Software Baseline Enhancement & Testing	3	2016	1	2018
v1.0.4.2.3 Software Release (SR), Fielding & Sustainment	1	2018	4	2020
Single CI/HUMINT SW Baseline Development & Testing	3	2016	4	2019
Single CI/HUMINT SW Baseline Fielding & Sustainment	1	2020	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604321A / All Source Analysis System				Project (Number/Name) B51 / Machine - Foreign Language Translation System			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
B51: Machine - Foreign Language Translation System	-	4.393	1.067	1.176	-	1.176	1.808	1.860	1.910	1.948	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Machine Foreign Language Translation System (MFLTS), formerly named Sequoyah, develops, fields, and sustains a basic automated foreign speech and text translation capability for Army tactical systems to augment and compliment limited human linguistic resources. These integrated automated translation capabilities will be applicable across three different system configurations; a hand-held/wearable portable device, a laptop/mobile device, and in a networked/web-enabled system. The software modules will translate English from a prioritized list of languages in a prioritized collection of domains (e.g. medical, intelligence, base security). MFLTS is interoperable with Commercial Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) automation equipment to include the Distributed Common Ground System-Army (DCGS-A) and Nett Warrior, and will be interoperable with a future version of the CI/HUMINT Automated Reporting and Collection System (CHARCS).

FY17 base dollars in the amount of \$1.176 million provides for the planning of incremental development of Speech to Speech (S2S) and Text to Text (T2T) languages and domains.

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

	FY 2015	FY 2016	FY 2017
Title: Product Development and Engineering Support	3.269	0.614	0.709
Description: Development, integration and improvement of Critical Technology Elements (CTE) of Automated Speech Recognition (ASR), Optical Character Recognition (OCR), and Machine Language Translation Translation Engine (MLT TE) software. Includes incremental development of Speech to Speech (S2S) and Text to Text (T2T) languages and domains.			
FY 2015 Accomplishments: Completed development and integration of Critical Technology Elements of Automated Speech Recognition, Optical Character Recognition, and Machine Language Translation Translation Engine software.			
FY 2016 Plans: Continuing support of the development of Speech to Speech languages in Iraqi Arabic and Pashto and Text to Text language in Modern Standard Arabic (MSA).			
FY 2017 Plans: Will provide for the planning of incremental development of Speech to Speech (S2S) and Text to Text (T2T) languages and domains.			
Title: Test and Evaluation of MFLTS Capabilities	0.684	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604321A / All Source Analysis System	Project (Number/Name) B51 / Machine - Foreign Language Translation System

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Testing of the automated language translation capabilities using established metrics, collected standard data sets, and standardized objective validation process.</p> <p>FY 2015 Accomplishments: Tested the automated language translation capabilities using established metrics, collected standard data sets, and standardized objective validation process.</p>			
<p>Title: PD Support and Management Services</p> <p>Description: Program Office Support.</p> <p>FY 2015 Accomplishments: Provided program management office support at Government activity sites.</p> <p>FY 2016 Plans: Continuing program management office support at Government activity sites.</p> <p>FY 2017 Plans: Will continue to provide program management office support at Government activity sites.</p>	0.440	0.453	0.467
Accomplishments/Planned Programs Subtotals	4.393	1.067	1.176

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>
• MFLTS: B88605 - Machine Foreign Language Translation System (MFLTS)	-	8.125	0.545	-	0.545	-	-	-	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

The MFLTS Technology Development (TD) Phase developed an open software architecture prototype using full and open competition that allowed the addition, upgrade and replacement of translation system components for integration into existing Programs. During the Engineering and Manufacturing Development (EMD) Phase, the program integrated technology demonstrated during the TD Phase to meet Key Performance Parameters (KPPs). This included the requirement to meet an Interagency Language Roundtable (ILR) level of 1 for two speech translation modules and an ILR level of 1+ for one text translation module in hand-held/wearable portable, laptop/mobile, and networked/web-enabled system configurations. Milestone B was achieved 22 Jul 13 and an option period for the EMD phase contract was awarded 22

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604321A / All Source Analysis System	Project (Number/Name) B51 / Machine - Foreign Language Translation System

Jul 13. Following a Limited Deployment Decision (LDD), a contract will be awarded to integrate and field MFLTS capability drop #1 during FY16. A full and open competition will result in the award of a contract(s) in FY17 for the incremental development of new MFLTS SW Capability Drops.

E. Performance Metrics

N/A

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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 / 5				PE 0604321A / All Source Analysis System				B51 / Machine - Foreign Language Translation 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	
Program Support	MIPR	Various : Ft. Belvoir, VA	3.976	0.440	Oct 2014	0.453	Oct 2015	0.467	Oct 2015	-		0.467	Continuing	Continuing	0	
Subtotal			3.976	0.440		0.453		0.467		-		0.467	-	-	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	
Software Development Contract	MIPR	Raytheon BBN : Cambridge, MA	12.000	0.553	Jan 2015	-		-		-		-	0	12.553	0	
Engineering Development	MIPR	Various : Various	2.589	1.284	Apr 2015	-		-		-		-	Continuing	Continuing	0	
Gen 2 EMD	C/IDIQ	TBD : TBD	0.000	-		-		0.100	Jun 2017	-		0.100	Continuing	Continuing	0	
Subtotal			14.589	1.837		-		0.100		-		0.100	-	-	0.000	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Engineering Support	MIPR	Various : Various	4.582	1.432	Dec 2014	0.614	Dec 2015	0.609	Dec 2016	-		0.609	Continuing	Continuing	0	
Subtotal			4.582	1.432		0.614		0.609		-		0.609	-	-	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 Activities	MIPR	USA Test and Eval Command : Alexandria, VA	0.981	0.419	Feb 2015	-		-		-		-	Continuing	Continuing	0	
Data Collection	MIPR	Army Research Laboratory : Adelphi, MD	0.308	-		-		-		-		-	0	0.308	0	

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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 / 5						PE 0604321A / All Source Analysis System				B51 / Machine - Foreign Language Translation System					
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
Technology Readiness Assessment	MIPR	Army Research Laboratory : Adelphi, MD	0.000	0.047	Dec 2014	-		-		-		-	0	0.047	0
Forensic Analysis	MIPR	Pro Services : Trenton, NJ	0.000	0.032	Jan 2015	-		-		-		-	0	0.032	0
PM and Host Platform Test and Evaluation Activities	MIPR	Various : Various	0.000	0.186	Jan 2015	-		-		-		-	0	0.186	0
Subtotal			1.289	0.684		-		-		-		-	-	-	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			24.436	4.393		1.067		1.176		-		1.176	-	-	0.000
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604321A / All Source Analysis System	Project (Number/Name) B51 / Machine - Foreign Language Translation System
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Initial Operational Test & Evaluation	IOT&E ▲ ¹																											
(2) Initial Capability - Limited Deployment Decision	LDD ▲ ²																											
Continued engineering support for development and integration																												
(3) Gen 2 EMD Award									Award ▲ ³																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604321A / <i>All Source Analysis System</i>	Project (Number/Name) B51 / <i>Machine - Foreign Language Translation System</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Initial Operational Test & Evaluation	3	2015	4	2015
Initial Capability - Limited Deployment Decision	4	2015	4	2015
Continued engineering support for development and integration	1	2016	4	2016
Gen 2 EMD Award	3	2017	3	2017

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604328A / <i>TRACTOR CAGE</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	19.929	15.138	12.525	-	12.525	12.231	13.438	14.337	14.615	Continuing	Continuing
C71: <i>Tractor Cage</i>	-	19.929	15.138	12.525	-	12.525	12.231	13.438	14.337	14.615	Continuing	Continuing

A. Mission Description and Budget Item Justification

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

B. Program Change Summary (\$ in Millions)

	<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	19.929	15.138	16.512	-	16.512
Current President's Budget	19.929	15.138	12.525	-	12.525
Total Adjustments	0.000	0.000	-3.987	-	-3.987
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-3.987	-	-3.987

Change Summary Explanation

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

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	36.826	89.661	66.943	-	66.943	72.844	69.613	61.511	96.155	Continuing	Continuing
ES9: <i>Advanced Tactical Parachute System</i>	-	0.000	0.000	1.487	-	1.487	5.709	10.020	3.528	1.851	0.000	22.595
EW4: <i>Crew Served Weapons Engineering Development</i>	-	0.000	0.000	14.447	-	14.447	15.566	14.270	14.689	25.838	Continuing	Continuing
S58: <i>Soldier Enhancement Program</i>	-	3.212	15.554	6.776	-	6.776	6.197	6.337	6.476	6.607	Continuing	Continuing
S60: <i>Clothing & Equipment</i>	-	2.422	5.980	10.166	-	10.166	7.814	5.593	7.813	9.414	Continuing	Continuing
S61: <i>Acis Engineering Development</i>	-	1.742	3.463	3.811	-	3.811	3.849	3.840	1.897	1.749	Continuing	Continuing
S62: <i>Counter-Defilade Target Engagement - SDD</i>	-	11.945	21.077	10.862	-	10.862	10.895	2.487	0.000	2.000	Continuing	Continuing
S63: <i>Small Arms Improvement</i>	-	11.172	23.084	11.801	-	11.801	15.169	10.833	10.844	23.848	Continuing	Continuing
S64: <i>Common Remotely Operated Wpn Sys (CROWS)</i>	-	1.164	4.076	4.331	-	4.331	3.354	8.962	8.351	15.826	0.000	46.064
S70: <i>Personnel Recovery Support System (PRSS)</i>	-	0.522	1.252	1.121	-	1.121	1.137	1.149	1.176	1.051	Continuing	Continuing
VS5: <i>Soldier Protective Equipment</i>	-	4.647	15.175	2.141	-	2.141	3.154	6.122	6.737	7.971	Continuing	Continuing

A. Mission Description and Budget Item Justification

Fiscal Year (FY) 2016 budget request funds Infantry Support Weapons. This Program Element (PE) Engineering and Manufacturing Development (EMD) manages the Soldier as a system, with the goal of increasing Soldiers' combat effectiveness, increasing survivability, and improving the Soldiers' quality of life. It develops and tests prototypes of weapons, clothing, equipment, and other items useful to support the Soldier.

Project ES9 (Advanced Tactical Parachute 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.

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	
<p>Project EW4 (Crew Served Weapons Engineering) supports efforts to transition components or prototypes from Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) and other domestic and foreign sources of small arms weapons to demonstrate, test and evaluate capability near or at planned operational requirements.</p> <p>Project S58 (Soldier Enhancement Program) supports accelerated integration, modernization, and enhancement efforts of lighter, more lethal weapons, and improved Soldier items including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigational aids.</p> <p>Project S60 (Clothing and Equipment) supports pre-production development of state-of-the-art individual clothing and equipment to improve the survivability, mobility and sustainment affecting the quality of life of the individual Soldier.</p> <p>Project S61 (Aircrew Integrated Systems) provides System Development programs with improved aviator safety, survivability, and human performance that amplify the warfighting effectiveness and facilitates full-spectrum dominance of the Army aircraft including the AH-64 Apache/Longbow, CH-47 Chinook, UH/HH-60 Blackhawk, Light Utility Helicopter, and Armed Reconnaissance Helicopter.</p> <p>Project S62 (Counter-Defilade Target Engagement) the XM25, Individual Airburst Weapon System (IAWS) delivers a 25mm programmable high explosive airburst (HEAB) round to defeat defilade and point area targets out to approximately 600 meters. Accurate and lethal engagement of defilade targets at the squad level is the number one capability gap identified by the United States Army Infantry Center (USAIC).</p> <p>Project S63 (Small Arms Improvements) demonstrates engineering development models or integrated commercial items designed to enhance lethality, target acquisition, fire control, training effectiveness, and reliability for small arms weapon systems and ammunition. Programs include Improved Weapons Coatings, Personal Defense Weapon, 30 Round 5.56mm Magazine, Modular Handgun and Precision Sniper Rifle.</p> <p>Project S64 (CROWS) continues enhancing CROWS capability and reliability to increase its application across combat and tactical platforms. This capability enhances the Soldier's survivability, lethality and situational awareness.</p> <p>Project S70 (Personnel Recovery Support System) provides system research, development and testing of the Personal Recovery Support System/Personnel Recovery Support Equipment supporting operations to report and locate isolated, missing, detained or captured Soldiers.</p> <p>Project VS5 (Soldier Protective Equipment) supports engineering and manufacturing development of Individual Soldier Ballistic Protection equipment. It will leverage advancements in technology to continue incremental improvements to body armor (to include improved outer tactical vests, plate carriers, and helmets) and other personal protective equipment.</p>		

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	34.575	74.128	72.273	-	72.273
Current President's Budget	36.826	89.661	66.943	-	66.943
Total Adjustments	2.251	15.533	-5.330	-	-5.330
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	2.251	15.533	-5.330	-	-5.330

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

Project: S63: *Small Arms Improvement*

Congressional Add: *New Weapons Congressional Add*

Congressional Add: *Small Arms Weapons Enhancements Congressional Add*

Congressional Add: *Combat Optics Congressional Add*

Congressional Add Subtotals for Project: S63

Congressional Add Totals for all Projects

	FY 2015	FY 2016
	4.875	-
	0.700	-
	1.085	-
Congressional Add Subtotals for Project: S63	6.660	-
Congressional Add Totals for all Projects	6.660	-

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

Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) ES9 / Advanced Tactical Parachute System			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
ES9: <i>Advanced Tactical Parachute System</i>	-	0.000	0.000	1.487	-	1.487	5.709	10.020	3.528	1.851	0.000	22.595
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding line established in FY17 for the Advanced Tactical Parachute System. Efforts were previously executed in Program Element 0604601A S60.

A. Mission Description and Budget Item Justification

This funding supports engineering and manufacturing development tasks related to Static Line (SL) and Military Free Fall (MFF) personnel parachutes and auxiliary equipment with the goal of enhancing the insertion capability of the airborne soldier and increasing the performance, safety and durability of personnel airdrop equipment. Funds improvements and testing/evaluation of personnel parachute systems. Includes integration and interface on the Soldier system.

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

	FY 2015	FY 2016	FY 2017
Title: Advanced Tactical Parachute System	-	-	1.487
Description: Funds are a new Project established in FY17. Efforts were previously executed in Program Element 0604601A S60.			
FY 2017 Plans: Efforts include enhanced capabilities transition from ET8 to include DT/OT, and purchasing contract data requirements for the Enhanced Electronic Automatic Activation Device (E/EAAD) for use with the RA-1 Advanced Ram Air Parachute System. Complete DT/OT for PARANAVSYS. Develop and test T-11 design and pack changes, develop Technical Manual (TM) updates and Modification Work Order (MWO) for the T-11R ripcord redesign. Prove out enhanced capability transitioned from ET8 to ensure viability in modernizing airdrop equipment across the airdrop portfolio to optimize parachutes and ancillary equipment for static line and military free fall parachutists.			
Accomplishments/Planned Programs Subtotals			
	-	-	1.487

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
• OPA, MA7801 ATPS: <i>Advanced Tactical Parachute System</i>	25.996	26.088	16.611	-	16.611	18.860	24.610	26.890	22.040	0.000	161.095
• RDTE, 643827ET8: <i>Personnel Airdrop System Development</i>	-	-	0.690	-	0.690	0.500	0.400	0.300	-	0	1.890

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) ES9 / <i>Advanced Tactical Parachute System</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

Acquisition strategies for these programs vary in methods, and range from: 1) Material Change programs that result in engineering changes to existing systems to; 2) traditional development programs that include an Engineering and Manufacturing Development phase ranging in duration from 12 to 48 months, depending on the level of complexity and testing required.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>					Project (Number/Name) ES9 / <i>Advanced Tactical Parachute System</i>					
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Contracts	C/FFP	various : various	0.000	-		-		0.687		-		0.687	0	0.687	0
Dev Sys Engineering Spt	MIPR	various : various	0.000	-		-		0.200		-		0.200	0	0.200	0
Subtotal			0.000	-		-		0.887		-		0.887	0.000	0.887	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
DT/OT	MIPR	various : various	0.000	-		-		0.600		-		0.600	0	0.600	0
Subtotal			0.000	-		-		0.600		-		0.600	0.000	0.600	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	-	-	1.487	-	-	1.487	0.000	1.487	0.000
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) ES9 / <i>Advanced Tactical Parachute System</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Prove out enhanced capabilities trans from ET8 to include DT/OT																												
E/EAAD Operational Testing																												
(1) Enhanced EAAD MS C																												
PARANAVSYS DT/OT																												
(2) PARANAVSYS MS C																												
(3) Military Altimeter MS B																												
Military Altimeter Testing																												
(4) Military Altimeter MS C																												
Parachutists Oxygen Delivery System Testing																												
(5) Parachutists Oxygen Delivery System MS C																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) ES9 / <i>Advanced Tactical Parachute System</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Prove out enhanced capabilities trans from ET8 to include DT/OT	1	2017	4	2021
E/EAAD Operational Testing	1	2018	3	2018
Enhanced EAAD MS C	4	2018	4	2018
PARANAVSYS DT/OT	1	2017	2	2017
PARANAVSYS MS C	3	2017	3	2017
Military Altimeter MS B	4	2018	4	2018
Military Altimeter Testing	1	2019	3	2020
Military Altimeter MS C	1	2021	1	2021
Parachutists Oxygen Delivery System Testing	3	2018	4	2019
Parachutists Oxygen Delivery System MS C	1	2020	1	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering 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
EW4: <i>Crew Served Weapons Engineering Development</i>	-	0.000	0.000	14.447	-	14.447	15.566	14.270	14.689	25.838	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding line established in FY17 for the Crew Served Weapons Engineering Development. Efforts were previously executed in Program Elements 0603827A S54 and 0604601A S63.

New Starts in FY 2017 include Next Generation Squad Automatic Rifle (NGSAR), Gunner Integrated Protection and Restraint System (GIPRS), Increased Barrel Life/ Replace Chrome, Advanced Fire Control with Hyperspectral Target.

A. Mission Description and Budget Item Justification

The Crew Served Weapons Engineering and Manufacturing Development (EMD) program provides funds to transition components or prototypes from Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) and other domestic and foreign sources of small arms weapons to demonstrate, test and evaluate capability near or at planned operational requirements. Crew Served Weapons systems include weapons ranging up to 40 millimeter in caliber. Current and future efforts focus on system improvements designed to enhance lethality, target acquisition, 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 system development, integration (to include human-systems), demonstration, test and evaluate components, prototypes and operational system prototypes of small arms weapons and/or enhancements. Benefits include continuous improvements to small arms weapons, fire control equipment, optics, gun barrels, ancillary equipment, training devices, component mounts, weapon mounts, and weapon/ammunition interface of current small arms fleet or new weapon systems.

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

	FY 2015	FY 2016	FY 2017
Title: New Weapons	-	-	5.682
Description: Development of new crew served weapons			
FY 2017 Plans: FY17 New Start. Transition of technologies from Program Element 0603827A S54: Next Generation Squad Automatic Rifle (NGSAR): Will work to coordinate and develop the Capability Development Document (CDD), Acquisition Strategy, Capability Production Document (CPD), and provide data from various technologies to better inform stakeholders. M3 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS): Will complete operational and limited user test activities to obtain Type Classification and Full Material Release.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Precision Sniper Rifle (PSR): Will continue to work in conjunction with SOCOM to 1) support development, acquisition and qualification of primary PSR anti-personnel ammunition and 2) perform acquisition and qualification efforts for PSR anti-materiel ammunition. Both rounds are necessary as a precursor for acquisition efforts slated in FY18 related to source selection activities of a new multi-caliber PSR weapon.				
<p>Title: Crew Served Weapons Enhancements</p> <p>Description: Enhancements and developments of Crew Served weapons</p> <p>FY 2017 Plans: The Gunner Integrated Protection and Restraint System (GIPRS): Will improve the force protection, survivability, and effectiveness of the gunner and exposed crew by addressing capability gaps associated with open hatch operations in armored vehicles when exposed to enemy fires. The system integrates the Objective Gunner Protection Kit (OGPK), and Gunner Restraint System (GRS), fielded separately in support of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). GIPRS improves current and future armored vehicles by providing the Army with an adaptive gunner and exposed crew protection capability, integrating the current inventory of machine guns, close combat missile systems, and target acquisition sensors.</p> <p>FY2017 New Start Increased Barrel Life: Transition of technologies from Program Element 0603827A Project S54. Will complete refinement of drawing and specification package, build full length barrels for final qualification and safety confirmation testing. Will perform testing at a Government facility.</p> <p>Compact Semi-Automatic Sniper System (CSASS): Will conduct operational assessments and evaluations with a Limited User Test (LUT) as well as airborne drop testing . Will complete Scoring Conference activities prior to release of the Operational Test Agency Milestone Assessment Report (OMAR). Complete provisioning activities and National Stock Number (NSN) assignment. Complete all documentation and prepare for MS-C /TC STD, Full Rate Production, and Full Material Release decisions in FY17.</p> <p>Individual Non-Lethal System: Will continue to test and evaluate technology and fine tune requirements and ensure all planning documentation is accurate and complete.</p> <p>Sniper Upgrades: Will perform feasibility, analysis of alternatives, and cost benefit analysis studies for various fire control and supporting precision enablers to include Shot Counter for Reliability and Maintainability (SCRAM) and cross wind sensing technologies. SCRAM is a system that collects a weapon's shock profile that is translated into diagnostic data to provide life cycle prognosis on individual weapon maintenance. It will increase a weapon life span and reduce maintenance cost and supports Condition Based Maintenance (CBM). Will also conduct barrel studies for improvements to reliability and accuracy that can be gained through new barrel materials and geometrics.</p>		-	-	5.150

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Weapon Upgrades and Accessories: Test, evaluate and analyze ongoing and new activities to enhance Crew Served Weapons.				
<p>Title: Ammunition</p> <p>Description: Improvement of Crew Served Weapons Ammunition</p> <p>FY 2017 Plans: XM1112 Airburst Non-Lethal Munition (ANLM): Complete type classification and transition to Project Manager Close Combat Systems.</p> <p>Ammunition Upgrades: Will continue to test, evaluate and analyze the effect of current and new ammunition on Crew Served Weapons. Specific focus on alignment of requirements between crew served fire control and 40mm air burst munition.</p>		-	-	0.100
<p>Title: Combat Optics</p> <p>Description: Improvement of Combat Optics</p> <p>FY 2017 Plans: Mounted Machinegun Optic: Will continue staffing Capability Production Document (CPD) towards final approval and preparation for MDD for Program of Record. Will continue to finalize TEMP, Acquisition Strategy/Acquisition Plan, and PRR for program execution. Work to prepare Procurement package, plan and develop Request for Proposals for down select. Contract award for initial source selection and down select.</p> <p>Optic Upgrades: Will continue engineering evaluations, verification and validation of weapon optics performance requirements.</p>		-	-	0.500
<p>Title: Fire Control</p> <p>Description: Improvement of Crew Served Weapons fire control.</p> <p>FY 2017 Plans: Advanced Fire Control with Hyperspectral Target: Will continue to assess, evaluate and test manufacturability and fire control system integration. Will continue to conduct technical evaluations to determine if Advanced Hyperspectral Target Acquisition (AHTA) should be integrated within an Optics Suite of a Vehicle Mounted Weapon System (e.g. Common Remotely Operated Weapon System) or within the Optics of a Dismounted Weapon System or both.</p>		-	-	2.915

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Advanced Fire Control with Precision Projectile/Dynamic: Will continue to support integration of component advanced tracking technologies. Will continue efforts to include initial integration of technologies including Contracting, System Requirements Review, System Functional Review, and preparations for Preliminary Design Review (PDR).			
Small Arms Fire Control - Precision (SAFC-P): Will continue leveraging previously developed Sniper Rifle Fire Control (SRFC)/ Integrated Ballistic Reticle System (IBRS): Will continue efforts to tailor and qualify IBRS technology in order to address Fire Control System for Precision accuracy requirements identified in the Small Arms Fire Control Capability Development Document (CDD).			
Small Arms Fire Control - Crew Served (SAFC-C): Will develop CDD for SAFC-CS.			
Fire Control Upgrades: Will continue to test, evaluate, and analyze ongoing and new activities to enhance crew served weapons fire control.			
Title: Research and Analysis Description: Market Research and Cost Benefit Analysis FY 2017 Plans: Will continue Market Research and Cost Benefit Analysis of new small arms weapon and/or enhancements for engineering and manufacturing development.	-	-	0.100
Accomplishments/Planned Programs Subtotals	-	-	14.447

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
• Advanced Development: <i>RDTE S54, Program Element 0603827A - Soldier Systems</i>	-	-	10.554	-	10.554	7.285	7.377	7.472	15.421	Continuing	Continuing
• Precision Sniper Rifle: <i>WTCV, G015060, Precision Sniper Rifle</i>	-	-	-	-	-	3.147	9.840	15.732	13.502	Continuing	Continuing
• Sniper Rifle MODS: <i>WTCV, GZ1500, Sniper Rifle MODS</i>	-	-	0.971	-	0.971	1.488	1.984	1.488	2.481	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</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
• M249 SAW MODS: <i>WTCV, GZ1290, M249 Squad Automatic Weapon (SAW) MODS</i>	-	-	1.179	-	1.179	1.179	1.179	1.181	-	0	4.718
• M240 Medium Machine Gun MODS: <i>WTCV, GZ1300, M240 Medium Machine Gun MODS</i>	-	-	1.784	-	1.784	1.931	1.938	1.966	0.992	Continuing	Continuing
• MK-19 Grenade Machine Gun MODS: <i>WTCV, GB3000, MK-19 Grenade Machine Gun MODS</i>	-	-	4.959	-	4.959	5.061	5.161	5.263	14.985	Continuing	Continuing
• M2 .50 CAL Heavy Machine Gun MODS: <i>WTCV, GB4000, M2 .50 CAL Heavy Machine Gun MODS</i>	-	-	48.582	-	48.582	37.013	42.936	11.703	10.916	Continuing	Continuing
• XM153 CROWS: <i>WTCV, G04700, XM153 CROWS</i>	-	-	25.164	-	25.164	12.265	8.247	-	-	0	45.676
• Modifications Less Than \$5.0M: <i>WTCV, GC0925, Modifications Less Than \$5.0M</i>	-	-	3.157	-	3.157	3.462	3.468	3.489	3.521	Continuing	Continuing

Remarks

In support of Small Arms Requirements, components or prototypes developed in Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) is transitioned to Crew Served Weapons Engineering Development, Project EW4, Program Element 0604601A, (Budget Activity 5) to conduct engineering and manufacturing development. Once the component, prototype or operational prototype achieves Milestone C and type classification the item transitions to small arms weapon production or modification program.

D. Acquisition Strategy

Primary strategy is to mature and finalize design efforts, award Research, Development, Test and Evaluation (RDT&E) hardware contracts, and test and evaluate systems that result in type classification and follow-on production contract awards.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army											Date: February 2016				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</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	PM Soldier Weapons, : Picatinny Arsenal	0.000	-		-		0.668	Mar 2017	-		0.668	Continuing	Continuing	Continuing
Travel	MIPR	PM Soldier Weapons, : Picatinny Arsenal	0.000	-		-		0.133	Mar 2017	-		0.133	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.801		-		0.801	-	-	-

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			
Fabrication	Various	Various : Multiple Contractors	0.000	-		-		0.593	Mar 2017	-		0.593	Continuing	Continuing	Continuing
Hardware Development	MIPR	Army Research Development Engineers Centers : Multiple	0.000	-		-		0.074	Mar 2017	-		0.074	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.667		-		0.667	-	-	-

Remarks
593

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	MIPR	Army Research Development Engineering Centers : Multiple	0.000	-		-		8.730	Mar 2017	-		8.730	Continuing	Continuing	Continuing
Logistics	MIPR	TACOM, : Warren	0.000	-		-		0.269	Mar 2017	-		0.269	Continuing	Continuing	Continuing

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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 / 5				PE 0604601A / Infantry Support Weapons				EW4 / Crew Served Weapons Engineering Development							
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
Human Research and Engineering	MIPR	Army Research Laboratory, : Aberdeen Proving Ground	0.000	-		-		0.269	Mar 2017	-		0.269	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		9.268		-		9.268	-	-	-
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 Developmental Test Command, : Aberdeen Proving Ground	0.000	-		-		1.365	Mar 2017	-		1.365	Continuing	Continuing	Continuing
Operational Testing	MIPR	Army Test and Evaluation Command, : Aberdeen Proving Ground	0.000	-		-		2.077	Mar 2017	-		2.077	Continuing	Continuing	Continuing
Validation Testing	MIPR	Army Test and Evaluation Centers, : Multiple	0.000	-		-		0.269	Mar 2017	-		0.269	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		3.711		-		3.711	-	-	-
Project Cost Totals			0.000	-		0.000		14.447		-		14.447	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NEW WEAPONS																												
Next Generation Squad Automatic Rifle (NGSAR)																												
M3 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS)																												
Precision Sniper Rifle (PSR)																												
CREW SERVED WEAPON ENHANCEMENTS																												
Gunner Integrated Protection and Restraint System (GIPRS)																												
Increased Barrel Life																												
Compact Semi-Automatic Sniper System (CSASS)																												
Individual Non-Lethal System																												
Sniper Upgrades																												
Weapons Upgrades and Accessories																												
AMMUNITION																												
XM1112 Airburst Non-Lethal Munition (ANLM)																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Ammunition Upgrades																												
COMBAT OPTICS																												
Mounted Machinegun Optic																												
Optic Upgrades																												
FIRE CONTROL																												
Advanced Fire Control with Hyperspectral Target																												
Advanced Fire Control with Precision Projectile/Dynamic																												
Small Arms Fire Control - Precision																												
Smal Arms Fire Control - Crew Served																												
Fire Control Upgrades																												
RESEARCH AND ANALYSIS																												
Research and Analysis																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NEW WEAPONS	1	2017	4	2021
Next Generation Squad Automatic Rifle (NGSAR)	1	2017	4	2021
M3 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS)	1	2017	4	2017
Precision Sniper Rifle (PSR)	1	2017	3	2020
CREW SERVED WEAPON ENHANCEMENTS	1	2017	4	2021
Gunner Integrated Protection and Restraint System (GIPRS)	1	2017	4	2018
Increased Barrel Life	1	2017	4	2021
Compact Semi-Automatic Sniper System (CSASS)	1	2017	4	2018
Individual Non-Lethal System	1	2017	4	2020
Sniper Upgrades	1	2017	4	2021
Weapons Upgrades and Accessories	1	2017	4	2021
AMMUNITION	1	2017	4	2021
XM1112 Airburst Non-Lethal Munition (ANLM)	1	2017	4	2017
Ammunition Upgrades	1	2017	4	2021
COMBAT OPTICS	1	2017	4	2021
Mounted Machinegun Optic	1	2017	4	2018
Optic Upgrades	1	2017	4	2021
FIRE CONTROL	1	2017	4	2021
Advanced Fire Control with Hyperspectral Target	1	2017	4	2019
Advanced Fire Control with Precision Projectile/Dynamic	1	2017	4	2019
Small Arms Fire Control - Precision	1	2017	4	2021
Smal Arms Fire Control - Crew Served	1	2017	4	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>

Events	Start		End	
	Quarter	Year	Quarter	Year
Fire Control Upgrades	1	2017	4	2021
RESEARCH AND ANALYSIS	1	2017	4	2021
Research and Analysis	1	2017	4	2021

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
S58: <i>Soldier Enhancement Program</i>	-	3.212	15.554	6.776	-	6.776	6.197	6.337	6.476	6.607	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

The Soldier Enhancement Program (SEP) was established by the National Defense Authorization Acts for Fiscal Years 1990 and 1991. The purpose of the SEP is to evaluate Commercial Off the Shelf/Government Off the Shelf/Non-Developmental Items (COTS/GOTS/NDI) that have the potential to increase the combat effectiveness of the Soldier. SEP uses a buy, try and decide methodology to support accelerated evaluation, integration, modernization, and enhancement efforts for lighter, more lethal weapons, and improved Soldier items including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigational aids. Proposals are submitted by Soldiers and others at any time, and are reviewed for approval twice a year by the SEP Council of Colonels (COC). Approved proposals are validated by G/3/5/7 and become SEP initiatives that are evaluated by Soldiers. The process, to include a completed evaluation report is completed within 12 months. The RDT&E funding is used for Soldier evaluations, evaluation planning and documentation of results.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Soldier Enhancement Program (SEP) Evaluations</p> <p>Description: Procured and evaluated COTS/GOTS/NDI items that has the potential to enhance Soldier combat effectiveness.</p> <p>FY 2015 Accomplishments: Evaluated 23 approved initiatives. Evaluations included safety testing, collection, and analysis of user feedback/results.</p> <p>FY 2016 Plans: Funding will support evaluation of approximately 68 initiatives. Product evaluations will include safety testing, collection, and analysis of user feedback/results and documentation of results.</p> <p>FY 2017 Plans: Funding will support evaluation of approximately 30 new initiatives. Evaluations will include safety testing, collection, and analysis of user feedback/results and documentation of results.</p>	2.715	5.048	6.255
<p>Title: Soldier Enhancement Program Evaluations</p> <p>Description: Additional funding will support evaluation of SEP initiatives.</p> <p>FY 2016 Plans:</p>	-	10.000	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Additional funding will support evaluation of approximately 41 initiatives. Product evaluations will include safety testing, collection, and analysis of user feedback/results and documentation of results.			
Title: Systems Engineering and Program Management.	0.497	0.506	0.521
Description: Systems Engineering and Program Management.			
FY 2015 Accomplishments: The SEP team received incoming proposals, submitted via the SEP Web application (http://peosoldier.army.mil/SEP). Coordinated with industry/TRADOC to ensure proposals satisfied user needs and were COTS/GOTS/NDI solutions which could be readily purchased and evaluated. Conducted two Council of Colonels and prepared documentation for Army G-3/5/7 validation. Proposals determined to be SEP initiatives completed an evaluation and received a recommendation to either inform a requirement, transition to an existing Program of Record or was included in the GSA and/or DLA catalogs for future procurements.			
FY 2016 Plans: The SEP team will continue to receive and review incoming proposals. Coordination with industry/TRADOC to ensure that submitted proposals satisfy user needs. Evaluated SEP initiatives will receive a recommendation to either inform a requirement, transition to an existing Program of Record or be included in the GSA and/or DLA catalogs for future procurements.			
FY 2017 Plans: The SEP team will continue to receive and review incoming proposals. Coordination with industry and TRADOC to ensure submitted proposals will continue to satisfy needs. Evaluated SEP initiatives will receive a recommendation to either inform a requirement, transition to an existing Program of Record or be included in the GSA and/or DLA catalogs for future procurements.			
Accomplishments/Planned Programs Subtotals	3.212	15.554	6.776

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>	
• OPA3 MA6800: <i>Soldier Enhancement - Other Support Equipment - MA6800</i>	1.677	2.287	2.138	-	2.138	2.190	2.234	2.278	2.324	Continuing	Continuing
• OPA2 BA5300: <i>Soldier Enhancement - Comms & Electronics Equipment - BA5300</i>	0.294	0.349	-	-	-	-	-	-	-	0	0.643
• AMMO: <i>Soldier Enhancement Program (SEP) Ammo</i>	-	-	0.341	-	0.341	0.348	0.355	0.362	0.369	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• WTCV GC0076: <i>Soldier Enhancement - Smalls Arms Weapons - GC0076</i>	1.682	2.392	3.155	-	3.155	3.122	3.283	3.349	3.417	Continuing	Continuing

Remarks

D. Acquisition Strategy

SEP focuses on COTS/GOTS/NDI initiatives submitted by Soldiers and industry. SEP proposals are reviewed and approved semi-annually. Procurement funds SEP COTS/GOTS/NDI items for evaluation. Research, Development, Test and Evaluation is used to conduct product evaluations which includes safety testing, data collection, analysis of Soldier feedback/results and documentation of results.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Various	MIPR	PEO Soldier : Ft. Belvoir, VA	12.253	0.497	Mar 2015	0.506	Mar 2016	0.521	Mar 2017	-		0.521	Continuing	Continuing	Continuing
Subtotal			12.253	0.497		0.506		0.521		-		0.521	-	-	-

Remarks
Systems Engineering and Program Management includes engineering support, conducting technical evaluations, market research and program reviews.

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			
Various	MIPR	Various : Various	39.573	-		-		-		-		-	0	39.573	Continuing
Subtotal			39.573	-		-		-		-		-	0.000	39.573	-

Remarks
Candidates for the Soldier Enhancement Program are received, reviewed, and approved semi-annually. Contractual efforts are focused on procuring prototypes for testing.

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			
Various	MIPR	PEO Soldier : Ft. Belvoir, VA	6.424	-		-		-		-		-	0	6.424	0
Subtotal			6.424	-		-		-		-		-	0.000	6.424	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			
Various	MIPR	Various : Various	16.810	2.715	Aug 2015	15.048	Aug 2016	6.255	Aug 2017	-		6.255	Continuing	Continuing	Continuing
Subtotal			16.810	2.715		15.048		6.255		-		6.255	-	-	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
Testing costs vary annually depending on number and type of items being evaluated.

	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	75.060	3.212	15.554	6.776	-	6.776	-	-	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Evaluate Initiatives 1-2Q FY15	Test approved proposals																											
(1) SEP Council of Colonel approval/prioritization process 2Q FY15	▲ 1 Approval/prioritization of SEP Proposals																											
Evaluate Initiatives 3-4Q FY15	Test approved proposals																											
(2) SEP Council of Colonel approval/prioritization process 4QFY15	▲ 2 Approval/prioritization of SEP Proposals																											
Evaluate Initiatives 1-2Q FY16	Test approved proposals																											
(3) SEP Council of Colonel approval/prioritization process 2Q FY16	▲ 3 Approval/prioritization of SEP Proposals																											
Evaluate Initiatives 3-4Q FY16	Test approved proposals																											
(4) SEP Council of Colonel approval/prioritization process 4QFY16	▲ 4 Approval/prioritization of SEP Proposals																											
Evaluate Initiatives 1-2Q FY17	Test approved proposals																											
(5) SEP Council of Colonel approval/prioritization process 2Q FY17	▲ 5 Approval/prioritization of SEP Proposals																											
Evaluate Initiatives 3-4Q FY17	Test approved proposals																											
(6) SEP Council of Colonel approval/prioritization process 4QFY17	▲ 6 Approval/prioritization of SEP Proposals																											
Evaluate Initiatives 1-2Q FY18	Test approved proposals																											
	Test approved proposals																											

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) SEP Council of Colonel approval/prioritization process 2Q FY18																	▲ Approval/prioritization of SEP Proposals											
Evaluate Initiatives 3-4Q FY18																												
(2) SEP Council of Colonel approval/prioritization process 4QFY18																	▲ 2 Approval/prioritization of SEP Proposals											
Evaluate Initiatives 1-2Q FY19																												
(3) SEP Council of Colonel approval/prioritization process 2Q FY19																	▲ 3 Approval/prioritization of SEP Proposals											
Evaluate Initiatives 3-4Q FY19																												
(4) SEP Council of Colonel approval/prioritization process 4QFY19																	▲ 4 Approval/prioritization of SEP Proposals											
Evaluate Initiatives 1-2Q FY20																												
(5) SEP Council of Colonel approval/prioritization process 4QFY20																	▲ 5 Approval/prioritization of SEP Proposals											
Evaluate Initiatives 1-2Q FY21																												
(6) SEP council proposal approval/prioritization 2QFY21																	▲ 6 Approval/prioritization of SEP Proposals											
Evaluate Initiatives 3-4Q FY21																												
(7) SEP Council of Colonel approval/prioritization process 4QFY21																	▲ 7 Approval/prioritization of SEP Proposals											

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Evaluate Initiatives 1-2Q FY15	1	2015	2	2015
SEP Council of Colonel approval/prioritization process 2Q FY15	2	2015	2	2015
Evaluate Initiatives 3-4Q FY15	3	2015	4	2015
SEP Council of Colonel approval/prioritization process 4QFY15	4	2015	4	2015
Evaluate Initiatives 1-2Q FY16	1	2016	2	2016
SEP Council of Colonel approval/prioritization process 2Q FY16	2	2016	2	2016
Evaluate Initiatives 3-4Q FY16	3	2016	4	2016
SEP Council of Colonel approval/prioritization process 4QFY16	4	2016	4	2016
Evaluate Initiatives 1-2Q FY17	1	2017	2	2017
SEP Council of Colonel approval/prioritization process 2Q FY17	2	2017	2	2017
Evaluate Initiatives 3-4Q FY17	3	2017	4	2017
SEP Council of Colonel approval/prioritization process 4QFY17	4	2017	4	2017
Evaluate Initiatives 1-2Q FY18	1	2018	2	2018
SEP Council of Colonel approval/prioritization process 2Q FY18	2	2018	2	2018
Evaluate Initiatives 3-4Q FY18	3	2018	4	2018
SEP Council of Colonel approval/prioritization process 4QFY18	4	2018	4	2018
Evaluate Initiatives 1-2Q FY19	1	2019	2	2019
SEP Council of Colonel approval/prioritization process 2Q FY19	2	2019	2	2019
Evaluate Initiatives 3-4Q FY19	3	2019	4	2019
SEP Council of Colonel approval/prioritization process 4QFY19	4	2019	4	2019
Evaluate Initiatives 1-2Q FY20	1	2020	2	2020
SEP Council of Colonel approval/prioritization process 4QFY20	4	2020	4	2020
Evaluate Initiatives 1-2Q FY21	1	2021	2	2021

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
SEP council proposal approval/prioritization 2QFY21	2	2021	3	2021
Evaluate Initiatives 3-4Q FY21	3	2021	4	2021
SEP Council of Colonel approval/prioritization process 4QFY21	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S60 / <i>Clothing & 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
S60: <i>Clothing & Equipment</i>	-	2.422	5.980	10.166	-	10.166	7.814	5.593	7.813	9.414	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding supports engineering and manufacturing development tasks related to individual clothing, equipment and personnel parachutes with the goal of enhancing the survivability, mobility and quality of life of the individual Soldier. It funds system integration and formal Developmental Testing/Operational Testing of preproduction and production representative systems leveraging advancements in materials, fabrication techniques, moisture management, flame resistance, antimicrobial treatments, insect protection, extreme environmental protection and chemical/biological protection and camouflage, to include evaluation, test, and conduct of Soldier evaluations of Organizational Clothing and Individual Equipment appropriate for use in jungle/tropical and Arctic environments. Goal is to increase the capabilities and durability of tactical and non-tactical clothing and individual equipment. Includes integration and interface on the Soldier system. It also funds improvements and testing/evaluation of personnel parachute systems.

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

	FY 2015	FY 2016	FY 2017
Title: Soldier Uniforms and Clothing	0.518	4.168	4.000
Description: Develop and provide superior and sustainable integrated clothing for the Soldier in a rapidly changing global environment.			
FY 2015 Accomplishments: Flame Resistant Clothing. Obtained Materiel Development Decision (MDD) and Milestone C (MS-C) Decision for the Army Combat Pants (ACP) in 2QFY15.			
Procured prototypes of Garrison Food Service Uniform (GFSU), and conducted user evaluation to test modified patterns to incorporate commercial standards for burn protection, stain release, and professional appearance into the GFSU. Achieved GFSU MDD and MS-C in 4QFY15. Developed revised patterns and conducted follow-on user evaluation on Army Service Uniform (ASU) slacks to address women's concerns in fit and function of the ASU.			
FY 2016 Plans: Uniform Clothing and Environmental Clothing System. Establish shade standards for fabrics and components used in Operational Camouflage Pattern (OCP) organizational clothing. Conduct operational tests of improved fabrics for reduced weight of winter overwhites.			
Flame Resistant Clothing. Conduct developmental test of Government designed/owned Knee Pad for the Army Combat Pants.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Clothing Bag. Continue to refine designs and incorporate alternate materials and designs in clothing bag items including the Women's Army Service Uniform (ASU) slacks, and alternate fabrics for the Army Physical Fitness Uniform (APFU).</p> <p>FY 2017 Plans: Flame Resistant Clothing: Conduct User Evaluation of FR Uniforms to incorporate design changes to improve fit and comfort based on Soldier feedback and incorporate more durable and affordable FR fabrics. Obtain MDD and MS B to procure prototypes and conduct Limited User Evaluation of FR Fuel Handler Coveralls to improve fit and breathability and reduce weight.</p> <p>Clothing Bag. Continue to refine designs and incorporate alternate materials and designs in clothing bag items including testing of lighter weight improved fabrics and designs of men's shirts and women's blouses worn with the Army Service Uniform to improve comfort. Procure prototypes and conduct user evaluation of the Women's Maternity Utility Uniform.</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: Personnel Airdrop. Modified PARANAVSYS software to utilize Nett Warrior as the PARANAVSYS End User Device. Procured Developmental Test 2 (DT2) assets and conducted DT on PARANAVSYS which provides GPS navigation capabilities to Military Free Fall (MFF) parachutists.</p> <p>NBC /Load Carriage: Procured test assets and conducted User Evaluation of the Modular Lightweight Load Carrying Equipment (MOLLE) 4000 Rucksack (formerly Airborne Rucksack) in 4QFY15.</p> <p>FY 2016 Plans: NBC/Load Carriage. Conduct developmental test and evaluation of MOLLE 4000 rucksack with airborne units. Following MS B in 3QFY16 complete safety release testing for the Individual Water Treatment Device (IWTD). Modify poncho liner to improve performance as a shelter. Environmental Equipment. Following approval of Material Change Proposal, modify poncho liner to integrate with the larger field tarp and modify field tarp to add central connection point to improve performance as a shelter.</p> <p>Airdrop. Conduct bench top testing of updated PARANAVSYS software (v 2.0) with new Nett Warrior End User Device and new Soldier Radio. After program initiation for the Electronic EEAD Program of Record, procure design validation assets and conduct DT to support a MS C in 1QFY18. Conduct tests on the ripcord design and pack tray of the T-11 Reserve (R) parachute to reduce potential of accidental activation. Procure prototype T-11 main canopies and conduct Developmental Testing of revised</p>		1.904	1.812	6.166

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
packing procedures and redesigned corner vent panels to reduce corner vent inversions. Develop prototypes and test redesigned RA-1 Main Riser Trim Straps and Reserve Pilot Chute Spring. Test updated air permeability treatments for RA-1 canopies to support new production contract award. Conduct Mean-Time-Between Failure (MTBF) tests of MC-6 and T-11 parachutes to determine if the service life of these parachutes can be extended.			
<i>FY 2017 Plans:</i> NBC/Load Carriage/Hydration: Procure samples and conduct live chemical agent testing for the Multi-Purpose Hydration System (MPHS) to increase operational life to reach 365 days once placed into service an operational environment. Procure samples and conduct testing of tactical holster to be fielded with the new Modular Handgun System. Conduct technical testing of DT/OT on IWTD candidates.			
Accomplishments/Planned Programs Subtotals	2.422	5.980	10.166

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
• Clothing and Individual Eqp S53: <i>RDTE, 0603827.S53, Clothing and Equipment</i>	1.555	9.985	3.582	-	3.582	3.571	1.845	2.495	3.113	Continuing	Continuing
• Central Funding and Fielding: <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
• Advanced Tactical Parachute System: <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
Acquisition strategies for these programs vary in methods, and range from: 1) Material Change programs that result in engineering changes to existing systems to; 2) traditional development programs that include an Engineering and Manufacturing Development phase ranging in duration from 12 to 48 months, depending on the level of complexity and testing required.

E. Performance Metrics
N/A

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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 / 5				PE 0604601A / Infantry Support Weapons				S60 / Clothing & Equipment							
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			
In-House Support	Various	PM SPIE : Various	8.475	0.104		0.500		0.623		-		0.623	Continuing	Continuing	Continuing
Subtotal			8.475	0.104		0.500		0.623		-		0.623	-	-	-
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			
Engineering Support	Various	NSRDEC : Natick, MA	14.889	0.408		0.498		0.490		-		0.490	Continuing	Continuing	Continuing
Development Contracts	Various	Various : Various	41.431	1.010		1.192		3.500		-		3.500	Continuing	Continuing	Continuing
Subtotal			56.320	1.418		1.690		3.990		-		3.990	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Misc Support Costs	Various	Various : Various	15.296	-		0.790		0.500		-		0.500	Continuing	Continuing	Continuing
Subtotal			15.296	-		0.790		0.500		-		0.500	-	-	-
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			
Developmental Testing	MIPR	Various : Various	17.405	0.900		3.000		5.053		-		5.053	Continuing	Continuing	Continuing
Subtotal			17.405	0.900		3.000		5.053		-		5.053	-	-	-
Project Cost Totals			97.496	2.422		5.980		10.166		-		10.166	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	UNIFORM CLOTHING																											
(1) Army Combat Pant MS C	▲																											
Continue Fabric & FR Upgrades																												
Clothing Bag Upgrades and Evaluations																												
APFU Product Improvement																												
Garrison Food Service Uniform Improvements																												
(2) Garrison Food Service Uniform Milestone C	▲																											
(3) EPS MS B													▲															
Environmental Protection System (EPS) DT																												
(4) Jungle Boot MS C													▲															
(5) Military Free Fall Environment Equipment MS C													▲															
(6) Torso and Extremity Environmental Protection MS C																	▲											
INDIVIDUAL EQUIPMENT																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	(1) EEAAD MDD/Program Initiation					▲ 1																						
EEAAD Developmental Testing																												
PARANAVSYS DT/OT																												
Poncho Liner/Field Tarp Testing																												
MPHS Operational Life Testing																												
Tactical Holster Testing																												
Integrated Load Carriage System DT/OT																												
(2) Integrated Load Carriage System MS C																	▲ 2											
IWTD Candidate Technical Testing																												
(3) IWTD MS C																	▲ 3											

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
UNIFORM CLOTHING	1	2010	4	2015
Army Combat Pant MS C	2	2015	2	2015
Continue Fabric & FR Upgrades	3	2009	4	2018
Clothing Bag Upgrades and Evaluations	1	2012	4	2018
APFU Product Improvement	1	2012	3	2015
Garrison Food Service Uniform Improvements	1	2015	3	2015
Garrison Food Service Uniform Milestone C	4	2015	4	2015
EPS MS B	1	2018	1	2018
Environmental Protection System (EPS) DT	1	2018	2	2019
Jungle Boot MS C	4	2018	4	2018
Military Free Fall Environment Equipment MS C	4	2018	4	2018
Torso and Extremity Environmental Protection MS C	4	2019	4	2019
INDIVIDUAL EQUIPMENT	2	2008	4	2015
EEAAD MDD/Program Initiation	3	2016	3	2016
EEAAD Developmental Testing	3	2016	4	2016
PARANAVSYS DT/OT	1	2015	4	2016
Poncho Liner/Field Tarp Testing	2	2016	1	2017
MPHS Operational Life Testing	2	2017	4	2018
Tactical Holster Testing	2	2017	4	2017
Integrated Load Carriage System DT/OT	2	2018	1	2019
Integrated Load Carriage System MS C	3	2019	3	2019
IWTD Candidate Technical Testing	1	2018	1	2018
IWTD MS C	2	2018	2	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S61 / <i>Acis Engineering 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
S61: <i>Acis Engineering Development</i>	-	1.742	3.463	3.811	-	3.811	3.849	3.840	1.897	1.749	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project conducts Engineering and Manufacturing Development (EMD) for the Air Soldier System (Air SS). The Air SS is Army aircrew survival and mission equipment that improves safety, survivability, and human performance. The Air SS Capability Development Document addresses capability gaps identified during sustained combat operations in Iraq and Afghanistan including inadequate crew station compatibility caused by equipment bulk, aircraft mishaps as a result of limited Situational Awareness (SA), and lack of functionally integrated aircrew mission and survival equipment. Air SS delivers reduced bulk and weight of survival equipment; improved crew station compatibility; and improved pilot SA and safety. The Air SS provides enhanced terrain, threat, and obstacle avoidance information; improved heads-up display (HUD) technologies that increase the aviator's ability to safely land or takeoff in Degraded Visual Environments (DVE); and the capability to perform extended missions in extreme environmental and chemical/biological threat conditions. This project also funds the development and test of the Air SS pre-planned product improvement (P3I) phase that includes the Electronic Flight Bag (EFB), a digital replacement for paper-based Department of Defense (DoD) Flight Information Publications for Army aircrews; improved laser eye protection; and tactile cueing that enhances aviator SA in a DVE. This program does not duplicate any aircraft platform program efforts. 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) Engineering Development	1.742	3.463	3.811
Description: Development, Integration, evaluation, testing, and qualification of Air Soldier System multi-phased capabilities as technologies mature.			
FY 2015 Accomplishments: Tested and evaluated Air Soldier System operational capabilities supporting a Full Rate Production Decision for the initial increment of Air Soldier System capabilities.			
FY 2016 Plans: Initial evaluation, modification, integration, and qualification of P3I candidate commercial products focusing on an Electronic Flight Bag solution. Initial focus will be on market research and performance demonstration of available Commercial Off the Shelf (COTS) devices. Down selection to preferred COTS solution followed by the preliminary design of any modifications and platform integration activities necessary to support initial deployment of an EFB capability which are also planned for FY 17.			
FY 2017 Plans: Continued evaluation, modification, integration, and qualification of P3I candidate commercial products. Primary focus will be on the detailed design and qualification of a COTS or modified COTS EFB tablet, including formal developmental and operational flight testing scheduled to begin in Fiscal Year (FY) 2017. Other activities will include market research and preliminary evaluation			

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>
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B. Accomplishments/Planned Programs (\$ in Millions) of candidate technologies for applicability to Air SS requirements for improved laser eye protection, integrated soldier power, and/or wireless personal networks.	FY 2015	FY 2016	FY 2017
Accomplishments/Planned Programs Subtotals	1.742	3.463	3.811

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
• Aircrew Integrated Sys Adv Dev: <i>RDTE, A PE</i> <i>0603827A, PROJ S51 - Adv Dev</i>	0.161	0.152	-	-	-	-	-	-	-	0	0.313
• Aircrew Integrated Systems: <i>Aircraft Procurement,</i> <i>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

Engineering and Manufacturing Development efforts for the Air SS program include development, integration, test, and airworthiness qualification of aviator flight display symbology technologies that will increase crew member situational awareness in DVE, and aircrew protective and survival equipment that reduces bulk and weight and improves crew station compatibility and mission effectiveness. Air SS includes improvements to the current flight helmet; improvements to the survival gear carriage system; lightweight body armor; environmental protective clothing and personal survival equipment; and a day/night helmet-mounted flight symbology display with head tracking and 3D flight symbology for UH-60 and CH-47 aviators. The Air SS P3I phase includes the development and qualification of the EFB, a digital Army aviation replacement for paper-based DoD Flight Information Publications, and the continuing development of deferred capabilities as defined within the draft Capability Production Document (CPD). P3I capabilities also include tactile Situational Awareness enhancements and laser eye protection. Contracts with industry include both Cost and Firm Fixed Price using full and open competition, each evaluated and selected to appropriately share risk between industry and the government.

E. Performance Metrics

N/A

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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 / 5				PE 0604601A / Infantry Support Weapons				S61 / Acis Engineering 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
PM Administration	Allot	Various Government : Huntsville, Alabama	2.839	0.102		0.273		0.387		-		0.387	Continuing	Continuing	Continuing
Subtotal			2.839	0.102		0.273		0.387		-		0.387	-	-	-
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
Air Warrior and Air Soldier System Development	C/CPFF	Various Government : Various Locations	56.353	0.158		2.705		1.577		-		1.577	Continuing	Continuing	Continuing
Subtotal			56.353	0.158		2.705		1.577		-		1.577	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	RO	Various Government : Various Locations	3.464	0.093		0.258		0.292		-		0.292	Continuing	Continuing	Continuing
Subtotal			3.464	0.093		0.258		0.292		-		0.292	-	-	-
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 and Operational Testing	RO	Various Activities : Various Locations	10.601	1.389		0.227		1.555		-		1.555	Continuing	Continuing	Continuing
Subtotal			10.601	1.389		0.227		1.555		-		1.555	-	-	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Air Soldier System System (Air SS) Dev, Dem and Qual Test																												
Air SS Full Rate Production (FRP) Decision																												
Air SS Pre-planned Product Improv (P3I) Phase																												
Electronic Flight Bag (EFB) Development & Qualification																												
EFB downselect to preferred alternative																												
EFB Preliminary Design and Platform Integration																												
EFB Detailed Design & Qualification																												
EFB Developmental Test/Operational Test (DT/OT)																												
EFB Production Decision																												
Deferred Air SS Capabilities Develop & Qual																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Air Soldier System System (Air SS) Dev, Dem and Qual Test	1	2012	4	2015
Air SS Full Rate Production (FRP) Decision	3	2016	3	2016
Air SS Pre-planned Product Improv (P3I) Phase	1	2016	4	2020
Electronic Flight Bag (EFB) Development & Qualification	1	2016	3	2016
EFB downselect to preferred alternative	3	2016	3	2016
EFB Preliminary Design and Platform Integration	3	2016	4	2016
EFB Detailed Design & Qualification	1	2017	3	2017
EFB Developmental Test/Operational Test (DT/OT)	3	2017	1	2018
EFB Production Decision	3	2018	3	2018
Deferred Air SS Capabilities Develop & Qual	1	2018	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</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
S62: <i>Counter-Defilade Target Engagement - SDD</i>	-	11.945	21.077	10.862	-	10.862	10.895	2.487	0.000	2.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Maneuver Center of Excellence (MCoE), FT Benning, GA (User Community) identifies the Counter Defilade Target Engagement (CDTE) as a critical capability gap for our Soldiers in combat. The number one materiel solution to mitigate the critical capability gap (defeating defilade (hidden) targets from 35-500m) is the XM25. The XM25 provides the Infantry Soldier with a leap-ahead overmatch capability that dramatically increases lethality, range, and capability through the use of a family of programmable 25mm ammunition and allows the Soldier to engage defilade targets with a high degree of accuracy while posing minimal burden, in terms of weight and size. The XM25 fires 25mm munitions including high-explosive airburst (HEAB) and training rounds. The XM25 comes with a target acquisition/fire control subsystem that integrates thermal capability with direct-view optics, laser rangefinder, environmental sensors, fuze setter, ballistic computer, and internal display. The XM25 has a 500-meter point target range and a 800-meter area target range capable of defeating defilade targets.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Engineering and Manufacturing Development/Fabricate</p> <p>Description: Description: Engineering Development and Fabrication</p> <p>FY 2015 Accomplishments: Established an open system component design to incorporate technical and producible design improvements for critical electronics and optics. Reduced integration complexity of components. Initiated build of hardware to support contractor and government testing.</p> <p>FY 2016 Plans: Conduct pre Milestone C system level trade studies and design reviews to improve system effectiveness and reliability. Implement design modifications to address issues identified during contractor and government testing. Explore Engineering Change Proposals (ECPs) to potentially reduce weight, size, and power consumption.</p> <p>FY 2017 Plans: Will complete build of hardware to support contractor and government testing. Will continue to implement modifications and explore additional engineering changes to potentially reduce weight, size, and power consumption.</p>	9.800	13.990	7.236
<p>Title: Engineering and Training Development</p> <p>Description: Description: Engineering and Training Development</p>	0.459	0.860	0.430

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Provided engineering support for weapon systems, subsystems, target acquisition/fire control (TA/FC) and software design enhancements based on lessons learned from the Limited User Evaluations (LUE) and updated training materials. Provided engineering support for the development of the XM25 virtual training concept.</p> <p><i>FY 2016 Plans:</i> Continue to provide engineering support for weapons systems, subsystems, target acquisition/fire control (TA/FC), ammunition and software design modifications based on lessons learned from Pre-Production Qualification Testing (PPQT) #2. Refine and update training material based on lessons learned during user assessments, Soldier training and pre log demo activities, as well as, PPQT#2. Continue to provide engineering support for the development of the virtual training concept for the XM25.</p> <p><i>FY 2017 Plans:</i> Will continue to provide engineering support for weapons systems, subsystems, target acquisition/fire control (TA/FC), ammunition and software design modifications. Will complete training material based on lessons learned during user assessments, Soldier training and log demo activities. Will provide engineering support to complete the development of the virtual training concept for the XM25.</p>			
<p><i>Title:</i> Development / Operational Test and Evaluation Activities</p> <p><i>Description:</i> Description: Test and Evaluate</p> <p><i>FY 2015 Accomplishments:</i> Conducted government, contractor, user assessment, design verification and other test activities to evaluate engineering changes to the weapon system and TA/FC. Government and user evaluated test efforts related to pre-planned product improvements. Planned, coordinated, and resourced PPQT#2, LUT and Pre Logistics Demonstrations.</p> <p><i>FY 2016 Plans:</i> Conduct PPQT#2 consisting of government test efforts to evaluate engineering changes, fixes and design modifications to address anomalies. Conduct Design Verification Testing and Pre-Logistics Demonstrations. Plan and coordinate Low Rate Initial Production (LRIP), Production Qualification Testing (PQT), Live Fire Tests and Evaluations (LFT&E) and final Logistics Demonstration (Log Demo)</p> <p><i>FY 2017 Plans:</i> Will conduct PQT of LRIP quantities consisting of government test efforts to evaluate weapon system and TA/FC design and production maturity. Will also conduct Limited User Testing (LUT), LFT&E, and the final log demo.</p>	1.239	5.820	2.950
<p><i>Title:</i> Program Management</p>	0.447	0.407	0.246

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Description: Program Management</p> <p>FY 2015 Accomplishments: Provided Program Management oversight pre Milestone C required to test and evaluate engineering changes and pre-planned product improvements to the weapon system.</p> <p>FY 2016 Plans: Provide program management, logistical and life cycle support, to organize, coordinate and control program activities leading up to Milestone C and transition to Low Rate Initial Production (LRIP).</p> <p>FY 2017 Plans: Will provide program management, logistical and life cycle support, to organize, coordinate and control program activities through Low Rate Initial Production (LRIP).</p>			
Accomplishments/Planned Programs Subtotals	11.945	21.077	10.862

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
• G16101: (G16101) <i>Integrated Air Burst Weapon System Family</i>	-	-	9.764	-	9.764	14.852	24.930	32.158	25.798	Continuing	Continuing
• E92500: (E92500) <i>CTG, 25MM, XM1083 High Explosive Air Burst (HEAB)</i>	-	-	0.198	-	0.198	2.180	4.957	5.000	-	Continuing	Continuing
• E92510: (E92510) <i>CTG, 25MM, XM1081 Target Practice (TP)</i>	-	-	-	-	-	0.396	0.892	1.000	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

The XM25 transitioned from the Technology and Development phase to Engineering and Manufacturing Development (EMD) phase by achieving Milestone B in December 2010. The EMD phase completes development of the XM25 and verifies training solutions for the Milestone C approval currently scheduled for 1QTR FY2017. The Research and Development acquisition strategy is to use sole source contracting with Orbital ATK (formerly known as Alliant Techsystems), Plymouth, MN. RDT&E initiatives will continue post Milestone C for engineering changes and pre-planned product improvements to include ammunition and target acquisition/fire control development.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>

E. Performance Metrics

N/A

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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 / 5				PE 0604601A / Infantry Support Weapons				S62 / Counter-Defilade Target Engagement - SDD								
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	Various	Performed by Government : Various Activities	2.743	0.447	Jan 2015	0.407	Oct 2015	0.246	Oct 2016	-		0.246	Continuing	Continuing	Continuing	
Subtotal			2.743	0.447		0.407		0.246		-		0.246	-	-	-	
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	
Design, Develop and Fabricate	SS/CPFF	ATK : Plymouth, MN	105.395	9.800	Feb 2015	10.240	Feb 2016	5.305	Feb 2017	-		5.305	Continuing	Continuing	Continuing	
Subtotal			105.395	9.800		10.240		5.305		-		5.305	-	-	-	
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	Various	Various : Multiple	7.826	0.449	Mar 2015	0.637	Jan 2016	0.400	Jan 2017	-		0.400	Continuing	Continuing	Continuing	
Training Development Support	MIPR	TACOM/PEO STRI : TACOM/PEO STRI	0.760	0.010	Mar 2015	0.223	Feb 2016	0.030	Feb 2017	-		0.030	Continuing	Continuing	Continuing	
Subtotal			8.586	0.459		0.860		0.430		-		0.430	-	-	-	
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/System Tests and Articles	SS/CPFF	Performed by Contractor : ATK, Plymouth, MN	15.854	-		3.750	Feb 2016	1.931	Feb 2017	-		1.931	0	21.535	0	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental/Operational Tests	Various	Performed by Government : Various Activities	12.034	1.239	Nov 2014	5.820	Feb 2016	2.950	Mar 2017	-		2.950	Continuing	Continuing	Continuing
Subtotal			27.888	1.239		9.570		4.881		-		4.881	-	-	-
			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			144.612	11.945	21.077	10.862	-	10.862	-	-	-				

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Design, Develop & Fabricate	[Red shaded area covering FY 2015-2016]																															
Engineering and Training Development																																
Development Tests & Evaluation																																
Program Management																																
Design, Develop, Engineer, Test & Manage Improvements	[Red shaded area covering FY 2015-2016]																															
Pre-Production Qualification Testing (PPQT #2)																													[Blue bar]			
Limited User Testing (LUT)																													[Blue bar]			
(1) MS C/Type Classification-Limited Procurement																													[Blue bar]			
Low Rate Initial Production (LRIP)-IOT&E																													[Blue bar]			
Production Qualification Test (PQT)																													[Blue bar]			
Live Fire Test & Evaluation (LFT&E)																													[Blue bar]			
Initial Operational Test & Evaluation (IOT&E)																													[Blue bar]			
Natural Environments/Airborne LUT																													[Blue bar]			
																													[Blue bar]			
																													[Blue bar]			
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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army **Date:** February 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Type Classification - Standard Full Rate Production (FRP)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Design, Develop & Fabricate	1	2011	4	2019
Engineering and Training Development	1	2011	4	2019
Development Tests & Evaluation	1	2011	4	2019
Program Management	1	2011	4	2019
Design, Develop, Engineer, Test & Manage Improvements	1	2021	4	2021
Pre-Production Qualification Testing (PPQT #2)	2	2016	4	2016
Limited User Testing (LUT)	1	2017	1	2017
MS C/Type Classification-Limited Procurement	1	2017	1	2017
Low Rate Initial Production (LRIP)-IOT&E	1	2017	3	2019
Production Qualification Test (PQT)	4	2017	1	2018
Live Fire Test & Evaluation (LFT&E)	1	2018	2	2018
Initial Operational Test & Evaluation (IOT&E)	3	2018	1	2019
Natural Environments/Airborne LUT	2	2018	1	2019
Type Classification - Standard	3	2019	3	2019
Full Rate Production (FRP)	3	2019	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S63 / <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
S63: <i>Small Arms Improvement</i>	-	11.172	23.084	11.801	-	11.801	15.169	10.833	10.844	23.848	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Element 0604601A Project S63 - Infantry Support Weapons is renamed Program Element 0604601A Project S63 - Individual Weapons Engineering Development

New start in FY 2017 includes Additive Manufacturing (3D Printing).

Transition of technologies from Program Element 0604601A Project S63 Individual Weapons Engineering Development to Program Element 0604601A Project EW4 Crew Served Weapons Engineering Development in FY 2017 include M3 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS), Precision Sniper Rifle (PSR), Combat Semi-Automatic Sniper System (CSASS), Sniper Upgrades, Mounted Machine Gun Optic, and XM1112 Airburst Non-Lethal Munition (ANLM).

A. Mission Description and Budget Item Justification

The Small Arms Improvement Engineering and Manufacturing Development (EMD) program provides funds to transition components or prototypes from Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) and other domestic and foreign sources of small arms weapons to demonstrate, test and evaluate capability near or at planned operational requirements. Small arms systems include weapons ranging up to 40 millimeter in caliber. Current and future efforts focus on system improvements designed to enhance lethality, target acquisition, 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 system development, integration (to include human-systems), demonstration, test and evaluate components, prototypes and operational system prototypes of small arms weapons and/or enhancements. Benefits include continuous improvements to small arms weapons, fire control equipment, optics, gun barrels, ancillary equipment, training devices, component mounts, weapon mounts, and weapon/ammunition interface of current small arms fleet or new weapon systems.

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

	FY 2015	FY 2016	FY 2017
Title: New Weapons	2.460	7.452	9.025
Description: Description: Development of new weapons			
FY 2015 Accomplishments: Modular Handgun System (MHS): Prepared documentation required for MS-C decision including the Acquisition Strategy, the Test & Evaluation Master Plan (TEMP), and the Acquisition Plan. Completed System Threat Assessment Report (STAR). Conducted Industry Days 3 & 4 to clarify the Army's handgun requirement to industry, to inform them of any changes and to determine the technical maturity, and manufacturing capabilities readily available to meet/exceed the Army's requirement. Funded the Integrated Product Team (IPT), released a draft and final solicitations.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>M3 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS): Prepared and staffed all documentation required for the MDA to render an official program of record decision. Planned, coordinated, resourced, and completed evaluation activities. Completed the analysis of alternatives, health hazard assessment, affordability analysis, system safety risk assessment and required documentation to support the MAAWS.</p> <p>FY 2016 Plans: Modular Handgun System (MHS): Complete staffing of documentation required for MS-C decision. Conduct bid sample testing, operational assessments for the weapon systems and ammo. Will initiate source selection activities, conduct the Early Warfighter Acceptance shoot. Obtain a safety release and plan, coordinate and resource the first of two Logistics Demonstration events.</p> <p>M3 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS): Complete performance specifications, supportability plans and other required acquisition documents. Conduct operational test and evaluation activities and required acquisition and safety documentation necessary to Type Classify the weapon system and ammunition. Obtain Type Classification-Standard. In parallel with the Type Classification effort, the IPT will prepare the necessary documentation in support of Full Material Release.</p> <p>Precision Sniper Rifle (PSR): Continue to work in conjunction with SOCOM to 1) support development, acquisition and qualification of primary PSR anti-personnel ammunition and 2) perform acquisition and qualification efforts for PSR anti-materiel ammunition. Both rounds are necessary as a precursor for acquisition efforts in FY18 for a new multi-caliber PSR weapon.</p> <p>Squad Designated Marksman Rifle (SDM): Continue to inform requirements and the Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel, and Facilities (DOTMLPF) analysis. Will develop Acquisition Strategy and initiate execution.</p> <p>FY 2017 Plans: Modular Handgun System (MHS): Will continue source selection activities to narrow the competitive range. Will award contracts for up to three (3) COTS/NDI weapon systems and ammunition. Perform second Logistic Demonstration and begin the ammunition energetic materials qualification testing. Will conduct verification, validation, Joint CONOP and limited user test activities to facilitate down selecting to one (1) vendor. Will continue to fund the IPT and prepare Type Classification documentation.</p> <p>Squad Designated Marksman Rifle (SDM): Will continue to inform requirements and the Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel, and Facilities (DOTMLPF) analysis. Will continue to develop Acquisition Strategy and initiate execution.</p>				
Title: Small Arms Weapons Enhancements		0.596	4.735	0.250
Description: Description: Enhancements and developments of small arms weapons				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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<p><i>FY 2015 Accomplishments:</i> Compact Semi-Automatic Sniper System (CSASS): Received bid samples from vendors and conducted three phases of bid sample testing to down-select to a single qualified vendor for initial contract award and entry into Production Qualification Testing (PQT). Obtained Safety Release and developed test plan in preparation to conduct a user evaluation with active duty snipers during Phase 3 Bid Sample Testing. Convened a Source Selection Evaluation Board (SSEB) to evaluate written proposals and provide Acquisition Center with final results. Completed and submitted Test and Evaluation Master Plan (TEMP) for staffing through the CSASS Test and Evaluation IPT.</p> <p>Powered Rail / Intelligent Rail: Integrated with weapon platform and soldier borne power and data management systems as well as integrating enablers to the weapon platform.</p> <p>Weapon Upgrades and Accessories: Will continue to test, evaluate and analyze ongoing and new activities to enhance small arms weapons.</p> <p><i>FY 2016 Plans:</i> Compact Semi-Automatic Sniper System (CSASS): Award a single contract for thirty (30) Non Developmental Items (NDI) weapon systems. Conduct verification and validation Production Qualification Testing (PQT). Conduct a depot assessment and plan, coordinate, resource and conduct Pre-Logistics Demonstration events. Develop fielding plan. Continue to fund the IPT and initiate preparation of Type Classification and MS-C/TC STD decision documentation.</p> <p>Powered Rail now known as Intelligent Rail: Continue further integration with weapon platform and soldier borne power and data management systems as well as integrating enablers to the weapon platform. Continue supporting efforts related to Ballistic Compensation Over Rail, Polymer Optic Integration, and development of a General Purpose Transceiver to support the integration of various data applications, including network communications. Will acquire developmental systems to prepare for and conduct developmental testing and Soldier evaluations.</p> <p>Sniper Upgrades: Perform feasibility, analysis of alternatives, and cost benefit analysis studies for various fire control and supporting precision enablers to include Shot Counter for Reliability and Maintainability (SCRAM) and cross wind sensing technologies. Pursue development activities for addressing Small Arms Fire Control -Precision CDD requirements, which include Spotting Scope Optical Display (SSOD), Sniper Rifle Fire Control System (SRFCS), Eagle Eye (EE), and Barrel Studies.</p> <p>Small Business Innovation Research (SBIR) Enhancements: Support Phase II Enhancement and/or initialization of Phase III SBIR activities.</p>			
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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<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: FY17 New Start Additive Manufacturing 3D Printing: Will use additive manufacturing (3D Printing) methods to fabricate and test selected prototype weapons components for all weapons.</p> <p>Intelligent Rail (Formerly known as Powered Rail): To continue supporting efforts related to Ballistic Compensation Over Rail, Polymer Optic Integration, and development of a General Purpose Transceiver to support the integration of various data applications including network communications. Will support acquired developmental systems to conduct developmental testing and Soldier evaluations.</p> <p>Small Business Innovation Research (SBIR) Enhancements: Will continue to support Phase II Enhancement and/or initialization of Phase III SBIR activities.</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: Improvement of small arms ammunition</p> <p>FY 2015 Accomplishments: XM1112 Airburst Non-Lethal Munition (ANLM): Completed Developmental Testing and Limited Operational Excursion testing and reports.</p> <p>Ammunition Upgrades: Evaluated effect of new ammunition on small arms weapons.</p> <p>FY 2016 Plans: XM1112 Airburst Non-Lethal Munition (ANLM): Complete Milestone C package and conduct reliability retest.</p> <p>Ammunition Upgrades: Continue to evaluate the effect of new ammunition on small arms weapons.</p> <p>FY 2017 Plans: Ammunition Upgrades: Will continue to evaluate the effect of new ammunition on small arms weapons.</p>		1.356	1.597	0.250
<p>Title: Combat Optics</p> <p>Description: Description: Improvement of combat optics</p>		-	1.800	0.250

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>FY 2016 Plans: Grenadier Sighting System (GSS): Complete Source Selection evaluations and award developmental contract for the GSS, test and evaluation efforts, system engineering analysis, and reviews. Following award of the developmental contract the government will conduct a user experiment, system requirements review, and preliminary design review. Further test plans will also be developed, and plans for fielding, new equipment training, and development of a deployment logistics package.</p> <p>Mounted Machine Gun Optic: Finalize Machine Gun Optic Capability Production Document (CPD), including anticipated final JROC approval. Conduct final pre-Milestone C activities in preparation for transition to Program of Record in FY2017; emphasis will be on development of Test & Evaluation Master Plan (TEMP) and Production Readiness Review (PRR). Develop Acquisition Strategy and initial package for Milestone C, Type Classification and Materiel Release. Prepare Milestone Decision Document for program of record.</p> <p>Optics Upgrades: Continue engineering evaluations, verification and validation of weapon optics performance requirements.</p>				
<p>FY 2017 Plans: Grenadier Sighting System (GSS): Will continue with the 2-vendor Research and Development effort and the government will conduct a second user engagement, a critical design review, and further technical testing. Initiate Source Selection evaluation for possible down select going into Phase II activities. Further refine test plan, plans for fielding, new equipment training, and the deployment logistics package.</p> <p>Optics Upgrades: Will continue engineering evaluations, verification and validation of weapon optics performance requirements.</p>				
<p>Title: Fire Control Description: Description: Improvement of small arms fire control</p> <p>FY 2016 Plans: Advanced Fire Control with Precision Projectile/Dynamic Target Tracking: Will support integration Small Arms Fire Control - Squad: Continue to inform requirements for Squad weapons in the Small Arms Fire Control Capability Development Document (CDD).</p> <p>Fire Control Upgrades: Continue to test, evaluate and analyze ongoing and new activities to enhance small arms weapons fire control.</p> <p>FY 2017 Plans: Small Arms Fire Control - Squad: Will finalize Fire Control Capability Development Document (CDD), Squad requirements, including anticipated final Joint Requirements Oversight Council (JROC) approval. Will initiate contracting effort to support pre-</p>		-	7.400	1.926

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Milestone B activities, including Acquisition Strategy and System Engineering Plan (SEP), in preparation for transition to Program of Record.			
Fire Control Upgrades: Will continue to test, evaluate and analyze ongoing and new activities to enhance small arms weapons fire control.			
Title: Research and Analysis Description: Market Research and Cost Benefit Analysis	0.100	0.100	0.100
FY 2015 Accomplishments: Continued Market Research and Cost Benefit Analysis of new small arms weapon and/or enhancements for engineering and manufacturing development.			
FY 2016 Plans: Continue Market Research and Cost Benefit Analysis of new small arms weapon and/or enhancements for engineering and manufacturing development.			
FY 2017 Plans: Will continue Market Research and Cost Benefit Analysis of new small arms weapon and/or enhancements for engineering and manufacturing development.			
Accomplishments/Planned Programs Subtotals	4.512	23.084	11.801

	FY 2015	FY 2016
Congressional Add: New Weapons Congressional Add	4.875	-
FY 2015 Accomplishments: Precision Sniper Rifle (PSR): Provided technical and programmatic support of SOCOM PSR efforts in anticipation of Army adoption upon successful SOCOM qualification and HQDA CPD approval. Army PSR efforts supported CPD staffing activities and pre-Milestone-C program planning. Technical performance challenges forced SOCOM to abandon the contracted PSR materiel solution and seek a renewed, alternate first quarter FY16 SOCOM acquisition strategy in sync with addressing Army CPD.		
Squad Designated Marksman Rifle (SDM): Informed requirements and the Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel, and Facilities (DOTMLPF) analysis. Contracted technical and user assessments with surrogate systems. Developed Acquisition Strategy and initiated execution.		
Congressional Add: Small Arms Weapons Enhancements Congressional Add	0.700	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>

	FY 2015	FY 2016
<p>FY 2015 Accomplishments: Small Business Innovation Research (SBIR) Enhancements: Supported Phase II Enhancement efforts on Nano-structured Anti-reflective Coating and Down-Range Wind Sense SBIR's, including system level integration of the developed technologies, and limited user demonstration and evaluation of those technologies.</p> <p>Weapon Upgrades and Accessories: Tested, evaluated and analyzed ongoing and new activities to enhance small arms weapons.</p>		
<p>Congressional Add: Combat Optics Congressional Add</p> <p>FY 2015 Accomplishments: Grenadier Sighting System (GSS): Created procurement package for Draft Request for Proposal (RFP) release. Conducted second GSS industry day to provide an opportunity to answer any industry questions. Released the RFP and initiate Source Selection evaluation.</p> <p>Mounted Machine Gun Optic (MMO): Supported staffing of MMO Capability Production Document (CPD), including response to comments. Developed key documents in support of pre-Milestone C activities, with emphasis on Acquisition Strategy and draft System Engineering Plan. Conducted technical tests and Operational experiments with off the shelf candidates to inform and clarify requirements.</p> <p>Squad Fire Control Optic (SFCO): Coordinated with MCoE to finalize draft of Fire Control Capability Development Document (CDD), and the associated Squad Annex, and ensured this draft enters world-wide staffing. Continued evaluation of commercially available fire control solutions to determine utility and leverage opportunities. Established technical team to ensure that capability requirements are technically achievable, and identify appropriate technologies to meet gaps.</p>	1.085	-
Congressional Adds Subtotals	6.660	-

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
• Small Arms Improvement: <i>RDTE S54, Program Element 0603827A - Soldier Systems - Advanced Development</i>	4.004	7.449	10.554	-	10.554	7.285	7.377	7.472	15.421	Continuing	Continuing
• XM25 ISAAS: <i>WTCV, G16101, XM25 (ISAAS) Individual Semi-Automatic Airburst System</i>	-	-	9.764	-	9.764	14.852	24.930	32.158	25.798	Continuing	Continuing

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• M4A1 Carbine: <i>WTCV, G13503, M4A1 Carbine</i>	20.616	31.260	40.493	-	40.493	40.123	40.339	31.538	10.101	Continuing	Continuing
• M4 Carbine MODS: <i>WTCV, GB3007, M4 Carbine MODS</i>	7.735	27.566	29.752	-	29.752	31.104	32.551	18.524	37.358	Continuing	Continuing
• XM320 GLM: <i>WTCV, G01501, XM320 GLM</i>	27.892	26.294	3.062	-	3.062	18.578	20.324	19.866	19.848	Continuing	Continuing
• Handgun: <i>WTCV, G15325, Handgun</i>	-	-	-	-	-	8.326	18.790	21.184	27.788	Continuing	Continuing
• Items Less Than \$5.0M: <i>WTCV, GL32000, Items Less Than \$5M</i>	1.604	2.848	2.331	-	2.331	2.295	2.616	2.949	2.978	Continuing	Continuing

Remarks

In support of Small Arms Requirements, components or prototypes developed in Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) is transitioned to Small Arms Improvement, Project S63, Program Element 0604601A, (Budget Activity 5) to conduct engineering and manufacturing development. Once the component, prototype or operational prototype achieves Milestone C and type classification the item transitions to small arms weapon production or modification program.

D. Acquisition Strategy

Primary strategy is to mature and finalize design efforts, award Research, Development, Test and Evaluation (RDT&E) hardware contracts, and test and evaluate systems that result in type classification and follow-on production contract awards.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Allot	PM Soldier Weapons, : Picatinny Arsenal	8.017	0.500	Mar 2015	0.908	Mar 2016	0.534	Mar 2017	-		0.534	Continuing	Continuing	Continuing
Travel	MIPR	PM Soldier Weapons, : Picatinny Arsenal	1.084	0.103	Mar 2015	0.100	Mar 2016	0.109	Mar 2017	-		0.109	Continuing	Continuing	Continuing
Subtotal			9.101	0.603		1.008		0.643		-		0.643	-	-	-

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			
Fabrication	Various	Various : Multiple Contractors	1.450	0.450	Mar 2015	1.000	Mar 2016	0.486	Mar 2017	-		0.486	Continuing	Continuing	Continuing
Hardware Development	MIPR	Army Research Development Engineering Centers, : Multiple	7.954	0.050	Mar 2015	-		0.061	Mar 2017	-		0.061	Continuing	Continuing	Continuing
Subtotal			9.404	0.500		1.000		0.547		-		0.547	-	-	-

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	MIPR	Army Research Development Engineering Centers, : Multiple	39.734	6.897	Mar 2015	12.176	Mar 2016	5.224	Mar 2017	-		5.224	Continuing	Continuing	Continuing
Logistics	MIPR	TACOM, : Warren	4.146	0.200	Mar 2015	0.400	Mar 2016	0.219	Mar 2017	-		0.219	Continuing	Continuing	Continuing
Human Research and Engineering	MIPR	Army Research Laboratory, : Aberdeen Proving Ground	2.921	0.200	Mar 2015	0.500	Mar 2016	0.219	Mar 2017	-		0.219	Continuing	Continuing	Continuing

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			46.801	7.297		13.076		5.662		-		5.662	-	-	-

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			
Developmental Testing	MIPR	Army Developmental Test Command, : Aberdeen Proving Ground	22.324	1.020	Mar 2015	1.000	Mar 2016	2.529	Mar 2017	-		2.529	Continuing	Continuing	Continuing
Operational Testing	MIPR	Army Test and Evaluation Command, : Aberdeen Proving Ground	9.246	1.552	Mar 2015	3.000	Mar 2016	2.201	Mar 2017	-		2.201	Continuing	Continuing	Continuing
Validation Testing	MIPR	Army Test and Evaluation Centers, : Multiple	5.012	0.200	Mar 2015	4.000	Mar 2016	0.219	Mar 2017	-		0.219	Continuing	Continuing	Continuing
Subtotal			36.582	2.772		8.000		4.949		-		4.949	-	-	-

	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		101.888	11.172	23.084	11.801	-	-	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	NEW WEAPONS																											
Modular Handgun System (MHS)																												
M3 Multi-Role Anti-Armor Personnel Weapon System (MAAWS)																												
Precision Sniper Rifle (PSR)																												
Squad Designated Marksman Rifle (SDM)																												
SMALL ARMS WEAPONS ENHANCEMENTS																												
Compact Semi-Automatic Sniper System (CSASS)																												
Powered Rail now known as Intelligent Rail																												
Sniper Upgrades																												
Small Business Innovation Research (SBIR) Enhancements																												
Weapon Upgrades and Accessories																												
XM1112 40MM Airburst Non-Lethal																												
Ammunition Upgrades																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
COMBAT OPTICS																												
Mountged Machine Gun Optics (MMO)																												
Squad Fire Control Optic																												
Grenadier Sighting System (GSS) for the M320 Grenade Launcher																												
Optics Upgrades																												
FIRE CONTROL																												
Small Arms Fire Control-Squad																												
Fire Control Upgrades																												
RESEARCH AND ANALAYSIS																												
Research and Analysis of Small Arms																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Small Arms Improvement</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NEW WEAPONS	1	2007	4	2021
Modular Handgun System (MHS)	1	2012	4	2018
M3 Multi-Role Anti-Armor Personnel Weapon System (MAAWS)	1	2015	4	2016
Precision Sniper Rifle (PSR)	1	2015	4	2016
Squad Designated Marksman Rifle (SDM)	1	2014	4	2021
SMALL ARMS WEAPONS ENHANCEMENTS	1	2008	4	2021
Compact Semi-Automatic Sniper System (CSASS)	1	2015	4	2016
Powered Rail now known as Intelligent Rail	1	2013	4	2017
Sniper Upgrades	1	2016	4	2016
Small Business Innovation Research (SBIR) Enhancements	1	2015	4	2017
Weapon Upgrades and Accessories	1	2008	4	2021
XM1112 40MM Airburst Non-Lethal	1	2010	4	2016
Ammunition Upgrades	1	2008	4	2021
COMBAT OPTICS	1	2008	4	2021
Mountged Machine Gun Optics (MMO)	1	2015	4	2016
Squad Fire Control Optic	1	2014	4	2016
Grenadier Sighting System (GSS) for the M320 Grenade Launcher	1	2009	4	2017
Optics Upgrades	1	2008	4	2021
FIRE CONTROL	1	2008	4	2021
Small Arms Fire Control-Squad	1	2017	4	2021
Fire Control Upgrades	1	2008	4	2021
RESEARCH AND ANALAYSIS	1	2012	4	2021
Research and Analysis of Small Arms	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</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
S64: <i>Common Remotely Operated Wpn Sys (CROWS)</i>	-	1.164	4.076	4.331	-	4.331	3.354	8.962	8.351	15.826	0.000	46.064
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Maneuver Support Center of Excellence (MSCoE) at FT Leonard Wood, MO (user community) has identified continued development of the Common Remotely Operated Weapon Station (CROWS) as a critical improvement for the Soldier in a combat environment. By addressing the capability gap of non-turreted, lightly armored vehicles where the gunner is exposed to enemy fire, the current CROWS system provides the ability to rapidly and accurately locate and engage the enemy while allowing platform gunners to remain under armor, thereby providing greater protection and increasing overall lethality.

Next generation requirements for the CROWS are identified in the CROWS Increment II Capability Development Document (CDD). CROWS Increment II capability improvements will bolster overall situational awareness, survivability and lethality. Increment II requirements include improved sensor systems for enhanced identification ranges; wider fields of view; improved on-the-move accuracy; training capability; battlefield obscurants; mission data recording for After Action Reviews (AAR); increased lethality using legacy and future anti-personnel and anti-materiel precision scalable lethal and non-lethal weapon systems; improved ballistics protection; adaptability to integrate on a variety of legacy and future platforms including ground vehicles, watercraft, semi-autonomous and autonomous platforms; precision targeting including visible and infrared (IR) pointers; target hand-off; slew-to-cue; escalation of force (EOF) capabilities; and other additional system modifications and improvements.

Obsolescence and Increment II requirements will address recommendations identified in the Operational Test Agency Milestone Assessment Report (OMAR) and user community feedback. These modifications include, but are not limited to: improved optics survivability; auto-zoom; improved auto-tracking; improved sensors for increased situational awareness; and improved rounds counter. Additionally, development efforts will include system and component level reliability improvements that will extend system life and reduce overall CROWS logistics footprint.

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

	FY 2015	FY 2016	FY 2017
Title: Technology Refresh and Obsolescence	-	2.743	0.920
Description: Description: Technology Refresh and Obsolescence			
FY 2016 Plans: Contractor designing and fabricating an improved Thermal Imaging Module (TIM) with a smaller pixel pitch and higher pixel density focal plane array, and enhanced video processing capability allowing the module to provide a wider field of view for increased situational awareness.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Contractor will continue the development of system enhancements addressing obsolescence issues, user community feedback, OMAR recommendations, reliability improvements and increased situational awareness and targeting capability.				
<p>Title: Engineering Support</p> <p>Description: Description: Government Engineering Support.</p> <p>FY 2015 Accomplishments: Provided engineering support and oversight of design improvements, development of enhanced sensors, infrared sights, video capabilities and situational awareness.</p> <p>FY 2016 Plans: Continuing to provide engineering support and oversight of design improvements and contractor performance; development of enhanced sensors, infrared sights, video capabilities and situational awareness. Developing training and technical publications associated with the system improvements.</p> <p>FY 2017 Plans: Will continue to provide engineering support and oversight of design improvements and contractor performance of Technology Refresh efforts and enhanced sensor development. Will begin requirements distillation, performance tradeoffs, feasibility studies and analysis of alternatives for system enhancements supporting Increment II requirements, user feedback, and reliability improvements.</p>		0.645	0.638	1.656
<p>Title: Development Test and Evaluation</p> <p>Description: Description: Test and Evaluation</p> <p>FY 2015 Accomplishments: Developed testing and evaluation criteria and documentation and conducted initial developmental testing and evaluation of improvements.</p> <p>FY 2016 Plans: Continuing initial developmental testing and evaluation of improvements and develop testing and evaluation criteria and documentation for the Thermal Imaging Module.</p> <p>FY 2017 Plans: Will continue developmental testing and evaluation of system enhancements addressing obsolescence issues, user community feedback and reliability improvements. Will begin testing sensor enhancements improving situational awareness and targeting</p>		0.110	0.195	0.651

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
capability. Will develop test and evaluation criteria and documentation for the system enhancements supporting Increment II requirements, user feedback and reliability improvements.			
Title: Program Management	0.409	0.500	1.104
Description: Description: Program Management.			
FY 2015 Accomplishments: Provided oversight of product design and development, to include engineering support, contract actions and test activities throughout the fiscal year. Facilitated test events at various government laboratories to test prototype units of the improved fire control unit processor and system slip ring, in order to quantify performance with the most current sensors and effectors, and managed the life cycle of the program to include future acquisition and sustainment plans.			
FY 2016 Plans: Continuing to provide oversight of product design and development, to include engineering support, contract actions and test activities throughout the fiscal year. Program management office facilitating test events at various government laboratories to test prototype units of the improved fire control unit processor and system slip ring, in order to quantify performance with the most current sensors and effectors, and managing the life cycle of the program to include future acquisition and sustainment plans.			
FY 2017 Plans: Will continue to provide oversight of product design and development, to include engineering support, contract actions and test activities throughout the fiscal year. Additionally, will provide program oversight of the system enhancements supporting Increment II requirements. Program management office will facilitate test events at various government laboratories to test prototype components, sub-system and systems. Will continue to manage the life cycle of the program to include future acquisition and sustainment plans.			
Accomplishments/Planned Programs Subtotals	1.164	4.076	4.331

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>
• CROWS (G04700, W&TCV): W&TCV, G04700, CROWS	14.149	33.750	25.164	-	25.164	12.265	8.247	-	-	0.000	93.575
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</i>

D. Acquisition Strategy

The Common Remotely Operated Weapon Station (CROWS) uses a single-step acquisition approach in its strategy. The CROWS achieved Type Classification Standard in 3QFY11, Full Materiel Release in 3QFY12 and Full Rate Production in 4QFY12, in accordance with the Capability Production Document (CPD) Increment I, as clarified in June 2009. Capability Development Document Increment II was approved in October 2015 addressing requirements for the next generation of CROWS.

The program objective is to continue developing, improving and fielding the current generation (Increment I) and next generation (Increment II) of CROWS on various platforms in accordance with the Basis of Issue Plan (BOIP). The program supports new and emerging urgent requirements like the integration of the Mine Resistant Ambush Protected (MRAP) family of vehicles, ground combat systems, Joint Lightweight Tactical Vehicles (JLTV) and fixed site mounting systems to support Integrated Base Defense (IBD).

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	MIPR	PM Soldier Weapons : Picatinny Arsenal, NJ	0.053	0.409	Mar 2015	0.500	Feb 2016	1.104	Dec 2016	-		1.104	Continuing	Continuing	0
Subtotal			0.053	0.409		0.500		1.104		-		1.104	-	-	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			
Technology Refresh, Obsolescence and Increment II Enhancements	SS/FFP	Kongsberg Protech Systems USA : Johnstown, PA	9.145	-		2.743	May 2016	0.920	Mar 2017	-		0.920	Continuing	Continuing	0
Subtotal			9.145	-		2.743		0.920		-		0.920	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	MIPR	ARDEC : Picatinny Arsenal, NJ	0.103	0.645	Mar 2015	0.638	Feb 2016	1.656	Dec 2016	-		1.656	Continuing	Continuing	0
Subtotal			0.103	0.645		0.638		1.656		-		1.656	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Planning and Execution	Various	Various : Multiple	0.017	0.110	Mar 2015	0.195	Feb 2016	0.651	Dec 2016	-		0.651	Continuing	Continuing	0
Subtotal			0.017	0.110		0.195		0.651		-		0.651	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016					
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</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	9.318	1.164		4.076		4.331		-		4.331	-	-	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Contractor Design and Fabrication	[Redacted]				[Redacted]				[Redacted]																			
Engineering Support (Government)									[Redacted]																			
Development Test & Evaluation									[Redacted]																			
Program Management									[Redacted]																			
Increment II Product Improvement																	[Redacted]											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Contractor Design and Fabrication	3	2016	1	2019
Engineering Support (Government)	3	2015	4	2021
Development Test & Evaluation	3	2015	4	2021
Program Management	3	2015	4	2021
Increment II Product Improvement	2	2017	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</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>S70: Personnel Recovery Support System (PRSS)</i>	-	0.522	1.252	1.121	-	1.121	1.137	1.149	1.176	1.051	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project provides the continued maturation of PRSS products that enable operations to report and locate isolated, missing, detained or captured Soldiers. The PRSS program consists of the enhancement of existing products to ensure continued successful interoperability within the relevant theater of operations and the Continental United States (CONUS), and the demonstration of a production representative encrypted Personnel Recovery Device (PRD) that operates over a secure architecture.

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

	FY 2015	FY 2016	FY 2017
Title: Development of Personnel Recovery Support System (PRSS)	0.522	1.252	1.121
Description: Integration, evaluation, testing and qualification of PRSS products to ensure continued successful interoperability within the relevant theater of operation, and development of a PRD that operates over a secure architecture.			
FY 2015 Accomplishments: Completed integration and test of receivers onto the communications infrastructure.			
FY 2016 Plans: Conduct evaluation and test of PRD production representative articles in support of competitive production contract down-select.			
FY 2017 Plans: Perform end-to-end testing to exercise all aspects of the PRSS communications system worldwide and conduct operational testing of production PRD in support of a full rate production decision.			
Accomplishments/Planned Programs Subtotals	0.522	1.252	1.121

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
• Personnel Recovery Support Sys OPA: <i>Other Procurement</i> ,	10.728	7.733	10.856	-	10.856	11.552	11.776	11.756	11.756	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</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>Army, G01101-Personnel Recovery Support System (PRSS)</i>											

Remarks

D. Acquisition Strategy

Execute PRSS program development effort for performance optimization through contracts with industry and Military Interdepartmental Purchase Requests to other Governmental agencies. Perform continuing development and test of new waveforms and hardware to ensure successful interoperability for personnel recovery, and to mitigate potential security compromises to the PRSS system.

E. Performance Metrics

N/A

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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 / 5				PE 0604601A / Infantry Support Weapons				S70 / Personnel Recovery Support System (PRSS)							
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Administration	Allot	Various Government : Huntsville, Alabama	0.767	0.052		0.105		0.110		-		0.110	Continuing	Continuing	Continuing
Subtotal			0.767	0.052		0.105		0.110		-		0.110	-	-	-
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
Personnel Recovery Support System Development Systems Engineering	MIPR	Various Organizations : Various Locations	6.879	0.099		0.318		0.372		-		0.372	Continuing	Continuing	Continuing
Subtotal			6.879	0.099		0.318		0.372		-		0.372	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	Various Organizations : Various Locations	1.600	-		-		-		-		-	0	1.600	0
Subtotal			1.600	-		-		-		-		-	0.000	1.600	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
Developmental Testing / Operational Testing	MIPR	Various Organizations : Various Locations	1.386	0.371		0.829		0.639		-		0.639	Continuing	Continuing	Continuing

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021								
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
Personnel Recovery Support System (PRSS) Development Oversight	PRSS Oversight																																
PRSS Development and Test	PRSS Development and Test																																
PRSS Prototype Hardware Build and Integration	PRSS Proto HW Bld & Integ																																
PRSS Operational Test									OT																								
PRSS Upgrades & Adaptations to New Platforms	PRSS Upgrades & Adaptations																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Personnel Recovery Support System (PRSS) Development Oversight	1	2010	4	2021
PRSS Development and Test	1	2010	4	2021
PRSS Prototype Hardware Build and Integration	3	2010	2	2016
PRSS Operational Test	2	2017	2	2017
PRSS Upgrades & Adaptations to New Platforms	1	2015	4	2021

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

Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) VS5 / Soldier Protective Equipment			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
<i>VS5: Soldier Protective Equipment</i>	-	4.647	15.175	2.141	-	2.141	3.154	6.122	6.737	7.971	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding supports engineering and manufacturing development and full rate production decision reviews of Soldier Protection equipment. It leverages advancements in technology to continue improvements to hard and soft body armor components, helmets and other personal protective equipment.

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

	FY 2015	FY 2016	FY 2017
Title: Soldier Protective Equipment	4.647	15.175	2.141
Description: Funding line established in FY12. Effort was previously executed in Program Element 0604601 S60. The objective of this 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).			
FY 2015 Accomplishments: Continued development of Soldier Protection System (SPS) subsystems (Torso & Extremity Protection (TEP, soft armor), Vital Torso Protection (VTP, hard armor plates), Transition Combat Eyewear Protection (TCEP), Integrated Head Protection System (IHPS) and the Integrated Soldier Sensor System (ISSS)). Completed characterization testing, Human Factors Evaluations (HFEs), system level blast, ballistic and non-ballistic characterization (including Pyroman) testing of SPS VTP, TEP TCEP and IHPS Subsystems in 3QFY15. Initiated a Phase III development cycle (build/test) to achieve IHPS performance requirements. Achieved a Milestone C Decision (Type Classification - Low Rate Initial Production) for VTP and TEP in June 2015. Continued support and sustainment tasks across all of the existing Personal Protection Equipment (PPE) portfolio (extremities, torso and vital torso, head, eye and face protection) to protect against current and emerging ballistic/blast threats. Continuation of efforts to characterize and increase durability and functional service life of PPE. Continued development of ballistic inserts for female and small statured Soldiers and transitioned them to LRIP as part of VTP.			
FY 2016 Plans: Continue system level development and integration of SPS subsystems and components transitioned from VS4 Advanced Component Development and Prototypes (ACD&P). Conduct system-level Initial Operating Test (IOT)/Live Fire testing of SPS TEP & VTP subsystems to support Full-Rate Production (FRP) decisions 3QFY16 & 4QFY16. Exercise DT Phase III contract options for the IHPS in 1QFY16 and conduct DT III (ballistic, non-ballistic & human factors testing). Award Phase II Developmental Testing/Operational Testing (DT/OT II) contract options of SPS Integrated Soldier Sensor System (ISSS) Personal Status Monitor (PSM) prototypes in 2QFY16. Initiate SPS ISSS DT/OT and complete in 2QFY17. Continue to evaluate system and subsystem technologies across the PPE portfolio (extremities, torso and vital torso, head, eye and face protection) from			

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) VS5 / <i>Soldier Protective Equipment</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
emerging ballistic/blast threats. Continue efforts to characterize and increase durability and functional service life of all PPE. Procure Non-Developmental Item (NDI) component candidates/prototypes by 2QFY16 for qualification/integration with existing fielded Advanced Bomb Suit (ABS) through 4QFY16.			
<i>FY 2017 Plans:</i> Continue system level integration of SPS subsystems and components transitioned from Advanced Component Development and Prototypes/Integrated System Design (ACD&P/ISD). Achieve a MS C decision (LRIP) for IHPS in 1QFY17. Prepare for Milestone C decisions (Type Classification - Low Rate Initial Production) and complete DT/OT of SPS subsystems (IHPS, TCEP and ISSS). Complete system-level IOT/Live Fire testing of IHPS and TCEP to support Full-Rate Production (FRP) decisions by 1QFY19. Continue to evaluate and develop system and subsystem technologies across the PPE portfolio (extremities, torso and vital torso, head, eye and face protection, sensors) from emerging ballistic/blast threats and physiological factors affecting Soldier performance (fatigue, heat stress, etc.). Continue to test ballistic properties of current PPE after exposure to extreme storage conditions for better shelf and service life predictions. Continue development of materials and technologies to reduce SPS weight and bulk at the system, subsystem and component level and continue efforts to characterize and increase durability and functional service life. Start SPS Material Changes for enhancements and specialized soldier functions (mounted and aviation platforms) and environments (including jungle (extreme heat and humidity)).			
Accomplishments/Planned Programs Subtotals	4.647	15.175	2.141

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
• VS4 6.4 RDTE: <i>RDTE, 0603827A.VS4, Soldier Protective Equipment</i>	2.629	5.408	16.294	-	16.294	11.711	8.224	2.869	2.647	0.000	49.782
• OMA: <i>OMA, 121017, Central Funding & Fielding</i>	126.972	64.631	96.468	-	96.468	74.833	75.368	63.753	76.563	0	578.588

Remarks

D. Acquisition Strategy

Acquisition strategies for these programs vary in methods, and range from: 1) Material Change programs that result in engineering changes to existing systems to; 2) traditional development programs that include an Engineering and Manufacturing Development phase ranging in duration from 12 to 48 months, depending on the level of complexity and testing required.

E. Performance Metrics

N/A

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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 / 5				PE 0604601A / Infantry Support Weapons				VS5 / 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	Various	Various SPIE : Various	0.000	0.017		0.450		0.150		-		0.150	0	0.617	0
Subtotal			0.000	0.017		0.450		0.150		-		0.150	0.000	0.617	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/Integ Contracts	Various	Various : Various	23.327	2.410		5.350		1.633		-		1.633	Continuing	Continuing	0
Prod Sys Engineering Spt	MIPR	various : various	2.592	0.530		4.987		-		-		-	Continuing	Continuing	0
Subtotal			25.919	2.940		10.337		1.633		-		1.633	-	-	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
Misc Support Costs	MIPR	Various : Various	1.800	-		1.003		-		-		-	0	2.803	0
Subtotal			1.800	-		1.003		-		-		-	0.000	2.803	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
DT/Ballistic & OT Test Costs	MIPR	Various DTC & OTC : Various DTC & OTC	5.253	1.690		3.385		0.358		-		0.358	Continuing	Continuing	0
Subtotal			5.253	1.690		3.385		0.358		-		0.358	-	-	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				
Project Cost Totals			32.972	4.647	15.175	2.141	-	2.141	-	-	0.000				

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) VS5 / <i>Soldier Protective Equipment</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Conduct Phase II SPS System Level DT/OT 1																												
(1) SPS VTP Milestone C Decision (LRIP)																												
(2) SPS TEP Milestone C Decision (LRIP)																												
Test and Qualify Improvements to SPS Gen 1 through FY19																												
Conduct IOT/LFT for VTP and TEP to Spt FRP																												
(3) VTP & TEP FRP Decision																												
Conduct IHPS DT III																												
(4) IHPS Milestone C Decision (LRIP)																												
IHPS/TCEP IOT/LFT/TCEP																												
(5) IHPS/TCEP FRP																												
ISSS DT II																												
(6) ISSS Milestone C Decision (LRIP)																												
Conduct OT for ISSS																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) VS5 / <i>Soldier Protective Equipment</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) ISSS FRP Decision																	▲											

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) VS5 / <i>Soldier Protective Equipment</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Conduct Phase II SPS System Level DT/OT 1	4	2014	3	2015
SPS VTP Milestone C Decision (LRIP)	3	2015	3	2015
SPS TEP Milestone C Decision (LRIP)	3	2015	3	2015
Test and Qualify Improvements to SPS Gen 1 through FY19	4	2015	4	2019
Conduct IOT/LFT for VTP and TEP to Spt FRP	2	2016	3	2016
VTP & TEP FRP Decision	4	2016	4	2016
Conduct IHPS DT III	2	2016	3	2016
IHPS Milestone C Decision (LRIP)	1	2017	1	2017
IHPS/TCEP IOT/LFT/TCEP	4	2017	1	2018
IHPS/TCEP FRP	3	2018	3	2018
ISSS DT II	3	2016	2	2017
ISSS Milestone C Decision (LRIP)	3	2017	3	2017
Conduct OT for ISSS	1	2018	2	2018
ISSS FRP Decision	2	2019	2	2019

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.210	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
H07: <i>Family Of Med Tac Veh</i>	-	0.210	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This Program Element (PE) supports continued modernization of the Army's medium truck and trailer fleet and the Armored Security Vehicle (ASV).

In the medium fleet, the Family of Medium Tactical Vehicles (FMTV) replaces aging M35 2 1/2-ton trucks and M809 and M900 Series 5-ton trucks that are beyond their economic useful life of 15-20 years. FMTV fills 2 1/2-ton Light Medium Tactical Vehicle (LMTV) and 5-ton truck Medium Tactical Vehicle (MTV) truck requirements and includes companion trailers. FMTV trucks perform over 55 percent of the Army's local and line haul, and unit resupply missions, and operates throughout theater as multi-purpose transportation vehicles in combat, combat support, and combat service support units.

The ASV is an all-wheel drive armored vehicle that provides ballistic protection, overhead protection, and protection against landmines. It is used by the Military Police to perform missions of area security, maneuver, and mobility support.

This PE funds government technical insertion initiatives that will support a competitive solicitation for a new production contract to be awarded in FY17 that includes integration of selected capability improvements to the FMTV. The selected improvements also support increased power generation to meet the needs of a growing number of C4ISR, Counter-IED, and other Mission Equipment Packages as well as provide the capability to increase vehicle safety and reduce soldier injuries. This will support the Integration, Test and Evaluation, and Logistics Development for these improvements.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.210	0.000	0.170	-	0.170
Current President's Budget	0.210	0.000	0.000	-	0.000
Total Adjustments	0.000	0.000	-0.170	-	-0.170
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.170	-	-0.170

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>			Project (Number/Name) H07 / <i>Family Of Med Tac Veh</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
H07: <i>Family Of Med Tac Veh</i>	-	0.210	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not Applicable.

A. Mission Description and Budget Item Justification

This Program Element (PE) supports continued modernization of the Army's medium truck and trailer fleet and the Armored Security Vehicle (ASV).

In the medium fleet, the Family of Medium Tactical Vehicles (FMTV) replaces aging M35 2 1/2-ton trucks and M809 and M900 Series 5-ton trucks that are beyond their economic useful life of 15-20 years. FMTV fills 2 1/2-ton Light Medium Tactical Vehicle (LMTV) and 5-ton Medium Tactical Vehicle (MTV) truck requirements and includes companion trailers. FMTV trucks perform over 55 percent of the Army's local and line haul, and unit resupply missions, and operates throughout theater as multi-purpose transportation vehicles in combat, combat support, and combat service support units.

The ASV is an all-wheel drive armored vehicle that provides ballistic protection, overhead protection, and protection against landmines. It is used by the Military Police to perform missions of area security, maneuver, and mobility support.

This PE funds government technical insertion initiatives that will support a competitive solicitation for a new production contract to be awarded in FY17 that includes integration of selected capability improvements to the FMTV. The selected improvements also support increased power generation to meet the needs of a growing number of C4ISR, Counter-IED, and other Mission Equipment Packages as well as provide the capability to increase vehicle safety and reduce soldier injuries. This will support the Integration, Test and Evaluation, and Logistics Development for these improvements.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Automotive Technological Evaluation, Testing & Insertion	0.082	-	-	-	-
Description: Funding is provided for the following effort					
FY 2015 Accomplishments: Continuation with FMTV Automotive Technological Evaluation, Testing, & Insertion					
Title: FMTV Force Protection Improvements	0.128	-	-	-	-
Description: Funding provided for the following effort:					
FY 2015 Accomplishments:					

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Improvements to occupant survivability.					
Accomplishments/Planned Programs Subtotals	0.210	-	-	-	-

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 1 D15500: <i>Family of Medium Tactical Vehicles D15500</i>	195.624	334.038	53.293	299.476	352.769	270.932	226.114	221.351	252.170	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FMTV Automotive Technological Evaluation and Insertion	C/CPFF	Oshkosh Truck Corporation : Oshkosh, WI	11.219	-		-		-		-		-	Continuing	Continuing	Continuing
FMTV Armor Spiral Development	C/CPFF	Oshkosh Truck Corporation : Oshkosh, WI	5.464	-		-		-		-		-	Continuing	Continuing	Continuing
FMTV Fuel Economy	C/CPFF	Oshkosh Truck Corporation : Oshkosh, WI	2.622	-		-		-		-		-	Continuing	Continuing	Continuing
FMTV Automotive Technological Evaluation and Insertion	C/CPFF	TBD : TBD	0.082	0.082		-		-		-		-	Continuing	Continuing	Continuing
FMTV Force Protection Improvements	C/CPFF	TBD : TBD	0.128	0.128		-		-		-		-	Continuing	Continuing	Continuing
ASV Mission Enhancement Package (MEP)	MIPR	Various Locations : Various Locations	1.844	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			21.359	0.210		-		-		-		-	-	-	-

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			
FMTV Automotive Technological Evaluation and Insertion	Various	Various : Various	0.351	-		-		-		-		-	Continuing	Continuing	Continuing
FMTV Armor Spiral Development Testing	MIPR	TARDEC : Warren, MI	0.319	-		-		-		-		-	Continuing	Continuing	Continuing
FMTV Fuel Economy Testing	MIPR	TARDEC : Warren, MI	0.319	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.989	-		-		-		-		-	-	-	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	22.348	0.210	0.000	-	-	-	-	-	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FMTV Technology Insertion	Technology Insertion																											
FMTV Armor Technology Insertion	Armor Technology Insertion																											
FMTV Fuel Economy	Fuel Economy																											
FMTV Force Protection Improvements	Force Protection Improvements																											
FMTV Competitive Rebuy & Follow-on Production	Competitive Rebuy & Follow-on Production																											
FMTV FY17-19 Sole Source Production													FMTV FY17-19 Sole Source Production															
FMTV FY17-24 Competition													FMTV FY17-24 Competition															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FMTV Technology Insertion	1	2008	4	2015
FMTV Armor Technology Insertion	1	2010	4	2015
FMTV Fuel Economy	1	2010	4	2015
FMTV Force Protection Improvements	2	2015	4	2015
FMTV Competitive Rebuy & Follow-on Production	2	2010	4	2016
FMTV FY17-19 Sole Source Production	2	2017	4	2019
FMTV FY17-24 Competition	3	2017	2	2024

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	4.006	3.945	20.011	-	20.011	21.095	17.772	0.000	0.000	0.000	66.829
499: <i>Javelin (AAWS-M)</i>	-	4.006	3.945	20.011	-	20.011	21.095	17.772	0.000	0.000	0.000	66.829

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

Beginning in FY 2015, all funding in this project is to support development of the Javelin Lightweight Command Launch Unit (CLU). Objective of the Javelin Lightweight CLU is a 50% reduction in weight and size compared to the Block I CLU, while meeting detect, recognize, and identify requirements. Javelin Lightweight CLU is a result of user feedback on weight and bulk, and addresses the Close Combat Missile System - Medium Capability Production Document objective system weight requirement.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	4.164	3.945	20.282	-	20.282
Current President's Budget	4.006	3.945	20.011	-	20.011
Total Adjustments	-0.158	0.000	-0.271	-	-0.271
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.158	-			
• Adjustments to Budget Years	-	-	-0.271	-	-0.271

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604611A / JAVELIN				Project (Number/Name) 499 / Javelin (AAWS-M)			
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
499: Javelin (AAWS-M)	-	4.006	3.945	20.011	-	20.011	21.095	17.772	0.000	0.000	0.000	66.829
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

FY 2017 funding will continue development engineering of the Javelin Lightweight Command Launch Unit (CLU). Objective of the Javelin Lightweight CLU is a 50% reduction in weight and size compared to the Block I CLU, while meeting detect, recognize, and identify requirements. Javelin Lightweight CLU is a result of user feedback on weight and bulk, and addresses the Close Combat Missile System - Medium Capability Production Document objective system weight requirement.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Javelin System Improvements	4.006	3.945	20.011	-	20.011
Description: Develop Lightweight Command Launch Unit.					
FY 2015 Accomplishments: Lightweight CLU system architecture design, research and design advanced lightweight composite material for CLU housing, research and design small form factored/ lightweight acquisition sensor and associated optics, and initiation of prototype software/firmware design.					
FY 2016 Plans: Lightweight CLU: completion of prototype hardware, firmware and software design. Critical prototype fabrication and system integration activities.					
FY 2017 Base Plans: Lightweight CLU Design phase - Conduct system level analysis; design, build and integrate 7 system-level prototypes for system-level design verification testing (DVT). Conduct DVT to include environmental, producibility, reliability, electromagnetic/electrostatic discharge, image quality, and mechanical separation/launch dynamic tests. Conduct user evaluation, critical design review, and prepare preliminary engineering change proposal.					
Accomplishments/Planned Programs Subtotals	4.006	3.945	20.011	-	20.011

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN	Project (Number/Name) 499 / Javelin (AAWS-M)
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SSN CC0007: Javelin (AAWS-M) Procurement	72.877	168.163	73.508	15.567	89.075	89.520	88.702	100.539	143.917	Continuing	Continuing

Remarks

FY

D. Acquisition Strategy

Javelin Lightweight CLU development is Sole Source to the Javelin Joint Venture (Raytheon, Tucson, AZ, and Lockheed Martin, Orlando, FL). Engineering services contract with the Javelin Joint Venture will be utilized for Lightweight CLU development efforts. The major subassemblies, which are also the primary cost drivers, will be competed. The Javelin Joint Venture has invested Industry Research and Development in the Lightweight CLU. Development, prototype, and testing will occur FY 2015-2019 with production beginning in FY 2020. Army Acquisition Objective (AAO) is 4,500. Current plan is to field to priority Infantry Brigade Combat Teams and Special Forces and cascade Block 0 CLUs out of the inventory.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN	Project (Number/Name) 499 / Javelin (AAWS-M)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Engineering/ Program Management, Govt	Allot	Close Combat Weapon Systems Project Office : Redstone Arsenal, AL	0.000	0.362	Nov 2014	0.420	Nov 2015	1.767	Nov 2016	-		1.767	3.499	6.048	0
Subtotal			0.000	0.362		0.420		1.767		-		1.767	3.499	6.048	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			
Lightweight CLU Development	SS/CPFF	JJV/Raytheon/ Lockheed Martin : Orlando, FL/ Tucson,AZ	0.000	2.345	Jan 2015	2.750	Jan 2016	15.396	Jan 2017	-		15.396	28.863	49.354	0
Lightweight CLU Development	MIPR	Redstone Test Center : Redstone Arsenal, AL	0.000	-		-		0.570	Nov 2016	-		0.570	0	0.570	0
Lightweight CLU Trade Studies and Demonstrations	MIPR	AMRDEC : Redstone Arsenal, AL	0.000	1.299	Nov 2014	0.775	Nov 2015	-		-		-	0	2.074	0
Subtotal			0.000	3.644		3.525		15.966		-		15.966	28.863	51.998	0.000

Remarks
 JJV - Javelin Joint Venture
 SS CPFF - Sole Source Cost Plus Fixed Fee
 CLU - Command Launch Unit
 AMRDEC - Aviation & Missile Research, Development and Engineering Center
 MIPR - Military Interdepartmental Purchase Request

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN	Project (Number/Name) 499 / Javelin (AAWS-M)
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LW CLU System Architecture Design																												
LW CLU Research/ Design Advanced Materials																												
Initiate LW CLU Prototype Software/Firmware																												
LW CLU Fabrication/ System Integration of Prototypes																												
LW CLU Prototype Demonstration																												
LW CLU Producibility and Environmental Design																												
LW CLU Design Verification Testing																												
LW CLU Qualification Testing																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN	Project (Number/Name) 499 / Javelin (AAWS-M)
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
LW CLU System Architecture Design	1	2015	2	2015
LW CLU Research/ Design Advanced Materials	3	2015	4	2015
Initiate LW CLU Prototype Software/Firmware	4	2015	3	2016
LW CLU Fabrication/ System Integration of Prototypes	4	2016	2	2017
LW CLU Prototype Demonstration	2	2017	4	2017
LW CLU Producibility and Environmental Design	2	2017	3	2017
LW CLU Design Verification Testing	4	2017	4	2017
LW CLU Qualification Testing	1	2018	4	2019

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	12.768	0.000	11.429	-	11.429	7.123	8.131	3.711	3.782	Continuing	Continuing
659: <i>Family Of Hvy Tac Veh</i>	-	5.771	0.000	0.986	-	0.986	0.500	2.500	0.000	0.000	0.000	9.757
E50: <i>TRAILER DEVELOPMENT</i>	-	0.000	0.000	5.919	-	5.919	1.000	0.000	0.000	0.000	0.000	6.919
VR5: <i>TWV Protection Kits</i>	-	6.997	0.000	4.524	-	4.524	5.623	5.631	3.711	3.782	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element aligns system development and demonstration of Heavy Tactical Vehicles (HTV) with Future Modular Force requirements to support combat and combat support missions. Missions include the following: line haul, local haul, and unit resupply. HTV trucks transport water, ammunition, and general cargo over all terrain and throughout the battle-space. Funding will also be used for developing the Army's next generation of tactical trucks, as part of the Army's Tactical Wheeled Vehicle Modernization Strategy. Funding in this Program Element (PE) supports the Family of Heavy Trucks to include Active Safety technologies, supports periodic evolutionary upgrade of survivability and crew protection for Heavy Tactical Vehicles as described in the Long Term Protection Strategy (LTPS), and supports Trailer Development.

FY 2017 Project 659 funding in the amount of \$.986 million will be used to begin program documentation and pre-Materiel Development Decision (MDD) efforts, as well as, perform requirements and trade analysis to feed into the Technology Development (TD) phase the Enhanced Heavy Equipment Transporter (EHET).

FY 2017 Project E50 funding in the amount of \$5.919 million will be used to start the requirements analysis process through the use of the Dynamic Object Orientated Requirements System (DOORS), as well as, perform a market survey and Whole Systems Trade Analysis (WSTA). The efforts are needed to meet a user approved requirement gap in the Heavy Tactical Trailer fleet as identified in the 25-ton Semi Trailer Low Bed (STLB) Capability Production Document (CPD) approved 10 July 2014.

FY 2017 Project VR5 funding in the amount of \$4.524 million will be used to support the solicitation preparation and rewriting of the Automotive Tank Purchase Description (ATPD) for the HDT. Funding will also be used to develop and test an MRAP-level armor underbody solution for the M915A5 fleet. Testing will include automotive and ballistic testing to achieve Full Materiel Release (FMR) for the armor kit.

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	12.906	0.000	11.509	-	11.509
Current President's Budget	12.768	0.000	11.429	-	11.429
Total Adjustments	-0.138	0.000	-0.080	-	-0.080
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.138	-			
• Other Adjustments 1	-	-	-0.080	-	-0.080

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
659: Family Of Hvy Tac Veh	-	5.771	0.000	0.986	-	0.986	0.500	2.500	0.000	0.000	0.000	9.757
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Heavy Dump Truck (HDT) armor development project has moved to PE 0604622A, Project VR5. FY17PB for Project 659 will fund the Enhanced Heavy Equipment Transporter (EHET), which is a new start.

FY 2015 funding was rescinded in the FY16 Appropriations Act.

A. Mission Description and Budget Item Justification

The Heavy Equipment Transporter System (HETS) is comprised of the M1070A1 Tractor and M1000 Trailer and is used to transport, recover, and evacuate a combat loaded M1 Series main battle tank, an M88, or similar heavy loads. The EHET is a new start program to resolve the need to transport the increased weight of the Abrams System Enhancement Package (SEP) V2 and SEP V3 with Force Protection kits installed as well as alleviating highway transportability limitations. This Program Element (PE) also supports Active Safety technologies for the Family of Heavy vehicles to reduce TWV accidents by 26-59% and result in decreased load on the operator while simultaneously increasing the logistics throughput and reducing maintenance and sustainment cost. Furthermore, Active Safety technologies provide the foundation for future autonomous capability insertion.

FY17 funding will be used to begin program documentation and pre-Materiel Development Decision (MDD) efforts, as well as, perform requirements and trade analysis to feed into the Technology Development (TD) phase.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: EHET Development	-	-	0.261	-	0.261
Description: Perform Pre-Materiel Development Decision (Pre-MDD) Studies					
FY 2017 Base Plans: Perform Whole Systems Trade Analysis (WSTA) and Dynamic Object Oriented Requirements System (DOORS) studies.					
Title: EHET System Engineer/Program Management Support (SEPM)	-	-	0.725	-	0.725

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: SEPM 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 professional acquisition workforce. FY 2017 Base Plans: Includes program management, engineering and budget support for EHET.					
Title: HDT Test and Evaluation Description: Test and Evaluation (Conduct Testing) FY 2015 Accomplishments: Test and Evaluation	2.327	-	-	-	-
Title: HDT Systems Engineering/Program Management Description: Program Support FY 2015 Accomplishments: Funds will provide program support to the Heavy Tactical Vehicles family.	0.854	-	-	-	-
Title: HDT Prototype Design and Integration Description: Prototype Design and Integration FY 2015 Accomplishments: Prototype Design and Integration	2.590	-	-	-	-
Accomplishments/Planned Programs Subtotals	5.771	-	0.986	-	0.986

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>
• Family of Heavy Tactical Vehicles: Family of Heavy Tactical Vehicles (FHTV) DA0500	78.425	27.549	39.564	6.122	45.686	39.338	3.966	-	-	0	194.964
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh

D. Acquisition Strategy

The Enhanced Heavy Equipment Transporter (EHETS) acquisition will follow the traditional Joint Capabilities Integration and Development System (JCIDS) process, including a competitive run off, with a pre-Management Decision Document (pre-MDD) entry point in FY16.

E. Performance Metrics

N/A

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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 / 5				PE 0604622A / Family of Heavy Tactical Vehicles				659 / Family Of Hvy Tac Veh								
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	
HDT Prototype Design and Integration	C/FFP	TBD : TBD	5.069	2.590	Jul 2015	-		-		-		-	0	7.659	0	
Subtotal			5.069	2.590		-		-		-		-	0.000	7.659	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	
Enhanced Heavy Equipment Transporter (EHET) - Whole Systems Trade Analysis (WSTA)	MIPR	Defense Technical Information Center (DTIC) : Ft. Belvoir, VA	0.000	-		-		0.221	Dec 2016	-		0.221	0	0.221	0	
EHET - Dynamic Object Oriented Requirements System (DOORS)	MIPR	Defense Technical Information Center (DTIC) : Ft. Belvoir, VA	0.000	-		-		0.040	Dec 2016	-		0.040	0	0.040	0	
Heavy Dump Truck (HDT) Prototype Design of Armored Cab	C/IDIQ	TBD : TBD	5.410	-		-		-		-		-	0	5.410	0	
Subtotal			5.410	-		-		0.261		-		0.261	0.000	5.671	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	
EHET Systems Engineering Program Management (SEPM) Support	MIPR	TACOM LCMC : Warren, MI	0.000	-		-		0.725	Oct 2016	-		0.725	0	0.725	0	
HDT SEPM	MIPR	TACOM : Warren, MI	1.365	0.854	Mar 2015	-		-		-		-	Continuing	Continuing	Continuing	
Subtotal			1.365	0.854		-		0.725		-		0.725	-	-	-	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016		
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles				Project (Number/Name) 659 / Family Of Hvy Tac Veh				

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			
HDT Test and Evaluation	MIPR	Army Test and Evaluation Command : Aberdeen, MD	3.176	2.327	Jul 2015	-		-		-		-	0	5.503	0
Subtotal			3.176	2.327		-		-		-		-	0.000	5.503	0.000
Project Cost Totals			15.020	5.771		0.000		0.986		-		0.986	-	-	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Perform pre-MDD Studies																																
Material Development Decision (MDD)																																
Analysis of Alternatives (AoA)																																
Program Milestone Documentation																																
Milestone B																																
Engineering, Manufacturing and Development (EMD) Phase																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) 659 / <i>Family Of Hvy Tac Veh</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Perform pre-MDD Studies	1	2017	1	2018
Materiel Development Decision (MDD)	2	2018	2	2018
Analysis of Alternatives (AoA)	2	2018	4	2019
Program Milestone Documentation	1	2020	4	2020
Milestone B	2	2021	2	2021
Engineering, Manufacturing and Development (EMD) Phase	2	2021	4	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles				Project (Number/Name) E50 / TRAILER 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
E50: TRAILER DEVELOPMENT	-	0.000	0.000	5.919	-	5.919	1.000	0.000	0.000	0.000	0.000	6.919
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Semi-Trailer Low Bed (STLB), 25-Ton. This will be a commercially based trailer.

A. Mission Description and Budget Item Justification

The Semi Trailer Low Bed (STLB) is a 25-ton payload capacity semi-trailer with a fixed goose neck, step deck, and rear loading ramps. The STLB is interoperable with a variety of truck tractors residing across the U.S. Army equipment inventory. The STLB will be introduced into a theater of operations to transport Construction Equipment (CE) employed by U.S. Army Engineers to execute horizontal and vertical construction projects in support of U.S. Military or other national goals and objectives. The STLB is employed to transport: CE, miscellaneous equipment, disabled equipment, Class IV (construction materials), and logistical provisions. The STLB supports units in the execution of the following tasks: expand the lodgment, construction/upgrade/rehabilitation and maintenance of Main Supply Routes (MSR), Alternate Supply Routes (ASR), logistical facilities, bituminous roads, helipads, airfields, landing strips, motor pools, parking areas, etc. These types of facilities are required for sustainment operations during decisive action operations. The STLB will also be used during routine exercises/deployments, disaster relief, and other nation building operations. The STLB will be capable of supporting mobility, counter mobility, survivability, counter improvised and sustainment needs and all applicable North Atlantic Treaty Organization (NATO) interoperability criteria. The current 25-ton semi-trailers were manufactured in the 1968 to 1975 timeframe with an average age of 38 to 45 years. The Economic Useful Life (EUL) of the current trailer is 30-years. The existing semi-trailers have far exceeded their EUL and are plagued with problems requiring constant maintenance attention. Repair parts are extremely difficult or impossible to obtain due to inactivity or deletion from the inventory. The burdensome conditions created from the age and maintenance nuisance of the current fleet of 25-ton semi-trailers has placed them in the liability category as opposed to the valued asset category required of units relying on their service.

FY17 funds will be used to start the requirements analysis process through the use of the Dynamic Object Orientated Requirements System (DOORS), as well as, perform a market survey and Whole Systems Trade Analysis (WSTA). The efforts are needed to meet a user approved requirement gap in the Heavy Tactical Trailer fleet as identified in the 25-ton STLB Capability Production Document (CPD) approved 10 July 2014.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Systems Engineering/Program Management (SEPM) Support	-	-	1.899	-	1.899
Description: SEPM includes PM and System Engineering oversight required to conduct requirements analysis, specification development, program management and contractor oversight. Salaries, Benefits, Travel, Personnel Training and other Government costs are included for retaining a professional acquisition workforce.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) E50 / <i>TRAILER DEVELOPMENT</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Labor and travel support includes project management support for initiating project, systems engineering support for development of program documentation, budget/cost analyst support and travel costs to user rep locations to help understand and further define requirements.					
Title: Market Survey Description: Conduct market survey to determine availability of commercially built trailers to meet requirements. FY 2017 Base Plans: Conduct market survey to determine availability of commercially built trailers to meet requirements.	-	-	0.222	-	0.222
Title: Government Required Design and Development Efforts Description: Translate user requirements from Capability Production Document (CPD) to performance specifications. FY 2017 Base Plans: Whole Systems Trade Analysis (WSTA), Dynamic Object Oriented Requirements System (DOORS)	-	-	0.900	-	0.900
Title: Modification of Commercial Design by Original Equipment Manufacturer (OEM) Description: Systems engineering required to assess potential modifications to commercial trailer designs in order to meet military user requirements. FY 2017 Base Plans: Systems engineering required to assess potential modifications to commercial trailer designs in order to meet military user requirements.	-	-	2.898	-	2.898
Accomplishments/Planned Programs Subtotals	-	-	5.919	-	5.919

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
• Family of Heavy Tactical Vehicles: <i>Family of Heavy Tactical Vehicles (FHTV) DA0500</i>	78.425	27.549	39.564	6.122	45.686	39.338	3.966	-	-	0.000	194.964
• Semitrailers, Flatbed: <i>Semitrailer Low Bed, 25 Ton D01650</i>	-	-	-	-	-	7.913	2.974	16.101	16.851	0	43.839

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) E50 / <i>TRAILER 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>
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Remarks

D. Acquisition Strategy

Perform market survey of the commercial market to determine if a trailer is available that will either meet requirements or can be modified to meet requirements. Two contractors will be awarded an Indefinite Delivery Indefinite Quantity (IDIQ) contract for prototype trailers each for a run-off test from the Source Selection Evaluation Board (SSEB) selection process. Evaluation of Fair Opportunity Submission Request (FOSR) will result in an award to one contractor for Low Rate Initial Production (LRIP).

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) E50 / TRAILER DEVELOPMENT
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Required Design and Development Efforts	MIPR	TARDEC : Warren, MI	0.000	-		-		0.900	Apr 2017	-		0.900	0	0.900	0
Market Survey and Technical Evaluation of Available Commercial Offerings	MIPR	Defense Technical Information Center : Ft. Belvoir, VA	0.000	-		-		0.222	Mar 2017	-		0.222	0	0.222	0
Modification of Commercial Design by Original Equipment Manufacturer (OEM)	C/FFP	TBD : TBD	0.000	-		-		2.898	Dec 2017	-		2.898	0	2.898	0
Subtotal			0.000	-		-		4.020		-		4.020	0.000	4.020	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			
Systems Engineering/ Program Management (SEPM)	MIPR	TACOM : Warren, MI	0.000	-		-		1.899	Feb 2017	-		1.899	0	1.899	0
Subtotal			0.000	-		-		1.899		-		1.899	0.000	1.899	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	5.919	-	5.919	0.000	5.919	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) E50 / TRAILER DEVELOPMENT
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																				
Material Development Decision (MDD)																																																
Requirements Analysis/Creation of Performance Spec																																																
Analysis of Alternatives (AoA)																																																
Develop Request for Proposal (RFP)																																																
Configuration Steering Board (CSB)																																																
Update Performance Spec and RFP																																																
Source Selection Evaluation Board (SSEB)																																																
Milestone B																																																
Award Contracts for Prototypes																																																
Build Trailers and Perform Run-off Test																																																
Milestone C																																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) E50 / <i>TRAILER DEVELOPMENT</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Development Decision (MDD)	2	2017	2	2017
Requirements Analysis/Creation of Performance Spec	1	2017	4	2017
Analysis of Alternatives (AoA)	3	2017	3	2018
Develop Request for Proposal (RFP)	2	2017	4	2017
Configuration Steering Board (CSB)	3	2017	3	2017
Update Performance Spec and RFP	1	2018	2	2018
Source Selection Evaluation Board (SSEB)	4	2018	2	2019
Milestone B	2	2019	2	2019
Award Contracts for Prototypes	3	2019	3	2019
Build Trailers and Perform Run-off Test	3	2019	3	2020
Milestone C	4	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles				Project (Number/Name) VR5 / TWV Protection Kits			
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
VR5: TWV Protection Kits	-	6.997	0.000	4.524	-	4.524	5.623	5.631	3.711	3.782	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Heavy Dump Truck (HDT) effort was previously funded by PE 0604622A, Project 659. The HDT armor effort has been moved to this project.

A. Mission Description and Budget Item Justification

This program element supports periodic, evolutionary upgrade of survivability and crew protection for Heavy Tactical Vehicles (HTV) as described in the Tactical Wheeled Vehicle (TWV) Strategy and individual variants' Capability Production Documents. The upgrades will leverage the Army Technology Objective's (ATO) survivability and Army Research Laboratory's (ARL) research and development activities to develop and evaluate kits which increase the protection level of all HTVs to the MRAP protection level as well as anticipating changing threat environments, protection gaps, or improving the operating performance, efficiency, and reliability through armor weight reduction. This Program Element (PE) also supports increasing crew protection by leveraging advancements in autonomous ground vehicle technology via development and evaluation of autonomous applique kits that can be applied to the current and future HTV fleet.

The Heavy Dump Truck (HDT) supports construction projects by loading, transporting and dumping payloads of sand and gravel aggregates, crushed rock, hot asphalt mixes, earth, clay, rubble, large boulders and other materials up to gross vehicle weight rating to job sites under world-wide climatic conditions. The HDT also serves as a quarry truck for the quick transport of bulk raw earth material to and from the crushing, screening and washing plant and the asphalt mixing plant. The HDT also serves as a transportation asset for organizational equipment. The HDT is Long Term Armor Strategy (LTAS) compliant with armored protection and includes a material control system coupled with the heated bed and Command, Control, Communications, Computers, and Intelligence (C4I) electrical architecture.

The M915A5 tractor truck manufactured by Daimler Trucks North America LLC is a prime mover of flatbed and tanker semi-trailers used primarily to transport containers, bulk cargo and petroleum products over primary and secondary roads and trails under worldwide climatic conditions. It has a diesel engine, automatic transmission, anti-lock brakes, air conditioning, and a fully sliding 36 inch fifth wheel. It has a Gross Vehicle Weight Rating (GVWR) of 66,000 lbs and is compatible with the following trailers: M872 (34-ton flatbed trailer), M871 (22-1/2 ton flatbed trailer), M127 (12-ton stake trailer), M967/969 (5000-gallon trailer), M1062 (7500-gallon trailer), M1062A1 (9200-gallon trailer), MILVAN, and commercial trailers. The M915A5 has two configurations, a base armor-ready A-Cab and an up-armored B-Kit. M915A5 underbody Protection Kits are required to protect the line haul fleet from current and future threats and add protection to the B-kit configuration.

FY 2017 base funding in the amount of \$4.524 million will be used to support the solicitation preparation and rewriting of the Automotive Tank Purchase Description (ATPD) for the HDT. Funding will also be used to develop and test an MRAP-level armor underbody solution for the M915A5 fleet. Testing will include automotive and ballistic testing to achieve Full Materiel Release (FMR) for the armor kit.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits				
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Heavy Dump Truck (HDT) Armor Development Description: Develop HDT Armor FY 2017 Base Plans: Procure HDT armor test assets		-	-	0.350	-	0.350
Title: HDT System Engineering/Program Management (SEPM) Support Description: SEPM includes PM and System Engineering oversight required to conduct requirements analysis, specifications development, program management and contractor oversight. Salaries, Benefits, Travel, Personnel Training and other Government costs are included for retaining a professional acquisition workforce. FY 2017 Base Plans: Includes labor support for management of project (i.e., cost, schedule, performance); engineering (Technical Data Package (TDP) update, test support); Product Assurance Test and Evaluation (PAT&E) support.		-	-	0.250	-	0.250
Title: M915A5 Underbody Armor - SEPM Description: SEPM includes PM and System Engineering oversight required to conduct requirements analysis, specification development, program management and contractor oversight. Salaries, Benefits, Travel, Personnel Training and other government costs are included for retaining a professional acquisition workforce. FY 2017 Base Plans: Includes labor support for management of project (i.e., cost, schedule, performance, Type Classification/Full Materiel Release); engineering (Technical Data Package update, test support); logistics (including Validation/ Verification-VAL/VER, mechanics, tech writer); provisioning, Product Support Integration Directorate (PSID) support; Product Assurance Test and Evaluation (PAT&E) support. Travel includes 3 trips--2 to witness testing and 1 to conduct the VAL/VER.		-	-	0.739	-	0.739
Title: M915A5 Underbody Armor - Test and Evaluation Description: Develop, test and evaluate Underbody Armor for the M915A5 FY 2017 Base Plans:		-	-	3.185	-	3.185

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army				Date: February 2016	
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles		Project (Number/Name) VR5 / TWV Protection Kits	
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Develop and test an MRAP-level armor underbody solution for the M915A5 fleet. Testing will include automotive and ballistic testing to achieve Full Materiel Release (FMR) for the armor kit.					
Title: Heavy Equipment Transport Urban Survivability Kits (HUSK) Systems Engineering/Program Management (SEPM)					
Description: SEPM support for HUSK					
FY 2015 Accomplishments: SEPM for HUSK					
	0.170	-	-	-	-
Title: HUSK Design and Build Armor Kits					
Description: Design and build prototype kits for the Heavy Tactical Vehicle systems.					
FY 2015 Accomplishments: Design and build Heavy Equipment Transport Urban Survivability Kit (HUSK) prototype kits in terms of form, fit, and function sufficient to validate the required protection levels and kit interface to the vehicle platform.					
	1.906	-	-	-	-
Title: HUSK Test and Evaluation					
Description: Funding is provided for the following efforts.					
FY 2015 Accomplishments: Validation of Heavy Equipment Transport Urban Survivability Kit (HUSK) design in preparation of Full Materiel Release.					
	1.531	-	-	-	-
Title: HUSK Logistics Support					
Description: HUSK Logistics Support					
FY 2015 Accomplishments: Includes development of update to Heavy Equipment Transporter (HET) manual, parts provisioning, installation instructions, and update of Technical Data Package (TDP) from Level 2 to Level 3.					
	3.390	-	-	-	-
Accomplishments/Planned Programs Subtotals					
	6.997	-	4.524	-	4.524

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 005: Family of Heavy Tactical Vehicles (FHTV) (DA0500)	78.425	27.549	39.564	6.122	45.686	39.338	3.966	-	-	0	194.964
• 000: Heavy Tactical Vehicle Protection Kits (D04017)	17.289	23.331	34.208	79.941	114.149	25.124	25.172	28.643	29.371	0	263.079

Remarks

D. Acquisition Strategy

Heavy Dump Truck (HDT) Armor: The FY17-19 dollars will be used to develop and build an armor solution for the HDT. This armored solution will be tested prior to approval for build to incorporate to the HDT production which will be procured after MS C decision in 2QFY18.

M915 Underbelly Armor: Funds will be dedicated to develop and test an MRAP-level armor underbody solution for the M915A5 fleet. Testing will include automotive and ballistic testing to achieve FMR for the armor kit.

E. Performance Metrics

N/A

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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 / 5				PE 0604622A / Family of Heavy Tactical Vehicles				VR5 / TWV Protection Kits							
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
SBIR/STTR	C/TBD	WARREN, MI : TBD	0.058	-		-		-		-		-	0	0.058	0
Subtotal			0.058	-		-		-		-		-	0.000	0.058	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
Heavy Dump Truck (HDT) Prototype Design of Armored Cab	C/DIQ	TBD : TBD	0.000	-		-		0.350	Jun 2017	-		0.350	0	0.350	0
Heavy Equipment Transport Urban Survivability Kits (HUSK) - Design and Build	MIPR	TARDEC : Warren, MI	2.720	1.906		-		-		-		-	0	4.626	0
HUSK Logistics Support	MIPR	TARDEC : Warren, MI	0.000	3.390		-		-		-		-	0	3.390	0
Subtotal			2.720	5.296		-		0.350		-		0.350	0.000	8.366	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
HDT - HTV Systems Engineering/Program Management (SEPM)	MIPR	TACOM LCMC : Warren, MI	0.000	-		-		0.250	Nov 2016	-		0.250	0	0.250	0
M915A5 Underbody Armor - SEPM	MIPR	TACOM LCMC : Warren, MI	0.000	-		-		0.739	Nov 2016	-		0.739	0	0.739	0
HUSK - SEPM	MIPR	TARDEC : Warren, MI	0.667	0.170		-		-		-		-	0	0.837	0
Subtotal			0.667	0.170		-		0.989		-		0.989	0.000	1.826	0.000

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
M915A5 Underbody Armor Preproduction	MIPR	TARDEC : Warren, MI	0.000	-		-		0.660	Nov 2016	-		0.660	0	0.660	0
M915A5 Underbody Armor - Ballistic and Automotive Testing	MIPR	Automotive Test Center (ATC) : Abedeen, MD	0.000	-		-		2.100	Nov 2016	-		2.100	0	2.100	0
M915A5 Underbody Armor - Test Support from U.S Army Materiel Systems Analysis Activity (AMSAA)	MIPR	AMSAA : Aberdeen, MD	0.000	-		-		0.200	Nov 2016	-		0.200	0	0.200	0
M915A5 Underbody Armor - Test Support from Army Research Lab (ARL)	MIPR	ARL : Adelphi, MD	0.000	-		-		0.200	Nov 2016	-		0.200	0	0.200	0
M915A5 Underbody Armor - Test Support from Army Evaluation Command (AEC)	MIPR	AEC : Aberdeen, MD	0.000	-		-		0.025	Nov 2016	-		0.025	0	0.025	0
HUSK - Test and Evaluation	MIPR	Various Locations : Various Locations	2.775	1.531		-		-		-		-	0	4.306	0
Subtotal			2.775	1.531		-		3.185		-		3.185	0.000	7.491	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	6.220	6.997	0.000	4.524	-	4.524	0.000	17.741	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
HDT Configuration Steering Board (CSB)																												
HDT Solicitation Preparation/Automotive Tank Purchase Description (AT)																												
HDT Issue Request for Proposal (RFP)																												
HDT Contract Award																												
HDT Milestone B/C (Armor/Truck)																												
HDT Armor Development																												
HDT Armor Test Asset Build																												
HDT Armor Build																												
M915A5 Underbody Armor - Test and Evaluation																												
M915A5 Underbody Armor - Type Classification/Full Materiel Release (T)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) VR5 / <i>TWV Protection Kits</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
HDT Configuration Steering Board (CSB)	4	2015	4	2015
HDT Solicitation Preparation/Automotive Tank Purchase Description (ATPD), Etc.	1	2017	2	2017
HDT Issue Request for Proposal (RFP)	2	2017	2	2017
HDT Contract Award	2	2018	2	2018
HDT Milestone B/C (Armor/Truck)	2	2018	2	2018
HDT Armor Development	2	2018	2	2019
HDT Armor Test Asset Build	2	2019	4	2020
HDT Armor Build	2	2021	4	2021
M915A5 Underbody Armor - Test and Evaluation	1	2017	4	2017
M915A5 Underbody Armor - Type Classification/Full Materiel Release (TC/FMR)	4	2017	4	2017

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	17.066	10.076	3.421	-	3.421	6.749	10.111	6.301	8.235	Continuing	Continuing
586: <i>Air Traffic Control</i>	-	17.066	10.076	3.421	-	3.421	6.749	10.111	6.301	8.235	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element funds continuous efforts in the development of modernized tactical Air Traffic Control (ATC) systems that will enable safety of aircraft operations. ATC systems are required to achieve or maintain compliance with civil, military, domestic and international air traffic control mandates and combat identification requirements. Funding will be utilized to develop, evaluate and integrate technologies required to support ATC requirements. Efforts funded include the Tactical Airspace Integration System (TAIS) Web Based Architecture and Airspace Improvements Initiative, Air Traffic Navigation Integration and Coordination System (ATNAVICS) Modernization, Advanced Surveillance, the development of an ATC Tactical Network, the Mobile Tower System (MOTS) Preplanned Product Improvement (P3I) upgrades, and Tactical Terminal Control System (TTCS) modernization.

TAIS, the Airspace Control System of the Army's Mission Command Information Systems (MCIS), requires the development and testing of web-based services for Airspace Control, and integration of these new web-based services into the TAIS common MCIS hardware, Air Traffic Services Common Operating Environment and Airspace Integration Improvement Initiatives. Additional capabilities will be provided through advanced surveillance interfaces, mission planning interfaces, and TAIS dynamic airspace updates to the cockpit. TAIS efforts also include developing and testing improvements to the air picture including the addition of Blue Force Tracker correlation and radar fusion capability. TAIS develops software and required hardware for airspace control web services, to operate effectively in a dynamic net-centric interconnected environment. TAIS also integrates advanced surveillance capabilities to further enhance airspace integration and dynamic management capabilities. ATNAVICS provides all weather instrument flight capabilities to include terminal, radar precision approach and landing services to all Army, Joint, and Allied aircraft. ATNAVICS will integrate Mode S capabilities required to control aircraft both Outside of the Continental United States (OCONUS) and Continental United States (CONUS). ATNAVICS will network its radar picture and interrogator data (Mode S) to aviation and joint network nodes through TAIS. ATNAVICS will undergo an effort to increase the range of the primary radar to 60 nautical miles. As the Department of Defense transitions military aircraft to positional self-reporting technologies, these various technologies will be incorporated in the Advanced Surveillance program. Advanced Surveillance allows ATC reception of aircraft self-reporting data which includes the Automatic Dependent Surveillance Broadcast. Advanced Surveillance integrates local radar feeds and self-reporting aircraft positional data into a correlated air situational awareness picture. ATC Tactical Networking supports the non-recurring engineering, test and evaluation tasks necessary for the integration of the radios, control stations and transmitter/receivers and software that will provide all ATC tactical systems an airfield network node capability. This will enable each ATC system to send voice and data between ATC platforms including connectivity to an external network for long range flight-following and data exchange. ATC Networking is required to meet the Net Ready Key Performance Parameter for ATC tactical systems. MOTS provides the Joint Force Commander or Combatant Commander a highly mobile, self-contained, integrated, and reliable information system platform for visual and procedural aircraft deconfliction and aircrew force protection in unified action terminal airspace environments. The ALS is a component of the MOTS and can be operated by solar power or by generator power. The ALS improvements include a Precision Approach Path Indicator and an ALS trailer charging system. The TTCS provides initial Air Traffic Services at remote landing sites and drop zones. TTCS includes secure communications equipment for aircraft separation and ground control, meteorological measuring system for basic weather information, and precision location capability.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	16.756	10.076	4.874	-	4.874
Current President's Budget	17.066	10.076	3.421	-	3.421
Total Adjustments	0.310	0.000	-1.453	-	-1.453
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.904	-			
• SBIR/STTR Transfer	-0.594	-			
• Adjustments to Budget Years	-	-	-1.453	-	-1.453

Change Summary Explanation

The Fiscal Year (FY) 2017 funding request was reduced by \$1,453,000 to account for availability of prior year execution balances.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>				Project (Number/Name) 586 / <i>Air Traffic Control</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
586: <i>Air Traffic Control</i>	-	17.066	10.076	3.421	-	3.421	6.749	10.111	6.301	8.235	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element funds continuous efforts in the development of modernized tactical Air Traffic Control (ATC) systems that will enable safety of aircraft operations. ATC systems are required to achieve or maintain compliance with civil, military, domestic and international air traffic control mandates and combat identification requirements. Funding will be utilized to develop, evaluate and integrate technologies required to support ATC requirements. Efforts funded include the Tactical Airspace Integration System (TAIS) Web Based Architecture and Airspace Improvements Initiative, Air Traffic Navigation Integration and Coordination System (ATNAVICS) Modernization, Advanced Surveillance, the development of an ATC Tactical Network, the Mobile Tower System (MOTS) Preplanned Product Improvement (P3I) upgrades, and Tactical Terminal Control System (TTCS) modernization.

TAIS, the Airspace Control System of the Army's Mission Command Information Systems (MCIS), requires the development and testing of web-based services for Airspace Control, and integration of these new web-based services into the TAIS common MCIS hardware, Air Traffic Services Common Operating Environment and Airspace Integration Improvement Initiatives. Additional capabilities will be provided through advanced surveillance interfaces, mission planning interfaces, and TAIS dynamic airspace updates to the cockpit. TAIS efforts also include developing and testing improvements to the air picture including the addition of Blue Force Tracker correlation and radar fusion capability. TAIS develops software and required hardware for airspace control web services, to operate effectively in a dynamic net-centric interconnected environment. TAIS also integrates advanced surveillance capabilities to further enhance airspace integration and dynamic management capabilities. ATNAVICS provides all weather instrument flight capabilities to include terminal, radar precision approach and landing services to all Army, Joint, and Allied aircraft. ATNAVICS will integrate Mode S capabilities required to control aircraft both Outside of the Continental United States (OCONUS) and Continental United States (CONUS). ATNAVICS will network its radar picture and interrogator data (Mode S) to aviation and joint network nodes through TAIS. ATNAVICS will undergo an effort to increase the range of the primary radar to 60 nautical miles. As the Department of Defense transitions military aircraft to positional self-reporting technologies, these various technologies will be incorporated in the Advanced Surveillance program. Advanced Surveillance allows ATC reception of aircraft self-reporting data which includes the Automatic Dependent Surveillance Broadcast. Advanced Surveillance integrates local radar feeds and self-reporting aircraft positional data into a correlated air situational awareness picture. ATC Tactical Networking supports the non-recurring engineering, test and evaluation tasks necessary for the integration of the radios, control stations and transmitter/receivers and software that will provide all ATC tactical systems an airfield network node capability. This will enable each ATC system to send voice and data between ATC platforms including connectivity to an external network for long range flight-following and data exchange. ATC Networking is required to meet the Net Ready Key Performance Parameter (KPP) for ATC tactical systems. MOTS provides the Joint Force Commander or Combatant Commander a highly mobile, self-contained, integrated, and reliable information system platform for visual and procedural aircraft deconfliction and aircrew force protection in unified action terminal airspace environments. The Airfield Lighting System (ALS) is a component of the MOTS and can be operated by solar power or by generator power. The ALS improvements include a Precision Approach Path Indicator and an ALS trailer charging system. The TTCS provides initial Air Traffic Services at remote landing sites and drop zones. TTCS includes secure communications equipment for aircraft separation and ground control, meteorological measuring system for basic weather information, and precision location capability.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>	Project (Number/Name) 586 / <i>Air Traffic Control</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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<p>Title: Tactical Airspace Integration System (TAIS)</p> <p>Description: TAIS Airspace Information Center (AIC), Common Operating Environment (COE) and Airspace Integration Improvements Initiative enhancements will be addressed through upgrades to the communications suite through new components such as 117G radios, BFT2/KGV-72, and ADS-B. TAIS develops software and required hardware for airspace management web services to operate effectively in a dynamic net-centric interconnected COE environment. TAIS also integrates advanced surveillance interfaces and passive receiver to further enhance a dynamic airspace management capability.</p> <p>FY 2015 Accomplishments: Initiated development of sensor and data interfaces to Civil Aviation agencies in support of military and homeland defense Air Traffic Services and Airspace Management Command and Control. Initiated development of web services and service oriented architecture with Joint systems to facilitate Air Traffic services and Airspace Command and Control across Department of Defense (DoD) agencies, Federal Agencies and with Allied Nations. Developed dynamic mission updates and interfaces with Unmanned Aerial Systems and DoD / Joint Air platforms for situational awareness. Developed and refined interfaces to cooperative, and non-cooperative sensors and self-reporting aircraft in support of Situational Awareness and airspace management and de-confliction. Developed rapidly deployable web based capabilities to enable disconnected off grid operations via non-line-of-sight communications and disjoined edge user nodes in support of ATC and Air Traffic Services (ATS). Developed personnel recovery data dissemination to facilitate medical evacuation and search-and-rescue operations. Developed 3D view of airspace execution and usage to prevent fratricide and mid-air collisions between military and civil aircraft. Developed capability to display and disseminate Instrument Flight Rules (IFR) and route structures, navigation information, and terminal area information. Implemented new interfaces to support the rapid visualization, de-confliction of airspace, increasing situational awareness and facilitating rapid clearance of airspace.</p> <p>FY 2016 Plans: Continue development of sensor and data interfaces to Civil Aviation agencies in support of military and homeland defense Air Traffic Services and Airspace Management Command and Control. Continue development of web services and service oriented architecture with Joint systems to facilitate Air Traffic services and Airspace Command and Control across DoD agencies, Federal agencies, COE and with Allied Nations. Continue to address Airspace Integration Improvements Initiative enhancements through upgrades to the communications suite through new components such as 117G radios, BFT2/KGV-72, and ADS-B. Continue to develop dynamic mission updates and interfaces with Unmanned Aerial Systems and DoD/Joint Air platforms for situational awareness. Continue to develop and refine interfaces to cooperative and non-cooperative sensor and self-reporting aircraft in support of Situational Awareness and airspace management and de-confliction. Develop deployable web based capabilities to enable disconnected off grid operations via non-line-of-sight communications and disjoined edge user nodes in support of ATC and ATS. Develop a computer-based, adaptive learning environment (ALE) to advance operator proficiency and adaptive</p>	8.333	3.565	2.184
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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>	Project (Number/Name) 586 / <i>Air Traffic Control</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>decision-making capabilities. Incorporate automated forms such as electronic flight strips, duty and facility logs within the ATC network environment.</p> <p>FY 2017 Plans: Continue to develop sensor and data interfaces to Civil Aviation agencies in support of military and homeland defense Air Traffic Services and Airspace Management Command and Control. Continue to develop web services and service oriented architecture with Joint systems to facilitate Air Traffic services and Airspace Command and Control across DoD agencies, Federal agencies, COE and with Allied Nations. Continue to develop dynamic mission updates and interfaces with Unmanned Aerial Systems and DoD/Joint Air platforms for situational awareness. Continue to develop and refine interfaces to cooperative and non-cooperative sensor and self-reporting aircraft in support of Situational Awareness and airspace management and de-confliction. Develop rapidly deployable web based capabilities to enable disconnected off grid operations via non-line-of-sight communications and disjointed edge user nodes in support of ATC and ATS. Continue to develop a computer-based, adaptive learning environment (ALE) to advance operator proficiency and adaptive decision-making capabilities. Continue incorporation of automated forms such as electronic flight strips, duty and facility logs within the ATC network environment strips, duty and facility logs and ATC records within the ATC network environment. Continue to reduce TAIS operator workload by simplifying software operations.</p>				
<p>Title: Air Traffic Navigation Integration and Coordination System (ATNAVICS) Modernization</p> <p>Description: ATNAVICS is a highly mobile tactical area surveillance and precision approach air traffic control radar system. It provides the Joint Force Commander, or Combatant Commander, with a mobile, self-contained, and reliable Airport Surveillance Radar, Precision Approach Radar, and a Secondary Surveillance Radar capability. System modernization includes radar interrogation enhancements.</p> <p>FY 2015 Accomplishments: Continued the development of the TPX-59 with Mode S as the secondary surveillance interrogator onto the radar. Supported development of the hardware and software which processes both Mode S and ADS-B messages as transmitted via the extended squitter function or upon interrogation, as well as the physical integration of the component into the ATNAVICS. Conducted system testing and qualification, as well as certification and Federal Aviation Administration (FAA) Army Spectrum Management Office (ASMO) approvals, and Air Traffic Control Radar Beacon System Identification Friend or Foe, Mark XII/Mark XIIa Systems (AIMS) certification.</p> <p>FY 2016 Plans: Complete system level development, testing, certification and integration of Mode S and ADS-B secondary surveillance radar capability (AN/TPX-59) into the ATNAVICS Platform. This will enable ATNAVICS to be compliant with International Civil Aviation Organization (ICAO) and FAA mandates.</p>		5.291	3.774	-
<p>Title: Advanced Surveillance</p>		0.500	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>	Project (Number/Name) 586 / <i>Air Traffic Control</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Advanced Surveillance technologies integration supports the nonrecurring engineering, integration and test tasks required to incorporate the passive reception of self-reporting technologies and the correlation of local radar feeds into Air Traffic Control systems. Self-reporting technologies include ADS-B, Mode 5 Level 2, Mode S, Universal Access Transmitter (UAT) and similar civil aircraft self-reporting technologies. Local radar feeds include any radars in close proximity to ATC systems.</p> <p>FY 2015 Accomplishments: Completed testing and integration of the selected Advanced Surveillance passive receiver into non-equipped tactical ATC equipment, including the TAIS and TTCS. Testing and evaluation included participation in NIE and Bold Quest exercises and operational/developmental testing to include potentially destructive testing. Advanced Surveillance will enable tactical Army ATC equipment to comply with FAA mandated capabilities.</p>				
<p>Title: ATC Tactical Network</p> <p>Description: ATC Tactical Networking supports the nonrecurring engineering, test and evaluation tasks necessary for the integration of the radios, control stations and transmitter/receivers and software that will provide all ATC tactical systems an airfield network node capability. This will enable each ATC system to send voice and data between ATC platforms including connectivity to an external network for long range flight-following and data exchange. ATC Networking is required to meet the Net Ready KPP for ATC tactical systems.</p> <p>FY 2015 Accomplishments: Conducted non-recurring engineering, test and evaluation tasks necessary for the integration of the radios, control stations and transmitter/receivers and software that will provide all ATC tactical systems an airfield network node capability. This enables each ATC system to send voice and data between ATC platforms including connectivity to an external network for long range flight-following and data exchange.</p>		1.028	-	-
<p>Title: Mobile Tower System (MOTS) P3I</p> <p>Description: MOTS is a rapidly deployable Air Traffic Control System supporting operations at military/civilian airfields and tactical landing zones. It provides ATC tower, secure, anti-jam communications, basic weather information, and precision location. The system includes an Airfield Lighting System that provides a visual indication of landing zone and runway locations in degraded conditions.</p> <p>FY 2016 Plans: Conduct nonrecurring engineering, test, and evaluations tasks necessary for the development and integration of amplifier for 117G radios, ARC-220 replacement, and universal power supply (UPS). The 117G amplifier will increase the range of the 117G radios to allow the system to meet the 30 nautical mile range to meet the threshold requirement. The ARC-220 will be replaced</p>		-	2.737	1.237

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / Air Traffic Control	Project (Number/Name) 586 / Air Traffic Control		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
by the PRC-150 to address obsolescence. The placement of UPS in the MOTS will be re-engineered to address human factors issues on the current design. FY 2017 Plans: Conduct nonrecurring engineering, test and evaluation tasks necessary for the development and integration of remote operation (300 ft) and advanced batteries. The remote operation (300 ft) will improve safety and functionality by providing the MOTS the capability to be remotely operated up to 300 ft away from the shelter. The advanced batteries replacement will allow the MOTS to meet its threshold requirement for extreme cold weather operation and storage.				
Title: Tactical Terminal Control System (TTCS) Description: TTCS provides initial Air Traffic Services at remote landing sites and drop zones. TTCS includes secure communications equipment for aircraft separation and ground control, meteorological measuring system for basic weather information, and precision location capability. FY 2015 Accomplishments: Designed, developed and tested the platform specific architecture for the integration of the ATC Tactical Operations Center Intercommunications System (TOCNET) common voice switching system and incorporation of the advanced surveillance system. The integration will permit future networking capabilities.		1.229	-	-
Title: Program Management (PM) Support Description: PM Support of PM ATC. FY 2015 Accomplishments: Continued Program Management in support of PM ATC.		0.201	-	-
Title: Tech and Log Support Description: Technical and logistics services in support of PM ATC. FY 2015 Accomplishments: Continued technical and logistics services in support of PM ATC.		0.484	-	-
Accomplishments/Planned Programs Subtotals		17.066	10.076	3.421

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>	Project (Number/Name) 586 / <i>Air Traffic Control</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• Air Traffic Control (AA0050): <i>Air Traffic Control</i>	127.232	94.545	50.405	-	50.405	111.890	91.119	53.269	54.922	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project is comprised of multiple systems supporting ATC development and test efforts. While the detailed acquisition strategy varies by program, the general strategy for each program is to complete development and testing efforts through contract modifications, engineering service tasks, and new/follow-on contracts. ATC systems are required to achieve or maintain compliance with civil, military, domestic and international air traffic control and upcoming Next Gen requirements and mandates, as well as current aircraft self-reporting transponders.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / Air Traffic Control	Project (Number/Name) 586 / Air Traffic Control
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	Various	PM ATC : Redstone Arsenal, AL	0.453	0.201	Oct 2014	-		-		-		-	0	0.654	0
Subtotal			0.453	0.201		-		-		-		-	0.000	0.654	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			
TAIS (Web Based Services Dev)	SS/T&M	General Dynamics C4S : Huntsville, AL	14.856	8.333	Aug 2015	3.565	Mar 2016	2.184	Jan 2017	-		2.184	Continuing	Continuing	Continuing
ATNAVICS Modernization	SS/CPFF	Raytheon : Marlboro, Mass	12.187	5.291	Aug 15	3.774	Mar 2016	-		-		-	0	21.252	0
Advanced Surveillance	Various	Various : Various	3.326	0.500	Jan 2015	-		-		-		-	0	3.826	0
Mobile Tower System (MOTS) P3I	SS/FFP	Various : Various	0.000	-		2.737	Jul 2016	1.237	Nov 2016	-		1.237	Continuing	Continuing	Continuing
Tactical Terminal Control System (TTCS)	Various	Various : Various	0.791	1.229	Sep 2015	-		-		-		-	0	2.020	0
Tech and Log Development Support	Various	PM ATC : Huntsville, AL	3.259	0.484	Sep 2015	-		-		-		-	0	3.743	0
ATC Tactical Network	Various	PM ATC : Huntsville, AL	0.000	1.028	Jul 2015	-		-		-		-	0	1.028	0
Subtotal			34.419	16.865		10.076		3.421		-		3.421	-	-	-

	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		34.872	17.066	10.076	3.421	3.421	-	-	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>	Project (Number/Name) 586 / <i>Air Traffic Control</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TAIS (Web Based Services Dev)	TAIS																											
ATNAVICS Modernization													TAIS															
ATNAVICS Continued Modernization	ATNAVICS TPX-59 Integration																											
Mobile Tower System (MOTS) P3I									Block II P3I												ATNAVICS Range Extension +							
Tactical Terminal Control System (TTCS)																												
ATC Tactical Network					ATC Tactical Network																							

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>	Project (Number/Name) 586 / <i>Air Traffic Control</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TAIS (Web Based Services Dev)	1	2015	4	2021
ATNAVICS Modernization	1	2015	4	2016
ATNAVICS Continued Modernization	1	2019	4	2021
Mobile Tower System (MOTS) P3I	1	2016	4	2018
Tactical Terminal Control System (TTCS)	1	2015	4	2015
ATC Tactical Network	1	2015	4	2015

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604641A / <i>TACTICAL UNMANNED GROUND VEHICLE</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	2.663	15.374	39.282	-	39.282	60.120	59.915	32.857	31.848	Continuing	Continuing
DV7: <i>Small Unmanned Ground Vehicle</i>	-	2.663	15.374	39.282	-	39.282	60.120	59.915	32.857	31.848	Continuing	Continuing

Note

This Program Element 0604641A Project DV7 captures four efforts to include: the Common Robotic System - Individual (CRS(I)), Robotics Enhancement Program (REP), Robotics Architecture, (RA) and Robotics Development (RD). Beginning in FY 2017, the Robotics Architecture (Interoperability Profile (IOP)) will be under this PE, 0604641A Project DV7 rather than 0604808A Landmine Warfare Barrier-Eng Dev under the Mine Neutralization/Detection Project

The FY 2016 funding request was reduced for by \$11.5 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

The Common Robotic System – Individual (CRS(I)) will be a man-packable, small (<25lbs), highly mobile, unmanned robotic system with advanced sensors/mission modules for dismounted Service Members. The CRS(I) will be designed so operator can quickly re-configure for other various missions by adding or removing modules and/or payloads. The CRS(I) will also include the Army universal controller. The CRS(I) will provide interrogation, detection, confirmation, and neutralization capabilities employed to support a wide spectrum of mobility missions for current and future forces. This capability provides commanders the ability to persistently monitor the operation environment (OE) while protecting and sustaining the force. The CRS(I) complements the Joint Integrated War-fighting Force by providing standoff to the War fighter during major combat, stability, and homeland security operations.

The Robotics Enhancement Program (REP) uses a “buy, try, and inform” methodology to evaluate Commercial Off the Shelf (COTS), Government Off the Shelf (GOTS) and Non-Developmental Item (NDI) products that have the potential to enhance Soldier combat effectiveness. Actual operational user feedback and evaluation results obtained will inform emerging capabilities and requirements documents in support of a Cost-Benefit Analysis to support future Army decision making.

Robotic Architecture (RA) provides the engineering and development resources to manage the overarching architecture for robotic systems that are both modular and interoperable across the Joint Force in order to facilitate future modernization efforts. It will manage the interoperability standards, modular payload interface, common software and universal controllers. RA includes the construction of program specific Interoperability Profiles (IOP) (i.e. Small Multipurpose Equipment Transport (SMET), Leader/Follower (LF), Route Clearance Interrogation System (RCIS), Common Robotics System-Vehicle (CRS(V)), CRS(I) Inc II, etc.) and new standards addressing emerging requirements (i.e. Cyber Security, Information Assurance, new payloads, etc).

Robotics Development (RD) includes efforts necessary to evaluate integrated technologies, validate material solutions and determine initial Analysis of Alternatives (AoA) in support of pre-material development decision activities for emerging requirements and programs of record. RD is designed to facilitate the transition of robotics and autonomous systems technology from Science and Technology (S&T) projects, REP initiatives and/or Small Business Innovative Research (SBIR) into emerging programs of record through development of emerging capabilities. This line is for robotic systems that are transported by individual Soldiers, by vehicle, maneuver

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604641A / <i>TACTICAL UNMANNED GROUND VEHICLE</i>
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under their own power, or are installed as robotic applique kits. RD supports early evaluations for operational effectiveness studies of platforms (i.e. SMET, Leader/Follower (LF), Route Clearance Interrogation Systems (RCIS), CRS(V), CRS(I) Inc II, Soldier Born Sensors, etc) to determine Technology Readiness Levels (TRL) and Manufacturing Readiness Levels (MRL). Studies support AoA that include Army Material Systems Analysis Activity (AMSAA), RAND studies, and/or modeling to increase confidence in the material solution defined in the emerging capability development document (CDD)/capability production document(CPD) that support appropriate Acquisition Category (ACAT), milestone decision authority (MDA) and office of primary responsibility designations.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	2.769	40.374	50.782	-	50.782
Current President's Budget	2.663	15.374	39.282	-	39.282
Total Adjustments	-0.106	-25.000	-11.500	-	-11.500
• Congressional General Reductions	-	-25.000			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.106	-			
• Other Adjustments 1	-	-	-11.500	-	-11.500

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604641A / <i>TACTICAL UNMANNED GROUND VEHICLE</i>				Project (Number/Name) DV7 / <i>Small Unmanned Ground Vehicle</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
DV7: <i>Small Unmanned Ground Vehicle</i>	-	2.663	15.374	39.282	-	39.282	60.120	59.915	32.857	31.848	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This Program Element 0604641A Project DV7 captures four efforts to include: the Common Robotic System - Individual (CRS(I)), Robotics Enhancement Program (REP), Robotics Architecture, (RA) and Robotics Development (RD). Beginning in FY 2017, the Robotics Architecture (Interoperability Profile (IOP)) will be under this PE, 0604641A Project DV7 rather than 0604808A Landmine Warfare Barrier-Eng Dev under the Mine Neutralization/Detection Project 415.

A. Mission Description and Budget Item Justification

The Common Robotic System – Individual (CRS(I)) will be a man-packable, small (<25lbs), highly mobile, unmanned robotic system with advanced sensors/mission modules for dismounted Service Members. The CRS(I) will be designed so operator can quickly re-configure for other various missions by adding or removing modules and/or payloads. The CRS(I) will also include the Army universal controller. The CRS(I) will provide interrogation, detection, confirmation, and neutralization capabilities employed to support a wide spectrum of mobility missions for current and future forces. This capability provides commanders the ability to persistently monitor the operation environment (OE) while protecting and sustaining the force. The CRS(I) complements the Joint Integrated War-fighting Force by providing standoff to the War fighter during major combat, stability, and homeland security operations.

The Robotics Enhancement Program (REP) uses a “buy, try, and inform” methodology to evaluate Commercial Off the Shelf (COTS), Government Off the Shelf (GOTS) and Non-Developmental Item (NDI) products that have the potential to enhance Soldier combat effectiveness. Actual operational user feedback and evaluation results obtained will inform emerging capabilities and requirements documents in support of a Cost-Benefit Analysis to support future Army decision making.

Robotic Architecture (RA) provides the engineering and development resources to manage the overarching architecture for robotic systems that are both modular and interoperable across the Joint Force in order to facilitate future modernization efforts. It will manage the interoperability standards, modular payload interface, common software and universal controllers. RA includes the construction of program specific Interoperability Profiles (IOP) (i.e. Small Multipurpose Equipment Transport (SMET), Leader/Follower (LF), Route Clearance Interrogation System (RCIS), Common Robotics System-Vehicle (CRS(V)), CRS(I) Inc II, etc.) and new standards addressing emerging requirements (i.e. Cyber Security, Information Assurance, new payloads, etc).

Robotics Development (RD) includes efforts necessary to evaluate integrated technologies, validate material solutions and determine initial Analysis of Alternatives (AoA) in support of pre-material development decision activities for emerging requirements and programs of record. RD is designed to facilitate the transition of robotics and autonomous systems technology from Science and Technology (S&T) projects, REP initiatives and/or Small Business Innovative Research (SBIR) into emerging programs of record through development of emerging capabilities. This line is for robotic systems that are transported by individual Soldiers, by vehicle, maneuver under their own power, or are installed as robotic applique kits. RD supports early evaluations for operational effectiveness studies of platforms (i.e. SMET, Leader/Follower (LF), Route Clearance Interrogation Systems (RCIS), CRS(V), CRS(I) Inc II, Soldier Born Sensors, etc) to determine Technology Readiness Levels (TRL)

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>TACTICAL UNMANNED GROUND VEHICLE</i>	Project (Number/Name) DV7 / <i>Small Unmanned Ground Vehicle</i>
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and Manufacturing Readiness Levels (MRL). Studies support AoA that include Army Material Systems Analysis Activity (AMSAA), RAND studies, and/or modeling to increase confidence in the material solution defined in the emerging capability development document (CDD)/capability production document(CPD) that support appropriate Acquisition Category (ACAT), milestone decision authority (MDA) and office of primary responsibility designations.

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

	FY 2015	FY 2016	FY 2017
<p>Title: CRS-I and emerging robotic requirements.</p> <p>Description: The CRS-I program expects a Material Development Decision (MDD) in FY16. In FY15, CRS-I completed AoA letter of sufficiency, began the program Test & Evaluation Working-Level Integrated Product Team (T&E WIPT), formed a CRS-I program IPT to support the acquisition process. An IPT was formed to support emerging robotic system requirements and REP.</p> <p>FY 2015 Accomplishments: The CRS-I program completed an AoA letter of sufficiency. Limited ADM to begin program Test & Evaluation Working-Level Integrated Product Team (T&E WIPT) and formed a CRS-I program IPT to support the acquisition process and MDD justification in 1Q16. The REP program established a website where industry and Gov't submits initiatives. A monthly stakeholders review was established leading towards a biannual Council of Colonels (CoC) review and approval of REP initiatives.</p> <p>FY 2016 Plans: The CRS(I) program will receive MDA delegation as ACAT III with MDD and an ADM to complete entrance criteria for MS B. Systems engineering activities will include completion of the TEMP, SEP and performance specification. The product support IPT will complete the LCSP. CRS(I) will collaborate with appropriate PEOs for development of common radio, universal controller architecture and modeling and simulation. The procurement specialist will conduct and compile results from a RFI from industry, a draft RFP with an industry day and prepare for release of the development RFP. The REP program utilizes an established website where industry and Gov't submits initiative proposals. Per standard operating procedure (SOP) and MOA between PEO CS&CSS and TRADOC/MCOE, a monthly stakeholders working group has proven continually effective in reviewing emerging capabilities leading towards a biannual Council of Colonels (CoC) review and selections of proposals in support of CoE determined REP initiatives. Industry and Gov't responses indicate proposal experimentation in support of these initiatives could exceed a \$10M level of effort. REP 16.1 and 16.2 initiatives will be conducted at Ft Benning and Ft Leonard Wood to inform emerging requirements.</p> <p>FY 2017 Plans: The CRS(I) program will enter MS B, conduct a source selection board and complete EMD contract award(s) beginning in 3QFY17. REP will continue to inform emerging robotic system requirements and risk reduction initiatives per SOP and MOA, to include 16.1 and 16.2 project reviews and complete REP 17.1 and 17.2 demonstrations. REP initiatives will be completed and published for PEO review at Knowledge Point 2 for program effectiveness and efficiency.</p>	2.663	15.374	39.282

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / TACTICAL UNMANNED GROUND VEHICLE	Project (Number/Name) DV7 / Small Unmanned Ground Vehicle

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
RA will monitor, validate, and update IOP for MTRS and CRS(I) instantiations as well as continuous revision for cyber security and information assurance. RA will also initiate development of SMET and LF instantiations. RD will initiate Pre-MDD activities to support AoA and draft CDD for SMET, LF and RCIS to include follow-on S&T activities and REP to support emerging requirements.			
Accomplishments/Planned Programs Subtotals	2.663	15.374	39.282

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
• F00001: OPA BCT Unmanned Ground Vehicle	-	-	-	-	-	-	47.510	95.640	130.360	Continuing	Continuing

Remarks

D. Acquisition Strategy

CRS(I) will enter MS-B as an ACAT III program, and the Acquisition strategy will be completed in FY 2016 prior to Pre-EMD in 4th quarter FY 2016. CRS(I) strategy to include the following considerations: Full and open competition with incentive type contract (i.e. Cost Plus Incentive (CPI) and Fixed Price incentive Fee (FPIF), and award of up to three contractors to support EMD phase.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / TACTICAL UNMANNED GROUND VEHICLE	Project (Number/Name) DV7 / Small Unmanned Ground Vehicle
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CRS(I)	Various	PM FP, PdM UGV : Warren, MI	0.000	-		3.500	Jun 2016	1.000	Jan 2017	-		1.000	0	4.500	0
REP	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	0.108	Feb 2016	3.784	Jun 2016	1.500	Jan 2017	-		1.500	0	5.392	0
Robotics Development	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		0.282	Mar 2017	-		0.282	0	0.282	0
Subtotal			0.000	0.108		7.284		2.782		-		2.782	0.000	10.174	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			
CRS(I) EMD Contract	C/CPIF	PM FP, PdM UGV : Warren, MI	0.000	-		2.000	Mar 2016	24.000	Apr 2017	-		24.000	0	26.000	0
REP	TBD	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	0.750	Dec 2015	2.000	Feb 2016	3.000	Dec 2016	-		3.000	0	5.750	0
Robotic Architecture	MIPR	PM FP, PdM UGV, PdM ALUGS & TARDEC : Warren, MI	0.000	-		-		1.500	May 2017	-		1.500	0	1.500	0
Robotics Development	TBD	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		1.000	Jan 2017	-		1.000	0	1.000	0
Subtotal			0.000	0.750		4.000		29.500		-		29.500	0.000	34.250	0.000

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / TACTICAL UNMANNED GROUND VEHICLE	Project (Number/Name) DV7 / Small Unmanned Ground Vehicle
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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			
CRS(I)	Various	PM FP, PdM UGV : Warren, MI	0.000	1.000	Jan 2016	2.000	Jul 2016	2.000	Nov 2016	-		2.000	0	5.000	0
REP	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	0.805	Jan 2016	1.090	Jul 2016	1.000	Nov 2016	-		1.000	0	2.895	0
Robotic Architecture	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		0.500	Nov 2016	-		0.500	0	0.500	0
Robotics Development	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		0.500	Nov 2016	-		0.500	0	0.500	0
Subtotal			0.000	1.805		3.090		4.000		-		4.000	0.000	8.895	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			
CRS(I)	MIPR	PM FP, PdM UGV : Warren, MI	0.000	-		0.500	Jan 2016	2.000	Aug 2017	-		2.000	0	2.500	0
REP	MIPR	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		0.500	Jan 2016	0.500	Jan 2017	-		0.500	0	1.000	0
Robotics Development	MIPR	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		0.500	Mar 2017	-		0.500	0	0.500	0
Subtotal			0.000	-		1.000		3.000		-		3.000	0.000	4.000	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	2.663	15.374	39.282	-	0.000	57.319	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / TACTICAL UNMANNED GROUND VEHICLE	Project (Number/Name) DV7 / Small Unmanned Ground Vehicle
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021																															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																												
CRS(I)																																																								
(1) MDD																																	1 MDD																							
(2) RFP																																	2 RFP																							
(3) MS B and Contract Award (x2 Competitive)																																					3 MS B																			
(4) PDR (x2)																																									4 PDR															
(5) CDR (x2)																																									5 CDR															
EMD Testing/Competitive Downselect (2 contractors)																																													EMD											
(6) MS C																																													6 MS C											
IOT&E																																																	IOT&E							
(7) FRP																																																					7 FRP			
REP	REP																																																							
REP Initiative(s) 16.1					Demonstration																																																			
REP Initiative(s) 16.2					Demonstration																																																			

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / TACTICAL UNMANNED GROUND VEHICLE	Project (Number/Name) DV7 / Small Unmanned Ground Vehicle
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
REP Initiative(s) 17.1									Demonstration																							
REP Initiative(s) 17.2																	Demonstration															
REP Initiative(s) 18.1																					Demonstration											
REP Initiative(s) 18.2																					Demonstration											
REP Initiative(s) 19.1																					Demonstration											
REP Initiative(s) 19.2																									Demonstration							
REP Initiative(s) 20.1																									Demonstration							
REP Initiative(s) 20.2																													Demonstration			
REP Initiative(s) 21.1																													Demonstration			
REP Initiative(s) 21.2																													Demonstration			
Robotics Development									Study/Analysis																							
Squad Multipurpose Equipment Transport									Study/Analysis																							
Leader/Follower									Study/Analysis																							

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / TACTICAL UNMANNED GROUND VEHICLE	Project (Number/Name) DV7 / Small Unmanned Ground Vehicle
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Route Clearance and Interrogation System (RCIS)									Study/Analysis																							
Automated Convoy Operations													Study/Analysis																			
Applique/Large Robotic Systems FY 2018																	Study/Analysis															
Soldier Robotic Systems FY 2019																					Study/Analysis											
Applique/Large Robotic Systems FY 2019																									Study/Analysis							
Soldier Robotic Systems FY 2020																													Study/Analysis			
Applique/Large Robotic Systems FY 2020																													Study/Analysis			
Soldier Robotic Systems FY 2021																													Study/Analysis			
Applique/Large Robotic Systems FY 2021																													Study/Analysis			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / TACTICAL UNMANNED GROUND VEHICLE	Project (Number/Name) DV7 / Small Unmanned Ground Vehicle

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CRS(I)	1	2016	1	2016
MDD	1	2016	1	2016
RFP	4	2016	4	2016
MS B and Contract Award (x2 Competitive)	3	2017	3	2017
PDR (x2)	2	2018	2	2018
CDR (x2)	3	2018	3	2018
EMD Testing/Competitive Downselect (2 contractors)	4	2018	4	2019
MS C	4	2019	4	2019
IOT&E	2	2020	4	2020
FRP	4	2020	4	2020
REP	2	2015	2	2015
REP Initiative(s) 16.1	4	2015	4	2016
REP Initiative(s) 16.2	2	2016	1	2017
REP Initiative(s) 17.1	4	2016	4	2017
REP Initiative(s) 17.2	2	2017	1	2018
REP Initiative(s) 18.1	4	2017	4	2018
REP Initiative(s) 18.2	2	2018	1	2019
REP Initiative(s) 19.1	4	2018	4	2019
REP Initiative(s) 19.2	2	2019	1	2020
REP Initiative(s) 20.1	4	2019	4	2020
REP Initiative(s) 20.2	2	2020	1	2021
REP Initiative(s) 21.1	4	2020	4	2021

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>TACTICAL UNMANNED GROUND VEHICLE</i>	Project (Number/Name) DV7 / <i>Small Unmanned Ground Vehicle</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
REP Initiative(s) 21.2	2	2021	1	2022
Robotics Development	1	2017	1	2017
Squad Multipurpose Equipment Transport	1	2017	4	2017
Leader/Follower	1	2017	4	2018
Route Clearance and Interrogation System (RCIS)	1	2017	3	2018
Automated Convoy Operations	1	2017	4	2017
Applique/Large Robotic Systems FY 2018	3	2018	2	2019
Soldier Robotic Systems FY 2019	1	2019	4	2019
Applique/Large Robotic Systems FY 2019	3	2019	2	2020
Soldier Robotic Systems FY 2020	1	2020	4	2020
Applique/Large Robotic Systems FY 2020	3	2020	2	2021
Soldier Robotic Systems FY 2021	1	2021	4	2021
Applique/Large Robotic Systems FY 2021	3	2021	2	2022

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604642A / LIGHT TACTICAL WHEELED VEHICLES
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	0.494	-	0.494	1.000	1.000	0.000	0.000	0.000	2.494
E40: LTV Prototype	-	0.000	0.000	0.494	-	0.494	1.000	1.000	0.000	0.000	0.000	2.494

Note

GMV is a new start program in FY17.

A. Mission Description and Budget Item Justification

Ground Mobility Vehicle (GMV) (formerly called the Ultra Light Combat Vehicle) provides enhanced tactical mobility for an Infantry Brigade Combat Team (IBCT) infantry squad of 9 personnel with their associated equipment to move quickly around the battlefield, including the ability to execute medium distance insertion operations using UH-60 aircraft, providing commanders greater freedom of movement and freedom of action. This capability provides flexibility for entry operations (permissive and non-permissive) to counter threat anti-access strategies by using multiple austere entry points via air-drop, air-land, and/or air-insertion to bring in combat configured units.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	0.494	-	0.494
Total Adjustments	0.000	0.000	0.494	-	0.494
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	0.494	-	0.494

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / LIGHT TACTICAL WHEELED VEHICLES	Project (Number/Name) E40 / LTV Prototype
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
E40: LTV Prototype	-	0.000	0.000	0.494	-	0.494	1.000	1.000	0.000	0.000	0.000	2.494
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

GMV is a new start program in FY17.

A. Mission Description and Budget Item Justification

Ground Mobility Vehicle (GMV) (formerly called the Ultra Light Combat Vehicle) provides enhanced tactical mobility for an Infantry Brigade Combat Team (IBCT) infantry squad of 9 personnel with their associated equipment to move quickly around the battlefield, including the ability to execute medium distance insertion operations using UH-60 aircraft, providing commanders greater freedom of movement and freedom of action. This capability provides flexibility for entry operations (permissive and non-permissive) to counter threat anti-access strategies by using multiple austere entry points via air-drop, air-land, and/or air-insertion to bring in combat configured units.

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

	FY 2015	FY 2016	FY 2017
Title: GMV Test Vehicles	-	-	0.494
Description: Purchase GMV Test Vehicles			
FY 2017 Plans: Contract award for two each GMV Test Vehicles for destructive testing such as LVAD, Roll over and Durability.			
Accomplishments/Planned Programs Subtotals	-	-	0.494

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
• D15505: Ground Mobility Vehicle D15505 OPA	-	-	4.907	-	4.907	5.935	13.878	4.956	-	0.000	29.676

Remarks

D. Acquisition Strategy

Pursue development of the GMV to fulfill requirements using a Commercial off the shelf or Non-developmental Item vehicle. A firm fixed priced contract will be awarded through full and open competition.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / <i>LIGHT TACTICAL WHEELED VEHICLES</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / LIGHT TACTICAL WHEELED VEHICLES	Project (Number/Name) E40 / LTV Prototype
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) CPD AROC Approval									▲ CPD AROC Approval																			
GMV RFP/Source Selection Evaluation Board (SSEB)													■ RFP/SSEB															
(2) Milestone C									▲ MS C																			
(3) GMV Contract Award									▲ Contract Award																			
Production Qualification Testing													■ Dev. Testing															
Log Development													■ Log Development															
(4) GMV Full Rate Production																	▲ RP											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / <i>LIGHT TACTICAL WHEELED VEHICLES</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CPD AROC Approval	4	2016	4	2016
GMV RFP/Source Selection Evaluation Board (SSEB)	1	2017	3	2017
Milestone C	4	2017	4	2017
GMV Contract Award	4	2017	4	2017
Production Qualification Testing	2	2018	2	2019
Log Development	2	2018	3	2019
GMV Full Rate Production	3	2019	3	2019

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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 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0604645A / <i>Armored Systems Modernization (ASM) - Eng 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	9.678	-	9.678	9.808	29.820	119.828	164.826	Continuing	Continuing
EV8: <i>Mobile Protected Firepower</i>	-	0.000	0.000	9.678	-	9.678	9.808	29.820	119.828	164.826	Continuing	Continuing

A. Mission Description and Budget Item Justification

Infantry Brigade Combat Teams (IBCTs) lack the mobile protected firepower capability necessary to defeat enemy prepared positions, destroy enemy armored vehicles, close with the enemy through fire and maneuver, and ensure freedom of maneuver and action in close contact with the enemy. Mobile Protected Firepower (MPF) will provide the protected, long range, precision direct-fire capability to ensure freedom of movement and action during offensive operations or defeat attacking enemy during defensive operations.

The funding in FY2017 will support trade studies, technical/operational/affordability analysis, the possible initiation of an Alternative of Analysis (AoA), designs for new development concepts or modification to existing platforms, and potential prototyping to assess such designs or modifications if funding permits.

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	9.678	-	9.678
Total Adjustments	0.000	0.000	9.678	-	9.678
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	9.678	-	9.678

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev				Project (Number/Name) EV8 / Mobile Protected Firepower			
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
EV8: Mobile Protected Firepower	-	0.000	0.000	9.678	-	9.678	9.808	29.820	119.828	164.826	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Mobile Protected Firepower (MPF) program is a New Start effort.

A. Mission Description and Budget Item Justification

Infantry Brigade Combat Teams (IBCTs) lack the mobile protected firepower capability necessary to defeat enemy prepared positions, destroy enemy armored vehicles, close with the enemy through fire and maneuver, and ensure freedom of maneuver and action in close contact with the enemy. Mobile Protected Firepower (MPF) will provide the protected, long range, precision direct-fire capability to ensure freedom of movement and action during offensive operations or defeat attacking enemy during defensive operations.

The funding in FY2017 will support trade studies, technical/operational/affordability analysis, the initiation of an Alternative of Analysis (AoA), designs for new development concepts or modification to existing platforms, and potential prototyping to assess such designs or modifications if funding permits.

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

	FY 2015	FY 2016	FY 2017
Title: Government Engineering and Project Management	-	-	9.678
Description: Funding is provided for the following effort			
FY 2017 Plans: Provides for basic Government oversight of the Mobile Protected Firepower (MPF) program. Includes funding for government personnel (labor, travel, training, supplies) and other support (other government agencies, support contractors, automated data processing, communications, and equipment). Initiation of the MPF Analysis of Alternatives (AoA), which will assess the operational effectiveness, suitability, and life-cycle cost of materiel solutions that satisfy requirements contained within the MPF Initial Capabilities Document (ICD). The results of the MPF AoA will provide critical information to support a Milestone A or B in 1QFY2019.			
Accomplishments/Planned Programs Subtotals	-	-	9.678

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / <i>Armored Systems Modernization (ASM) - Eng Dev</i>	Project (Number/Name) EV8 / <i>Mobile Protected Firepower</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>
• Mobile Protected Firepower (G80820): <i>Mobile Protected Firepower (G80820)</i>	-	-	-	-	-	-	-	-	69.470	0.000	69.470

Remarks

D. Acquisition Strategy

Upon successful execution of a Mobile Protected Firepower (MPF) Materiel Development Decision (MDD) by late FY17 an Analysis of Alternative (AoA) will be initiated to assess the operational effectiveness, suitability, and life-cycle cost of potential materiel solutions that satisfy requirements contained within the MPF Initial Capabilities Document (ICD). Materiel Solution Analysis will support a future decision whether the MPF Program will likely enter the Defense Acquisition System at Milestone A or Milestone B in FY2019.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Project Management Office	RO	Government Warren MI; : Various	0.000	-		-		9.678	Dec 2016	-		9.678	Continuing	Continuing	0
Subtotal			0.000	-		-		9.678		-		9.678	-	-	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			
MPF Development	TBD	Various Contractor sites : TBD	0.000	-		-		-		-		-	Continuing	Continuing	0
Subtotal			0.000	-		-		-		-		-	-	-	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			
MPF Testing	TBD	Various Test Sites : TBD	0.000	-		-		-		-		-	Continuing	Continuing	0
Subtotal			0.000	-		-		-		-		-	-	-	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
	0.000	-	0.000	9.678	-	9.678	-	-	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
MPF Materiel Development Decision									■																							
MPF Analysis of Alternatives									MPF MDD																							
(1) MPF Milestone A or B													MPF AoA																			
MPF Technology Maturation and Risk Reduction or Engineering & Manu																	▲	MPF Milestone A or B							MPF TMRR or EMD							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / <i>Armored Systems Modernization (ASM) - Eng Dev</i>	Project (Number/Name) EV8 / <i>Mobile Protected Firepower</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MPF Materiel Development Decision	3	2017	3	2017
MPF Analysis of Alternatives	3	2017	3	2018
MPF Milestone A or B	1	2019	1	2019
MPF Technology Maturation and Risk Reduction or Engineering & Manufacturing Dev	2	2019	4	2021

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	58.997	67.582	84.519	-	84.519	88.129	100.883	73.394	47.301	Continuing	Continuing
EQ9: <i>Close Access Target Reconnaissance (CATR)</i>	-	0.000	1.656	1.173	-	1.173	0.000	0.000	0.000	0.000	0.000	2.829
L67: <i>Soldier Night Vision Devices</i>	-	14.151	20.440	26.257	-	26.257	14.690	19.194	19.649	18.643	Continuing	Continuing
L70: <i>Night Vision Dev Ed</i>	-	18.689	27.696	40.368	-	40.368	55.764	53.289	37.141	15.770	Continuing	Continuing
L75: <i>Profiler</i>	-	1.655	2.108	3.885	-	3.885	3.705	3.421	3.573	1.956	0.000	20.303
L76: <i>Dismounted Fire Support Laser Targeting Systems</i>	-	4.912	4.662	5.778	-	5.778	6.131	14.472	5.221	5.410	Continuing	Continuing
L79: <i>Joint Effects Targeting Systems (JETS)</i>	-	19.590	11.020	7.058	-	7.058	7.839	10.507	7.810	5.522	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element provides night vision/reconnaissance, surveillance and target acquisition technologies required for U. S. defense forces to engage enemy forces twenty-four hours a day under conditions of degraded visibility due to darkness, adverse weather, battlefield obscurants, foliage and man-made structures. These developments and improvements to high performance night vision electro-optics, radar, laser, and thermal systems and integration of related multi-sensor suites will enable near to long range target acquisition, identification and engagement to include significant fratricide reduction, which will improve battlefield command and control in "around-the-clock" combat operations.

Project EQ9 focuses on a kit of electronic devices that acquires, collects, and transmits data to provide near real time feedback in order to validate, follow, locate, or track a target (i.e., tagging, tracking, and locating (TTL)). Using electronic audio and/or video recorders, information obtained will validate movement and identify targets. In addition, threat monitoring can be integrated into existing operational tools, help to paint a clearer picture of the battlefield, pinpoint possible target locations, and identify and exploit enemy movements and patterns. CATR has been fielded since 2005 as a Quick Reaction Capability (QRC) program.

Project L67 develops, improves and miniaturizes high performance night vision electro-optics, thermal and laser systems. It also provides for systems integration of related multi-sensor suites to enable near to long-range target acquisition and engagement as well as improved battlefield command and control in around-the-clock combat operations. It focuses on adapting demonstrated technologies that bring improvements to the dismounted Soldiers' equipment. This project develops or enhances equipment that provides the individual Soldier's day/night situational awareness and individual targeting capability, sniper fire detection and location capability, and integrates improved target location and self-location capability to eliminate friendly fire incidents. Includes associated with efforts for integration and interface of products on Soldiers' head, body, and weapons.

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	
<p>Project L70 focuses on night vision, reconnaissance, surveillance and target acquisition (RSTA) sensor and suites of sensors to provide well-defined surveillance and targeting capabilities for a variety of Current, Modular, and Future Force platforms. This project includes: 3rd Generation Forward Looking Infra-Red (3GEN FLIR) B-Kit development activities, the 3GEN Long Range Advanced Scout Surveillance System (LRAS3) Engineering Change Proposal (ECP) to integrate 3GEN FLIR B-Kit, and the Assistant Secretary of the Army for Acquisition, Logistics, and Technology ASA(ALT) Common Operating Environment (COE) effort to meet sensor interoperability requirements and improve the soldier-machine interface of the Program of Record (POR).</p> <p>Project L75 focuses on development of Profiler Block enhanced capabilities for meteorological (MET) measurement sensors and data. Improvements have reduced the footprint (less soldiers/vehicles) and complexity of the system, improved performance (accuracy), improved survivability, connectivity, no balloon sensor, multiple initialization data, and terrain visualization. The improved MET message data will increase lethality by enabling artillery a greater probability of first round hit with indirect fire systems. Profiler Block III provides a networked laptop configuration while further reducing the system's logistics footprint with the elimination of the High Mobility Multi-purpose Wheeled Vehicle (HMMWV) mounted shelter and trailer located in the Tactical Operations Center (TOC). The Profiler Virtual Module (PVM), a product improvement to the Block III, concept includes the following updates: update of weather model; update of software architecture removing legacy Block I code and creating a modular framework; development in conjunction with the Advanced Field Artillery Tactical Data System (AFATDS) program including AFATDS version II, to provide increased interoperability and usability; and to enable operation of the Profiler system in a virtual machine for use in the Common Operating Environment (COE) versions 2,3,4,and 5. This concept is a flexible approach that supports use of existing Block III hardware, increased accuracy during technical refresh of hardware with higher performance computers, and virtualization on the Command Post Computing Environment (CP CE) server.</p> <p>Project L76 matures technologies and capabilities which benefit the Lightweight Laser Designator Rangefinder (LLDR, AN/PED-1, AN/PED-1A, and AN/PED-1B), Joint Effects Targeting System (JETS), and other precision targeting systems. These precision targeting and next generation systems are used by dismounted Soldiers to locate, identify, and target enemy assets. This project focuses on reducing weight, improving imaging performance, and increasing targeting accuracy. Targeting accuracy improvements will focus on developing and integrating affordable, non-magnetic, high accuracy, full-time (24/7), and all weather Azimuth and Vertical Angle Measurement (AVAM) devices, with reduced size, weight and power characteristics into the LLDR system. Long term goals include improving current celestial navigation systems to increase operational availability, developing precision targeting capabilities that will operate in a Global Positioning System (GPS) denied environment, and integration of M-Code GPS (next generation GPS) receivers into LLDR and JETS, when available.</p> <p>Project L79 focuses on the Joint Effects Targeting System (JETS). JETS is an Army program with joint information (Air Force and Marine Corps). JETS will meet the one-man, hand-held precision targeting gap identified by the Fire Center of Excellence (FCOE). JETS is a light-weight, handheld system that will provide the single dismounted observer and Joint Terminal Attack Controller (JTAC) with a common, enhanced day and night thermal capability to rapidly acquire, accurately locate, positively identify, and precisely designate targets. JETS Target Location and Designation System (TLDS) will be able to interface with existing and future Service Forward Entry Systems (FESS). After initiating JETS TLDS production, this project will address continued development and integration of improved precision targeting components to reduce size, weight, power, and cost of the system, to address operation in environments where GPS is denied, and to integrate M-code GPS receivers when they become available.</p>		

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	65.299	67.582	71.280	-	71.280
Current President's Budget	58.997	67.582	84.519	-	84.519
Total Adjustments	-6.302	0.000	13.239	-	13.239
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-6.302	-	13.239	-	13.239

Change Summary Explanation

Fiscal Year 2017: Program increases of \$6.187 million to Project L67 for Soldier Night Vision Devices, \$7.265 million for L70 Night Vision Dev Ed, and \$0.586 million to EQ9 for CATR evaluation and testing of new technology. Program decreases of -\$0.286 million to L79 Joint Effects Targeting Systems (JETS), -\$0.269 million to L76 Dismounted Fire Support Laser Targeting Systems, and -\$0.244 million to L75 Profiler.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>				Project (Number/Name) EQ9 / <i>Close Access Target Reconnaissance (CATR)</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
EQ9: <i>Close Access Target Reconnaissance (CATR)</i>	-	0.000	1.656	1.173	-	1.173	0.000	0.000	0.000	0.000	0.000	2.829
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

CATR is a kit of electronic devices that acquires, collects and transmits data to provide near real time feedback in order to validate, follow, locate, or track a target (i.e., tagging, tracking, and locating (TTL)). CATR will use electronic audio and/or video recorders to obtain information which is used to validate movement and identify targets. In addition, CATR allows for threat monitoring that can be integrated into existing operational tools, help to paint a clearer picture of the battlefield, pinpoint possible target locations, and identify and exploit enemy movements and patterns. CATR has been fielded since 2005 as a Quick Reaction Capability (QRC) program.

FY 2017 Base development dollars in the amount of \$1.173 million is to conduct evaluation and testing of emerging commercial off-the-shelf equipment, devices and capabilities of new CATR technology for Army utilization.

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

	FY 2015	FY 2016	FY 2017
Title: Close Access Target Reconnaissance (CATR) Post Milestone C/Fielding Decision	-	1.656	1.173
Description: Prepare for Post Milestone C/Fielding Decision by conducting a Customer Test and prepare acquisition documentation.			
FY 2016 Plans: In order for CATR to obtain a Post Milestone C/Fielding Decision in FY2016, a Customer Test will be conducted by the Army Test & Evaluation Command (ATEC). Funding is also to secure the type classification of the CATR Basic Set, participate in the logistics demonstration, review Customer Test report, develop life cycle sustainment plan, and develop acquisition documents for a Post Milestone C/Fielding Decision.			
FY 2017 Plans: New technology will be evaluated and tested in order to support technology refresh in the Production & Deployment phase in FY2018.			
Accomplishments/Planned Programs Subtotals	-	1.656	1.173

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) EQ9 / <i>Close Access Target Reconnaissance (CATR)</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>
• Close Access Target Reconnaissance: <i>Close Access Target Reconnaissance (CATR) (B10002)</i>	-	8.010	7.970	-	7.970	8.050	7.999	8.064	9.830	Continuing	Continuing

Remarks

D. Acquisition Strategy

Based on a successful Materiel Development Decision (MDD) in September 2015, the Milestone Decision Authority designated the CATR program as a post-Milestone C Acquisition Category (ACAT) III program at the Production and Deployment phase. After a successful Fielding decision planned for 4th Quarter FY2016, CATR will utilize Quick Reaction Capability (QRC) equipment to refresh, re-kit existing, and field sets/systems in the Brigade Combat Teams (BCTs).

E. Performance Metrics

N/A

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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 / 5				PE 0604710A / Night Vision Systems - Eng Dev				EQ9 / Close Access Target Reconnaissance (CATR)							
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	MIPR	PdM GS, : Ft Belvoir, VA	0.000	-		0.146	Nov 2015	0.085	Jan 2017	-		0.085	0	0.231	0
Subtotal			0.000	-		0.146		0.085		-		0.085	0.000	0.231	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
Evaluate new CATR technology	TBD	Various : Various	0.000	-		-		0.765	Mar 2017	-		0.765	0	0.765	0
Subtotal			0.000	-		-		0.765		-		0.765	0.000	0.765	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
Post MS C/ Fielding Decision Prep	C/FP	PdM GS, : Ft Belvoir, VA	0.000	-		0.442	Dec 2015	-		-		-	0	0.442	0
Subtotal			0.000	-		0.442		-		-		-	0.000	0.442	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
Customer Test	MIPR	ATEC : APG, MD	0.000	-		1.068	Nov 2015	-		-		-	0	1.068	0
Test new CATR Technology	MIPR	ATEC : APG, MD	0.000	-		-		0.323	Apr 2017	-		0.323	0	0.323	0
Subtotal			0.000	-		1.068		0.323		-		0.323	0.000	1.391	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>			Project (Number/Name) EQ9 / <i>Close Access Target Reconnaissance (CATR)</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	-	1.656	1.173	-	1.173	0.000	2.829	0.000		

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) EQ9 / <i>Close Access Target Reconnaissance (CATR)</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Customer Test																												
(1) Post Milestone C/Fielding Decision									▲																			
Test Report & Acquisition Documentation																												
Evaluate and test new CATR technology																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) EQ9 / <i>Close Access Target Reconnaissance (CATR)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Customer Test	2	2016	3	2016
Post Milestone C/Fielding Decision	3	2016	3	2016
Test Report & Acquisition Documentation	3	2016	4	2016
Evaluate and test new CATR technology	2	2017	4	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>			Project (Number/Name) L67 / <i>Soldier Night Vision Devices</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
L67: <i>Soldier Night Vision Devices</i>	-	14.151	20.440	26.257	-	26.257	14.690	19.194	19.649	18.643	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops, improves and miniaturizes high performance night vision electro-optics, thermal and laser systems. It also provides for systems integration of related multi-sensor suites to enable near to long-range target acquisition and engagement as well as improved battlefield command and control in around-the-clock combat operations. It focuses on adapting demonstrated technologies that bring improvements to the dismounted Soldiers' equipment. This project develops or enhances equipment that provides the individual Soldier's day/night situational awareness and individual targeting capability, sniper fire detection and location capability, and integrates improved target location and self-location capability to eliminate friendly fire incidents. 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: Enhanced Night Vision Goggle (ENVG)	1.398	-	-
Description: The AN/PSQ-20 ENVG is a helmet-mounted passive device for the individual Soldier that fuses image intensification (night vision) and long wave infrared imagery (thermal) into a single, integrated image. It operates in high light conditions to total darkness (no light) and through battlefield obscurants.			
FY 2015 Accomplishments: Completed production qualification testing for multiple (AN/PSQ-20) new contracts.			
Title: Family of Weapons Sights (FWS)	12.253	19.940	26.257
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 fire control under day/night obscurants, 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 smaller pixel focal plane arrays 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 aimpoint 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; resulting in a more accurate aimpoint 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			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>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: Funded initial requirements for the FWS-I Engineering, Manufacturing and Development (EMD) phase.</p> <p>FY 2016 Plans: Complete Government and Contractor testing of FWS-I EMD systems in support of Milestone C, 4QFY16. Initiate FWS-CS and FWS-S EMD to design, build and deliver prototype systems for Government and Contractor testing. Improve the manufacturing process of uncooled Focal Plane Arrays (FPA) and micro-Organic Light-Emitting Diode (OLED) displays that are key components of FWS.</p> <p>FY 2017 Plans: Continue FWS-CS and FWS-S EMD to design, build and deliver prototype systems for Government and Contractor testing. FWS-I continue testing for re-compete. Improve the manufacturing process of uncooled Focal Plane Arrays (FPA) and micro-Organic Light-Emitting Diode (OLED) displays that are key components of FWS.</p>				
<p>Title: Small Tactical Optical Rifle Mounted (STORM) Engineering Change Proposal (ECP)</p> <p>Description: The AN/PSQ-23 STORM Micro-Laser Range Finder (MLRF) is a weapon-mounted multi-function laser system. It provides an eye safe laser range finder, digital compass, Infrared (IR) and visible aiming lights, and an IR illuminator for far target location with continuous range, accuracy, weight and power performance enhanced capabilities. Funding supports qualifying smaller, lighter, cheaper STORM variant (STORM SLX) with Soldiers.</p> <p>FY 2015 Accomplishments: Qualification tests for ECP units.</p>		0.500	-	-
<p>Title: Laser Target Locator Module (LTLM)</p> <p>Description: LTLM is a lightweight, handheld, laser target locator with day and thermal sight capability as well as an internal Global Positioning System (GPS) receiver. LTLM provides the dismounted observer or Scout a fully digital, handheld system to accurately determine target location and the ability of call for fire during all weather and lighting conditions.</p> <p>FY 2016 Plans: Conduct Government Developmental and Operational Testing for LTLM II at White Sands Test Center.</p>		-	0.500	-
Accomplishments/Planned Programs Subtotals		14.151	20.440	26.257

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 603774A VT7: 603774A - <i>Night Vision Systems Advanced Development (VT7)</i>	3.521	7.292	10.321	-	10.321	13.856	4.729	6.779	6.828	Continuing	Continuing
• <i>Helmet Mounted Enhanced Vision Devi: 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
• <i>Family of Weapons Sights - Inividid: Family of Weapons Sights - Individual (FWS-I) (SSN K22002)</i>	2.000	53.453	55.536	-	55.536	75.006	88.491	102.759	2.685	Continuing	Continuing
• <i>Small Tactical Optical Rifle Mounte: Small Tactical Optical Rifle Mounted (STORM) (SSN K35110)</i>	18.520	23.216	15.885	-	15.885	22.979	23.846	27.633	24.216	Continuing	Continuing
• <i>Laser Target Locators: Laser Target Locators (LTL) (SSN B53800)</i>	5.851	26.248	31.083	-	31.083	22.876	19.627	21.802	21.843	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

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PROGRAM MGMT	MIPR	Various : Various	1.874	1.038	Dec 2014	3.619	Feb 2016	3.087	Feb 2017	-		3.087	Continuing	Continuing	0
Subtotal			1.874	1.038		3.619		3.087		-		3.087	-	-	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-Individual (FWS-I)	C/CPFF	DRS RSTA, Inc BAE Systems : Dallas, TX/Nashua, NH	24.320	9.076	Mar 2015	1.140	Apr 2016	-		-		-	0	34.536	0
Family of Weapon Sights-Crew Served (FWS-CS)	C/CPFF	Various : Various	0.000	-		6.539	Apr 2016	14.465	Dec 2016	-		14.465	Continuing	Continuing	0
Family of Weapon Sights-Sniper (FWS-S)	C/CPFF	Various : Various	0.000	-		6.080	Jul 2016	4.122	Dec 2016	-		4.122	Continuing	Continuing	0
Subtotal			24.320	9.076		13.759		18.587		-		18.587	-	-	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	2.547	1.648	Dec 2014	1.328	Feb 2016	1.549	Feb 2017	-		1.549	Continuing	Continuing	0
Subtotal			2.547	1.648		1.328		1.549		-		1.549	-	-	0.000

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ENVG Production Qualification Testing (PQT)	PQT																											
(1) FWS-I MS C																												
(2) FWS-CREW SERVED (CS) MS B					MS B																							
FWS-CS Engineering and Manufacturing Development					EMD																							
(3) FWS-CS MS C																	C											
(4) FWS-SNIPER (S) MS B					MS B																							
FWS-S Engineering and Manufacturing Development					EMD																							
(5) FWS-S MS C																	C											
LTLM II Development and Operational Testing																												
STORM Production Qualification Testing (PQT)									PQT																			
FUSED VISION MOBILITY CAPABILITY																					Development							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ENVG Production Qualification Testing (PQT)	3	2014	3	2015
FWS-I MS C	4	2016	4	2016
FWS-CREW SERVED (CS) MS B	2	2016	2	2016
FWS-CS Engineering and Manufacturing Development	3	2016	4	2018
FWS-CS MS C	4	2018	4	2018
FWS-SNIPER (S) MS B	2	2016	2	2016
FWS-S Engineering and Manufacturing Development	2	2016	2	2018
FWS-S MS C	3	2018	3	2018
LTLM II Development and Operational Testing	1	2017	1	2017
STORM Production Qualification Testing (PQT)	3	2016	3	2016
FUSED VISION MOBILITY CAPABILITY	3	2019	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>				Project (Number/Name) L70 / <i>Night Vision Dev Ed</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
L70: <i>Night Vision Dev Ed</i>	-	18.689	27.696	40.368	-	40.368	55.764	53.289	37.141	15.770	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project performs Engineering and Manufacturing Development (EMD) on high performance night vision, Reconnaissance, Surveillance, and Target Acquisition (RSTA) systems and other related systems that allow forces to locate and track enemy units in day, night, and all battlefield conditions, and through natural and man-made structures and obscurants. It also develops and integrates suites of these sensors to provide well-defined surveillance and targeting capabilities, as well as architectures for these sensors to communicate automatically. These efforts focus on meeting the requisite night vision and RSTA capabilities required for evolving Current Force, Modular Force, and Future Force systems.

The project supports the 3rd Generation Forward Looking Infrared (3GEN FLIR) B-Kit EMD program, which incorporates the next generation of forward looking infrared technologies. The 3GEN FLIR EMD program will leverage critical technology development from the Advanced Thermal Imaging EMD and Combat Vehicle Advanced Sensor Technology (CVAST) effort to develop a common 3GEN FLIR B-Kit for integration into US Army FLIR sensor systems in accordance with the approved Improved Forward Looking Infrared (I-FLIR) Capability Development Document (CDD). The common 3GEN FLIR B-Kit prescribed by the I-FLIR CDD will allow the Army to achieve economies of scale and avoid duplicative engineering and development costs. As a result, 3GEN FLIR capabilities can be delivered at a lower cost to the Abrams, Bradley, reconnaissance systems, and potentially leverage 3GEN FLIR components for airborne applications. The 3GEN FLIR B-Kit provides Mid Wave Infrared and Long Wave Infrared digital video and the electronic interfaces required to integrate the 3GEN FLIR technology with the host platform sensor. When integrated in current sensor packages, 3GEN FLIR technology enhances the war-fighters' survivability and lethality through increased identification range performance, while enabling the detection of difficult or obscured targets and faster threat detection through automated processes. The 3GEN FLIR B-Kit EMD program is also a key element in maintaining the Army's FLIR industrial base.

The project supports the Long Range Advanced Scout Surveillance System (LRAS3) Engineering Change Proposal (ECP) to integrate 3GEN FLIR B-Kit. The LRAS3 ECP effort includes integration of 3GEN FLIR B-Kit technology, an Inertial Measurement Unit (IMU), and an M-code Global Positioning System (GPS) receiver. Collectively, these capabilities will improve the Far Target Location (FTL) accuracy of the LRAS3 and enhance the scout's survivability and lethality through increased detection, recognition and identification range performance.

This project also executes the Army Sensor Computing Environment (CE) effort which is part of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA-ALT) Common Operating Environment (COE) program. The Sensor CE effort focuses on increasing sensor interoperability across the enterprise and improving the Soldier-machine interface. This is done by defining, demonstrating and standardizing Sensor interfaces across the Army networks. Standardized interfaces delivered from this effort will be incorporated into current and future sensor systems and programs.

FY 2017 Base Funding in the amount of \$40.368 Million supports the 3GEN FLIR B-Kit EMD program activities as well as the 3GEN LRAS3 performing trade studies to integrate 3GEN FLIR B-Kit, an Inertial Measurement Unit (IMU), and an M-code GPS receiver; and developing the performance specification and preparing solicitation

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>		
documentation. Additionally, FY 2017 Base Funding supports the continued activities associated with meeting sensor interoperability requirements and improving the Soldier-machine interface in support of the Army's vision of the Common Operating Environment (COE).				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Title: 3GEN FLIR B-Kit Description: Development of 3GEN FLIR. 3GEN FLIR will represent the materiel solution in accordance with the I-FLIR CDD, resulting in a common sensor component for both Ground and Airborne host platforms. FY 2015 Accomplishments: FY 2015 Base Funding supports Development Request For Proposal Release Review (DRFPRR) and source selection activities. In support of (MSB), FY15 funding support will include comprehensive full sight performance trade studies, preparation of logistics documentation, test evaluation master plan documentation, and the program affordability analysis.		10.310	-	-
Title: 3GEN FLIR B-Kit Milestone Activities Description: 3GEN FLIR engineering and document preparation. FY 2016 Plans: FY 2016 Base Funding supports EMD engineering and logistics document preparation in support of a 2QFY16 Milestone B decision. Support includes preparation of core logistics analysis, system engineering plan, test and evaluation master plan, life cycle sustainment plan, and an independant logistics assessment.		-	6.303	-
Title: 3GEN FLIR B-Kit EMD Description: 3GEN FLIR EMD requirements and contract awards. FY 2016 Plans: FY 2016 Base Funding supports source selection activities, award of multiple contracts in support of 3GEN FLIR, and program management support. Contract awards will support development engineering activities and Preliminary Design Review (PDR). FY 2017 Plans: FY 2017 Base Funding supports the continuation of 3GEN FLIR development activities to include Critical Design Review (CDR), coding of software, the initiation of prototype manufacturing, platform Preliminary Design Review (PDR) support activities, and program management support.		-	16.554	37.212
Title: Common Operating Environment (COE) Description: This effort supports the Common Operating Environment vision by improving the sensor interoperability requirement and the Soldier-machine interface. Resultant improvements to be made on a program by program basis.		8.379	4.839	0.100

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> FY 2015 Base Funding supports continued development of the COE program to include meeting the network interoperability requirement and improving the Soldier-machine interface. Specific FY15 activities include configuration management and specification development and implementation.</p> <p><i>FY 2016 Plans:</i> FY 2016 Base Funding supports continued development of the COE program to include meeting the network interoperability requirement and improving the soldier-machine interface. Specific FY16 activities include continuation of configuration management, specification development & implementation, and execution of demonstrations and experimentation for transition into Army programs.</p> <p><i>FY 2017 Plans:</i> FY 2017 Base Funding supports continued development of the COE program to include meeting the sensor interoperability requirement and improving the soldier-machine interface. Specific FY17 activities include continued execution of demonstrations and experimentation for transition into Army programs.</p>			
<p><i>Title:</i> 3GEN LRAS3 ECP to integrate 3GEN FLIR B-Kit</p> <p><i>Description:</i> This effort supports the sensor enhancement activities required to integrate 3GEN FLIR B-Kit technology into the LRAS3.</p> <p><i>FY 2017 Plans:</i> FY 2017 Base Funding supports performing trade studies to analyze the current LRAS3 for modification required to integrate 3GEN FLIR B-Kit, an Inertial Measurement Unit (IMU), and an M-code GPS receiver; and developing the performance specification and preparing solicitation documentation.</p>	-	-	3.056
Accomplishments/Planned Programs Subtotals	18.689	27.696	40.368

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>
• ABRAMS Tank Improvement Program: <i>Abrams Tank Improvement Program (PE 0203735A)</i>	98.596	77.603	78.452	-	78.452	95.679	108.621	57.829	45.036	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</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>
• BRADLEY Improvement Program: <i>Bradley Improvement Program (PE 0203735A)</i>	73.294	73.775	101.882	-	101.882	73.514	89.118	118.893	67.738	Continuing	Continuing

Remarks

D. Acquisition Strategy

3GEN FLIR: Materiel Development Decision (MDD) was received from the Army Acquisition Executive (AAE) and the Acquisition Decision Memorandum (ADM) was signed on 22-Dec-2014. Per the ADM, 3GEN FLIR will enter the acquisition lifecycle at Milestone B (MS B). After a successful MS B decision planned for 2QFY16, competitive EMD contracts will be awarded to design, develop, integrate and test the 3GEN FLIR B-Kit to prepare for production and mitigate the industrial base risk. The host platforms will be responsible for integration of the 3GEN FLIR B-Kit.

3GEN LRAS3: After a Milestone Decision Authority (MDA) review planned for 2Q FY2017, 3GEN LRAS3 will perform technical trade studies to determine modifications required to the current LRAS3 to integrate 3GEN FLIR B-Kit technology, an Inertial Measurement Unit (IMU), and an M-coded Global Positioning System (GPS) receiver.

Sensor CE: Additional Fiscal Year 2017 activities include continued development of the sensor interoperability requirement and improving the Soldier-machine interface in support of the Army's vision of the Common Operating Environment (COE).

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Project Management	MIPR	PM TS : Ft. Belvoir, VA	9.621	1.623	Feb 2015	1.623	Feb 2016	1.332	Jan 2017	-		1.332	0	14.199	9.454
Subtotal			9.621	1.623		1.623		1.332		-		1.332	0.000	14.199	9.454

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			
FY 2012-FY 2013: Develop, Fab, and Qual of a common Ground Platform Engine with Block II EOCCM	C/Variou	Various : Various	0.049	-		-		-		-		-	0	0.049	0
3GEN FLIR Engineering/ Document Prep	C/Variou	Various : Various	12.061	7.434	Mar 2015	3.307	Jan 2016	-		-		-	0	22.802	0
3GEN FLIR B-Kit EMD	C/CPIF	Various : Various	0.000	-		16.554	Mar 2016	34.150	Dec 2016	-		34.150	0	50.704	0
3GEN LRAS3: Tech Trade Studies	C/TBD	Various : Various	0.000	-		-		2.182	Mar 2017	-		2.182	0	2.182	0
PSS P3I: CE COE	C/FP	Various : Various	6.113	8.179	Mar 2015	4.639	Mar 2016	-		-		-	0	18.931	8.904
Subtotal			18.223	15.613		24.500		36.332		-		36.332	0.000	94.668	8.904

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			
3GEN FLIR Support	C/TBD	Various : Various	27.524	1.253	Mar 2015	1.373	Mar 2016	1.930	Feb 2017	-		1.930	0	32.080	27.995
3GEN LRAS3 - Spec development and solicitation prep	C/TBD	Various : Various	0.000	-		-		0.674	Feb 2017	-		0.674	0	0.674	0
COE Support	C/CPFF	Various : Various	0.794	0.200	Mar 2015	0.200	Mar 2016	0.100	Feb 2017	-		0.100	Continuing	Continuing	0
Subtotal			28.318	1.453		1.573		2.704		-		2.704	-	-	27.995

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
3GEN FLIR - Spec Development, Trade Studies, Analyses, & Milestones																												
(1) 3GEN FLIR Materiel Development Decision (MDD)	▲																											
(2) 3GEN FLIR Development Request For Proposal Release Review (DR)		▲																										
(3) 3GEN FLIR B-Kit MS B						▲																						
3GEN FLIR B-Kit Development, Test, and Integration																												
3GEN LRAS3 ECP to Integrate 3GEN FLIR B-Kit: Perform Tech Trade S																												
3GEN LRAS3 ECP to Integrate 3GEN FLIR B-Kit: Spec Development &																												
3GEN LRAS3 ECP to Integrate 3GEN FLIR B-Kit: Test & Integration																												
Common Operating Environment, Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
3GEN FLIR - Spec Development, Trade Studies, Analyses, & Milestone Prep	1	2012	2	2016
3GEN FLIR Materiel Development Decision (MDD)	1	2015	1	2015
3GEN FLIR Development Request For Proposal Release Review (DRFPRR)	3	2015	3	2015
3GEN FLIR B-Kit MS B	2	2016	2	2016
3GEN FLIR B-Kit Development, Test, and Integration	2	2016	4	2021
3GEN LRAS3 ECP to Integrate 3GEN FLIR B-Kit: Perform Tech Trade Studies	2	2017	4	2017
3GEN LRAS3 ECP to Integrate 3GEN FLIR B-Kit: Spec Development & Solicitation	2	2017	2	2018
3GEN LRAS3 ECP to Integrate 3GEN FLIR B-Kit: Test & Integration	2	2021	4	2021
Common Operating Environment, Development	2	2012	4	2017

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L75 / <i>Profiler</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
L75: <i>Profiler</i>	-	1.655	2.108	3.885	-	3.885	3.705	3.421	3.573	1.956	0.000	20.303
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Profiler Virtual Module (PVM) provides meteorological (MET) data that includes wind speed, wind direction, temperature, barometric pressure, and humidity information required for use in the Advanced Field Artillery Tactical Data System (AFATDS). The correctional information is necessary for precise targeting and terminal guidance to Field Artillery assets. PVM improves accuracy of predictive fires solutions and allows for first round effects on target and reduces the risk of fratricide. This capability increases the lethality of indirect fire systems such as the rocket launchers, self-propelled or towed howitzers, and mortars.

FY2017 Base funding in the amount of \$3.885 million supports the continued development of PVM to comply with Command Post Computing Environment (CP CE) Common Operating Environment (COE) version 3 requirements and upgrades to weather forecasting models.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Profiler Virtual Module COE V2/3 development</p> <p>Description: Implementation of COE V2/3 requirements and Digital Terrain and Elevation Data (DTED) upgrades and improved elevation algorithms.</p> <p>FY 2015 Accomplishments: Implementation of COE V2 requirements and Digital Terrain and Elevation Data (DTED) upgrades and improved elevation algorithms.</p> <p>FY 2016 Plans: Completion of COE V2 requirements and Digital Terrain and Elevation Data (DTED) upgrades and improved elevation algorithms.</p> <p>FY 2017 Plans: Continue development for PVM in compliance with CP CE/COE V3</p>	0.805	1.158	2.635
<p>Title: Support cost for conversion of the MET model for Profiler Virtual Module</p> <p>Description: Conversion of the MET model for Profiler Virtual Module</p> <p>FY 2015 Accomplishments: Conversion of the MET model for Profiler Virtual Module and support for the implementation of Digital Terrain and Elevation Data (DTED) upgrades and improved elevation algorithms.</p> <p>FY 2016 Plans:</p>	0.350	0.650	0.650

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L75 / <i>Profiler</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Engineering and development of PVM to receive the European weather data and compute meteorological data for Advanced Field Artillery Tactical Data System (AFATDS). FY 2017 Plans: Continued engineering and development of PVM for MET model upgrades.			
Title: Formal Qualification Testing/Developmental Testing (FQT/DT) Description: Conduct and complete FQT/DT FY 2015 Accomplishments: Conduct Formal Qualification Testing/Developmental Testing for PVM 1.0 FY 2017 Plans: Conduct Developmental Testing for PVM 1.0.1 for CP CE/COE V3	0.400	-	0.300
Title: Management Services Description: Cost for Project Management Office efforts. FY 2015 Accomplishments: Provide Program Management Office (PMO) efforts. FY 2016 Plans: Provide Program Management Office (PMO) efforts. FY 2017 Plans: Provide Program Management Office (PMO) efforts.	0.100	0.300	0.300
Accomplishments/Planned Programs Subtotals	1.655	2.108	3.885

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>
• Profiler (K27900): <i>Profiler (K27900)</i>	3.115	4.057	-	-	-	0.375	-	-	-	0.000	7.547
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L75 / <i>Profiler</i>

D. Acquisition Strategy

The Profiler Acquisition Strategy was approved by the MDA on 28 March 2012 for a product improvement to the Profiler Block III for a Virtual Module supporting the Command Post Computing Environment of the Common Operating Environment (COE). PVM 1.0 was completed in FY15. PVM 1.0.1 reflects continued updates for weather model changes and to meet directed COE compliance.

The Profiler product was transitioned to PEO C3T per the transition plan signed by the Army Acquisition Executive (AAE) dated 14 May 2015. The APB dated 30 Sep 2010, reflecting efforts to develop Profiler Block 3, was closed out 3 Apr 2015.

E. Performance Metrics

N/A

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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 / 5				PE 0604710A / Night Vision Systems - Eng Dev				L75 / Profiler								
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	Sub Allot	PM Mission Command : APG, MD	2.893	0.100	Nov 2014	0.300		0.300		-		0.300	0	3.593	0	
Subtotal			2.893	0.100		0.300		0.300		-		0.300	0.000	3.593	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	
Profiler Virtual Module COE V2/V3 development and data gathering	IA	SEC/C3T/FD : Ft. Sill, OK	0.000	0.805	Apr 2015	1.158		2.635		-		2.635	0	4.598	0	
Subtotal			0.000	0.805		1.158		2.635		-		2.635	0.000	4.598	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	
Conversion of MET model for Profiler Virtual Module	MIPR	ARL, Various : WSMR, NM	1.757	0.350	Mar 2015	0.650		0.650		-		0.650	0	3.407	0	
Subtotal			1.757	0.350		0.650		0.650		-		0.650	0.000	3.407	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	
Formal Qualification Test/ Developmental Test and test ramp up activities	IA	ATEC, CTSF : Various	0.000	0.400	Jul 2015	-		0.100		-		0.100	0	0.500	0	
Limited User Test	MIPR	ATEC : Ft. Sill, OK	1.552	-		-		0.100		-		0.100	0	1.652	0	

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L75 / <i>Profiler</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Profiler Virtual Module 1.0.1 Development	1	2015	1	2017
PVM 1.0.1 FQT	1	2017	1	2017
PVM 1.0.1 Customer Test	2	2017	2	2017
PVM 1.0.1 AIC Testing	2	2017	2	2017
PVM 1.0.1 Software Release	3	2017	3	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>				Project (Number/Name) L76 / <i>Dismounted Fire Support Laser Targeting Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
L76: <i>Dismounted Fire Support Laser Targeting Systems</i>	-	4.912	4.662	5.778	-	5.778	6.131	14.472	5.221	5.410	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project matures technologies and capabilities which benefit the Lightweight Laser Designator Rangefinder (LLDR, AN/PED-1, AN/PED-1A, and AN/PED-1B), Joint Effects Targeting System (JETS), and other precision targeting systems. These precision targeting and next generation systems are used by dismounted Soldiers to locate, identify, and target enemy assets. This project focuses on reducing weight, improving imaging performance, and increasing targeting accuracy. Targeting accuracy improvements will focus on developing and integrating affordable, non-magnetic, high accuracy, full-time (24/7), and all weather Azimuth and Vertical Angle Measurement (AVAM) devices, with reduced size, weight, and power characteristics into the LLDR system. Long term goals include improving current celestial navigation systems to increase operational availability, developing precision targeting capabilities that will operate in a Global Positioning System (GPS) denied environment, and integration of M-Code GPS (next-generation GPS) receivers into LLDR and JETS when available.

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

	FY 2015	FY 2016	FY 2017
Title: Azimuth and Vertical Angle Measurement (AVAM) development	4.132	4.062	4.900
Description: AVAM is a non-magnetic based inertial navigation materiel solution for targeting devices. This AVAM effort improves azimuth accuracy leading to reduced collateral damage and improved target engagement. Celestial navigation systems provide a supplemental high accuracy, low cost azimuth measurement capability in order to provide 24/7 precision target capability.			
FY 2015 Accomplishments: Continued funding the development of improved precision AVAM devices and the development of better celestial navigation systems for application to the LLDR and the Joint Effects Targeting System (JETS), and funded the investigation of integration of emerging high accuracy capabilities into the current portfolio of targeting systems.			
FY 2016 Plans: Continue funding the development of an improved precision AVAM and initiate integration with the LLDR. Initiate the development of celestial navigation systems with improved operational availability for application to the LLDR and the JETS.			
FY 2017 Plans: Base FY 2017 Description: Complete integration of an improved precision AVAM with the LLDR system and conduct testing. Continue development of improved celestial navigation system technologies for application to LLDR and JETS.			
Title: Laser development	0.680	0.500	0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L76 / <i>Dismounted Fire Support Laser Targeting Systems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Development of lightweight, low cost, multi-spectral, and more efficient lasers.</p> <p>FY 2015 Accomplishments: Development of lightweight, low cost, multi-spectral, and more efficient lasers.</p> <p>FY 2016 Plans: Continue funding of development of lightweight, low-cost, multi-spectral, and more efficient lasers.</p> <p>FY 2017 Plans: Incorporate laser improvements into the LLDR and conduct testing.</p>			
<p>Title: Target Acquisition Development</p> <p>Description: Focuses on development of improvements to optical detection, recognition, and identification of targets for precision targeting systems.</p> <p>FY 2015 Accomplishments: Continue improvements to imaging performance, recognition, and identification of targets.</p> <p>FY 2016 Plans: Continue improvements to imaging performance, recognition, and identification of targets.</p> <p>FY 2017 Plans: Incorporate imaging improvements into the LLDR design and conduct testing.</p>	0.100	0.100	0.378
Accomplishments/Planned Programs Subtotals	4.912	4.662	5.778

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
• LLDR Mod-of-In-Service (SSN KA3100): <i>Lightweight Laser Designator Rangefinder (LLDR) Modification-of-In-Service (SSN KA3100)</i>	16.885	22.314	28.058	-	28.058	25.998	31.435	46.212	40.271	Continuing	Continuing
• JETS (SSN K32101): <i>Joint Effects Targeting System (JETS) (SSN K32101)</i>	-	47.212	50.726	-	50.726	48.664	43.511	73.575	91.556	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L76 / <i>Dismounted Fire Support Laser Targeting Systems</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• JETS (654710.L79-RDTE): <i>Joint Effects Targeting System</i> <i>(JETS) (654710.L79-RDTE)</i>	19.590	11.020	7.058	-	7.058	7.839	10.507	7.810	5.522	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project continues to exercise competitively awarded contracts using best value source selection procedures.

E. Performance Metrics

N/A

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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 / 5				PE 0604710A / Night Vision Systems - Eng Dev				L76 / Dismounted Fire Support Laser Targeting Systems							
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	Allot	PM-SSL : Ft. Belvoir VA 22060	0.007	-		0.050	Mar 2016	0.050	Nov 2016	-		0.050	Continuing	Continuing	Continuing
Subtotal			0.007	-		0.050		0.050		-		0.050	-	-	-
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
AVAM Development and Integration	SS/CPFF	CACI Technologies, Inc : Chantilly, VA 20151	0.056	4.132	Mar 2015	3.402	Mar 2016	3.720	Nov 2016	-		3.720	Continuing	Continuing	0
Laser Development	SS/CPFF	DCS Millenium LLC : Alexandria, VA 22310	0.000	0.680	Feb 2015	0.500	Mar 2016	0.500	Feb 2017	-		0.500	Continuing	Continuing	0
Target Acquisition Development	SS/CPFF	CACI Technologies, INC : Chantilly, VA 20151	0.000	0.100	Mar 2016	0.100	Mar 2016	0.378	Nov 2016	-		0.378	Continuing	Continuing	0
Subtotal			0.056	4.912		4.002		4.598		-		4.598	-	-	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
Matrix Support	MIPR	Various : Various	0.000	-		-		0.180	Nov 2016	-		0.180	Continuing	Continuing	0
Science and Engineering Support	SS/CPFF	Johns Hopkins University : Laurel, MD	0.000	-		0.610	Apr 2016	0.600	Jan 2017	-		0.600	Continuing	Continuing	0
Subtotal			0.000	-		0.610		0.780		-		0.780	-	-	0.000

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / Night Vision Systems - Eng Dev	Project (Number/Name) L76 / Dismounted Fire Support Laser Targeting Systems
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Azimuth and Vertical Angle Measurement (AVAM) Development and Int																																
(1) LLDR 24/7 AVAM Production Cut-in																					▲											
(2) LLDR GPS denied capability Production cut-in																									▲							
Improved Laser Development and Integration																																
(3) Initial LLDR Laser cut-in																					▲											
Improved Target Acquisition Development and Integration																																
(4) Initial LLDR Target Acquisition cut-in																					▲											
Competitive Development of Improved LLDR Prototype																																
M-Code Integration Development (LLDR)																																
(5) M-Code Cut-in																													▲			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L76 / <i>Dismounted Fire Support Laser Targeting Systems</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Azimuth and Vertical Angle Measurement (AVAM) Development and Integration	2	2014	4	2021
LLDR 24/7 AVAM Production Cut-in	2	2018	2	2018
LLDR GPS denied capability Production cut-in	2	2020	2	2020
Improved Laser Development and Integration	2	2014	4	2021
Initial LLDR Laser cut-in	2	2018	2	2018
Improved Target Acquisition Development and Integration	1	2015	4	2021
Initial LLDR Target Acquisition cut-in	2	2018	2	2018
Competitive Development of Improved LLDR Prototype	2	2019	4	2021
M-Code Integration Development (LLDR)	3	2018	2	2021
M-Code Cut-in	3	2021	3	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>				Project (Number/Name) L79 / <i>Joint Effects Targeting Systems (JETS)</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
L79: <i>Joint Effects Targeting Systems (JETS)</i>	-	19.590	11.020	7.058	-	7.058	7.839	10.507	7.810	5.522	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Effects Targeting System (JETS) is an Army program with joint interest (Air Force and Marine Corps). JETS will meet the one-man, hand-held precision targeting gap identified by the Fire Center of Excellence (FCOE). JETS is a light-weight, handheld system that will provide the single dismounted observer and Joint Terminal Attack Controller (JTAC) with a common, enhanced day and night thermal capability to rapidly acquire, accurately locate, positively identify, and precisely designate targets. JETS Target Location and Designation System (TLDS) will be able to interface with existing and future Service Forward Entry Systems (FESs). After initiating JETS TLDS production, this project will address continued development and integration of improved precision targeting components to reduce size, weight, power, and cost of the system, to address operation in environments where GPS is denied, and to integrate M-code GPS receivers when they become available.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Joint Effects Targeting System (JETS) Engineering and Manufacturing Development (EMD)</p> <p>Description: JETS is a lightweight mission equipment set for the dismounted forward observers and Joint Terminal Attack Controllers (JTAC). JETS provides observers and controllers the means to call for fire and control delivery of air, ground and naval surface fire support, including using precision munitions and effects (both lethal and non-lethal).</p> <p>FY 2015 Accomplishments: Continued EMD phase activities with two prime contract vendors, including build of prototypes, contractor testing, government testing of prototypes, and refined supportability and production planning.</p> <p>FY 2016 Plans: Complete EMD phase by completing contractor testing and Government Developmental Testing (DT).</p> <p>FY 2017 Plans: Refurbish EMD prototypes with corrective actions following DT(with one contractor). Perform follow-on DT and limited user testing.</p>	16.510	9.605	2.162
<p>Title: Azimuth and Vertical Angle Measurement (AVAM) Development</p> <p>Description: Focuses on improvements to azimuth accuracy by use of inertial navigation solutions (non-magnetic) for advanced precision AVAM solutions to provide high accuracy full-time (24/7) target location as well as celestial navigation systems that provide lightweight and low cost part-time precision AVAM for target location.</p>	3.080	1.415	4.896

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L79 / <i>Joint Effects Targeting Systems (JETS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Funded the development of precision AVAM and risk mitigation, and funded the development of improved celestial navigation systems, and explored the integration of both forward observer applications to the JETS.</p> <p><i>FY 2016 Plans:</i> Fund the development of low size, weight, power, and cost precision AVAM for future integration into JETS. Continue the development of improved celestial navigation systems, and analyze the integration of both improvements to the JETS design for incorporation as an Engineering Change Proposal (ECP).</p> <p><i>FY 2017 Plans:</i> Continue development of the improved AVAM to reduce size, weight, power and cost, and initiate development to address operation in GPS denied environments.</p>			
Accomplishments/Planned Programs Subtotals	19.590	11.020	7.058

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>
• Joint Effects Targeting System: <i>Joint Effects Targeting System (SSN K32101)</i>	-	47.212	50.726	-	50.726	48.664	43.511	73.575	91.556	Continuing	Continuing
• Dismounted Fire Spt Laser Targeting: <i>Dismounted Fire Support Laser Targeting Sys (654710.L76)</i>	4.912	4.662	5.778	-	5.778	6.131	14.472	5.221	5.410	Continuing	Continuing

Remarks

D. Acquisition Strategy
This project continues to exercise competitively awarded contracts using best value source selection procedures.

E. Performance Metrics
N/A

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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 / 5				PE 0604710A / Night Vision Systems - Eng Dev				L79 / Joint Effects Targeting Systems (JETS)							
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	Allot	PM-SSL : Ft Belvoir, VA 22060	1.245	1.685	Feb 2015	0.492	Mar 2016	0.180	Jan 2017	-		0.180	0	3.602	0
Subtotal			1.245	1.685		0.492		0.180		-		0.180	0.000	3.602	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
AVAM Development 2	C/T&M	Various : Various	0.962	3.080	Feb 2015	1.265	Mar 2016	2.241	Feb 2017	-		2.241	Continuing	Continuing	0
JETS TLDS EMD prototype development, integration, and test - Contractor BAE	C/CPFF	BAE Systems Information and Electronics : Nashua NH 03060-6909	19.488	6.448	Aug 2015	3.960	Oct 2015	-		-		-	0	29.896	0
JETS TLDS EMD prototype development, integration, and test - Contractor DRS	C/CPFF	DRS RSTA, Inc : Dallas TX 75243	19.440	6.453	Aug 2015	3.960	Oct 2015	-		-		-	0	29.853	0
JETS TLDS Refurbishment of EMD Prototypes and Testing - (TBD)	C/FFP	TBD : TBD	0.000	-		-		2.162		-		2.162	0	2.162	0
Subtotal			39.890	15.981		9.185		4.403		-		4.403	-	-	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
Matrix Support	MIPR	Night Vision Electronics Sensors Directorate : Ft. Belvoir	10.314	0.329	Feb 2015	0.343	Feb 2016	0.375	Nov 2016	-		0.375	Continuing	Continuing	0

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army													Date: February 2016		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604710A / Night Vision Systems - Eng Dev					Project (Number/Name) L79 / Joint Effects Targeting Systems (JETS)						
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
Science and Engineering Support	SS/CPFF	Johns Hopkins University : Laurel, MD	1.949	1.070	Sep 2015	0.500	Apr 2016	0.650	Dec 2016	-		0.650	0	4.169	0
Subtotal			12.263	1.399		0.843		1.025		-		1.025	-	-	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
Testing	MIPR	Various : Various	0.852	0.525	Jul 2015	0.500	Feb 2016	1.450	Nov 2016	-		1.450	Continuing	Continuing	0
Subtotal			0.852	0.525		0.500		1.450		-		1.450	-	-	0.000
Project Cost Totals			54.250	19.590		11.020		7.058		-		7.058	-	-	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L79 / <i>Joint Effects Targeting Systems (JETS)</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Engineering & Manufacturing Development (EMD)																												
(1) JETS TLDS MS C					▲																							
Low Rate Initial Production (LRIP)																												
(2) Full Materiel Release (FMR)													▲															
Full Rate Production (FRP)																												
(3) Initial Operational Capability (IOC)													▲															
Reduce SWAP-C AVAM development and integration																												
(4) SWAP-C AVAM cut-in																	▲											
AVAM operation in a GPS denied environment development and integration																												
(5) GPS denied environment AVAM cut-in																					▲							
M-code integration development																												
(6) M-code cut-in																					▲							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L79 / <i>Joint Effects Targeting Systems (JETS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering & Manufacturing Development (EMD)	2	2013	2	2016
JETS TLDS MS C	3	2016	3	2016
Low Rate Initial Production (LRIP)	4	2016	4	2018
Full Materiel Release (FMR)	4	2018	4	2018
Full Rate Production (FRP)	1	2019	1	2023
Initial Operational Capability (IOC)	4	2018	4	2018
Reduce SWAP-C AVAM development and integration	3	2016	3	2020
SWAP-C AVAM cut-in	2	2020	2	2020
AVAM operation in a GPS denied environment development and integration	2	2017	3	2021
GPS denied environment AVAM cut-in	2	2021	2	2021
M-code integration development	3	2018	2	2021
M-code cut-in	2	2021	2	2021

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604713A / Combat Feeding, Clothing, and Equipment
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	2.983	1.763	2.054	-	2.054	2.225	2.070	2.114	2.172	Continuing	Continuing
548: Mil Subsistence Sys	-	2.983	1.430	0.759	-	0.759	0.358	0.472	1.148	1.178	Continuing	Continuing
EL2: Army Field Feeding Equipment	-	0.000	0.333	1.295	-	1.295	1.867	1.598	0.966	0.994	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project supports the development and demonstration and Non-Developmental Item (NDI) Commercial Off The Shelf (COTS) evaluation of combat feeding equipment to enhance soldier efficiency and survivability, and to reduce food service logistics requirements for all four services. The project supports multi-fuel, rapidly deployable field food service equipment initiatives and engineering and manufacturing development to improve equipment, enhance safety in food service, and decrease fuel and water requirements. This project develops critical enablers that support the Joint Future Capabilities and Joint Expeditionary mindset, by maintaining readiness through fielding and integrating new equipment; by enhancing the field soldier's well-being; and providing soldier usable equipment. They also reduce sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands on lift, the combat zone footprint, and costs for logistical support.

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

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	3.034	1.763	2.466	-	2.466
Current President's Budget	2.983	1.763	2.054	-	2.054
Total Adjustments	-0.051	0.000	-0.412	-	-0.412
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-0.051	-	-0.412	-	-0.412

Change Summary Explanation

The FY17 funding request was reduced by \$.412 million to account for the availability of prior year execution balances.

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
548: <i>Mil Subsistence Sys</i>	-	2.983	1.430	0.759	-	0.759	0.358	0.472	1.148	1.178	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the development and demonstration and Non-Developmental Item (NDI) Commercial Off The Shelf (COTS) evaluation of combat feeding equipment to enhance Soldier efficiency and survivability, and to reduce food service logistics requirements for all four services. The project supports multi-fuel, rapidly deployable field food service equipment initiatives and engineering and manufacturing development to improve equipment, enhance safety in food service, and decrease fuel and water requirements. This project develops critical enablers that support the Joint Future Capabilities and Joint Expeditionary mindset, by maintaining readiness through fielding and integrating new equipment; by enhancing the field Soldier's well-being; and providing Soldier usable equipment. They also reduce sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands on lift, the 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
<p>Title: Containerized Kitchen Modernization (CK)</p> <p>Description: New Containerized Kitchen (CK) layout with modular, closed combustion, thermostatically controlled appliances that reduce heat stress inside the kitchen.</p> <p>FY 2015 Accomplishments: Upgraded the Containerized Kitchen with improved layout, appliances, ventilation and power generation for improved energy efficiency and operator environment. Used completed initial design to integrate the Advanced Medium Mobile Power Source (AMMPS) into the CK. Performed testing to validate generator interface, interoperability and performance with the CK. Developed technical data to support required Engineering Change Proposal to current system.</p>	0.312	-	-
<p>Title: Fielded Individual Ration Improvement Project (FIRIP)</p> <p>Description: Continuous product improvement project for the Meal Ready to Eat (MRE).</p> <p>FY 2015 Accomplishments: Based on field test results, presented recommendations to Joint Services (2Q15) for continued product improvement of ration components/packaging/technologies for MRE (2017 date of pack). Finalized MRE procurement documents and initiated transition to Defense Logistics Agency - Troop Support (DLA-Troop Support). Obtained Surgeon General approval of revised MRE menus. Executed production testing with industry to ensure consistent ration quality, understand Performance Contract Requirements</p>	0.379	0.274	0.130

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>(PCR), and resolve vendor/supplier issues. Obtained and assembled selected new items for field test. Conducted field evaluation of new candidate ration components for MRE (2018 date of pack) to improve quality, acceptability, nutrition and expand variety.</p> <p>FY 2016 Plans: Finalize MRE procurement documents and standards for verification for MRE (2018 date of pack) and initiate transition to DLA-Troop Support based on Budget Activity 4 (BA4) Joint Service approvals. Obtain Surgeon General approval of revised MRE menus. Execute production testing with industry to ensure consistent ration quality, understand PCR requirements, resolve vendor/supplier issues, and conduct confirmatory sensory, chemical, physical and shelf life testing.</p> <p>FY 2017 Plans: Will integrate prototype components/technologies into MRE menu system to improve quality, acceptability, nutrition and expand variety. Will plan and complete field testing of new ration menus for MRE (2020 date of pack) in an operationally relevant environment.</p>				
<p>Title: Assault/Special Purpose Ration Improvement Project (ASPIP)</p> <p>Description: Continuous product improvement of special purpose rations by the insertion of new technologies in nutrition, processing and packaging.</p> <p>FY 2015 Accomplishments: Continued on-going shelf life studies of candidate Meal, Cold Weather/Long-Range Patrol (MCW/LRP) and Modular Operational Ration Enhancement (MORE) components and updated procurement documents for transition to DLA - Troop Support.</p> <p>FY 2017 Plans: Will integrate prototype components/technologies (e.g., commercial brick pack packaging, Multi- Purpose Individual Heating Technology (MIT)) into First Strike Ration (FSR), MCW/LRP and/or MORE menu systems to improve quality, acceptability, nutrition and expand variety. Will plan and complete field testing of new ration menus in an operationally relevant environment. Will continue to populate Combat Rations Database with nutritional/menu data.</p>		0.175	-	0.056
<p>Title: Fielded Group Ration Improvement Project (FGRIP)</p> <p>Description: Continuous product improvement project to 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).</p> <p>FY 2015 Accomplishments:</p>		0.356	0.323	0.122

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Completed field testing of UGR-H&S and UGR-E (2016/17 date of pack) and UGR-A (FY17 menus) to improve quality, nutritional intake and expand variety. Finalized procurement documents for transition to DLA-Troop Support.</p> <p>FY 2016 Plans: Finalize UGR (A, H&S, E) procurement documents and standards for verification and initiate transition to DLA-TS based on BA4 Joint Service approvals. Obtain Surgeon General approval of revised UGR menus. Support DLA-Troop Support Limited First Article production testing of new H&S and E items with industry to ensure consistent ration quality, understand PCR requirements, resolve vendor/supplier issues, and conduct confirmatory sensory, chemical, physical and shelf life testing.</p> <p>FY 2017 Plans: Will integrate prototype components/technologies into UGR-H&S, UGR-E, UGR-M and UGR-A menu systems to improve quality, acceptability, nutrition and expand variety. Will complete field testing of new ration menus in an operationally relevant environment.</p>				
<p>Title: Group Ration Airdrop Survivability Project (GRASP)</p> <p>Description: Quantify baseline airdrop performance characteristics for current group combat ration (UGR-H&S/M/E) configurations/designs; identify survival rates (based on caloric loss and packaging damage/loss) under defined operational conditions; provide knowledge base and supporting data to generate executable load configuration changes; identify capability gaps that might warrant product/package/assembly configuration redesign and reengineering.</p> <p>FY 2015 Accomplishments: Conducted extensive airdrop testing to determine UGR components, packaging and assembly configurations with the highest survival rates. Performed cost/benefit analysis of current vs. proposed reconfigurations. Transitioned updated technical data to DLA - Troop Support and Airdrop partners.</p> <p>FY 2017 Plans: Will conduct review/analysis of airdrop test data on additional UGR configurations/versions. Will re-test/assess data and recommend packing/rigging changes. Will transition updated technical data/rigging changes to DLA - Troop Support and Airdrop partners.</p>		0.072	-	0.039
<p>Title: Navy Shipboard Galleys</p> <p>Description: Provide continuous Research and Development (R&D) for Navy Shipboard Galleys for state-of-the-art Galley designs and equipment technologies; support Naval Supply Systems Command (NAVSUP) foodservice equipment standardization plan; integrate automated technology such as, prognostics, diagnostics, and reliability tracking.</p> <p>FY 2015 Accomplishments:</p>		0.310	0.397	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Conducted in-house test and evaluation of equipment prioritized by Navy. Instrumented equipment for reliability evaluations and support for ship board evaluations. Transitioned reports to NAVSUP. Procured, tested and evaluated a hydroponic system to grow fresh produce aboard ballistic submarines for increased quality of life and nutrition for submarine Sailors.</p> <p>FY 2016 Plans: Preliminary Design Review/Critical Design Review (PDR/CDR) reviews. Instrument equipment for Condition-Based Maintenance. Conduct test & evaluation of modified COTS equipment in accordance with Naval Sea Systems Command (NAVSEA) test criteria. Complete at-sea user evaluations and technical data package for transition to Navy.</p>				
<p>Title: Armed Forces Recipe Service (AFRS)</p> <p>Description: Demonstrate and validate standardized recipes to be utilized by the Services in food service and operational settings. Develop and deliver specifications to the Armed Forces Recipe Committee for approval. Specifications will populate the Armed Forces Management Information System (AFMIS), a system utilized by all DoD Components.</p> <p>FY 2015 Accomplishments: Completed transition to new recipe development/nutritional analysis software. Conducted nutritional analysis of deliverables. The output of this project facilitated implementation of nutritional initiatives such as Go for Green and Healthy Base Initiative.</p>		0.600	-	-
<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: Conducted root cause failure analysis on Modernized Tray Ration Heater (MTRHS) prototype. Conducted operational test and evaluation on field feeding equipment. Completed approved Engineering Changes to upgrade the capability of the Expeditionary Field Kitchen.</p> <p>FY 2017 Plans: Will develop reports, Engineering Change Proposals (ECPs) and logistical data to facilitate integration of cooking appliances into United States Marine Corp (USMC) Expeditionary Field Kitchen (EFK), Enhanced Tray Ration Heating System (ETRHS), and/or Tray Ration Heater (TRH). Will transition prototype equipment and technical data to USMC.</p>		0.320	-	0.079
<p>Title: Support to Air Force Field Feeding Modernization Efforts</p>		0.240	0.386	0.158

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Provide continuous R&D efforts for all Expeditionary Air Force squadrons. Modernize and standardize field foodservice equipment to reduce labor, maintenance, pack-out volume and cost. Increase reliability, efficiency and sustainability. Develop comprehensive specifications and technical data packages for recommended Food Service Equipment (FSE) items; test and evaluate newer commercial FSE items for expeditionary use and smaller transportation footprint; develop total overall life cycle cost of each system; test Energy Star certified FSE items that use less power; and investigate/develop appliances that use less water, increase competition on standardized designs</p> <p>FY 2015 Accomplishments: Provided continuous research and development efforts for all Expeditionary Air Force squadrons. Increased reliability, efficiency and sustainability. Provided operational test and evaluation support to the Basic Expeditionary Airfield Resources (BEAR) community to develop or edit equipment purchase descriptions, participate in source selection evaluations, provide technical documents to support the contract award process and participate in the design reviews.</p> <p>FY 2016 Plans: Complete preliminary design review (PDR). Initiate BEAR Kitchen Final Design Review. Conduct user Test & Evaluation of proposed equipment. Draft technical test reports and provide to Air Force for review.</p> <p>FY 2017 Plans: Will conduct Energy Management System (EMS) Critical Design Reviews and in-house test and evaluation. Will complete the development of the Joint Service Expandable Refrigerated Container System (JSERCS). Will integrate JSERCS into the BEAR kitchen system to conduct operational testing.</p>				
<p>Title: Joint Inter-service Field Feeding Burner</p> <p>Description: Develop, demonstrate and validate a Joint-Service, government owned Jet Propellant 8 (JP-8) burner for field kitchen appliances. Government will control configuration, procurement, and support decisions. Establishment of a COTS parts list using widely supportable supply chain in field operations.</p> <p>FY 2015 Accomplishments: Built beta units; prepared Tech Data Package; tested units in a high fidelity, realistic operating environment and conducted Integrated Logistic Support (ILS) validation.</p>		0.169	-	-
<p>Title: Navy Food Storage Analysis Tool (NFSAT)</p> <p>Description: Software analysis tool for Navy Foodservice that will automatically calculate all storage space factors and requirements for naval vessels based off the specific Navy Standard Core Menu (NSCM), crew size, Naval Ship's Technical Manual 096, Weights and Stability, Naval Vessel Requirements Food Service Facility Design Manual, Build Specifications 671,</p>		0.050	0.050	0.175

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
672, and Type Commander established endurance levels. Develop automated subsistence inventory management, tracking and storeroom locations for all storage areas with mobile scanning technology capability.			
<i>FY 2015 Accomplishments:</i> Expanded NFSAT capabilities to include Landing Platform Docking (LPD) amphibious warfare ship class and the Littoral Combat Ship (LCS) class.			
<i>FY 2016 Plans:</i> Complete Alpha version of Navy subsistence inventory management software and conduct test and evaluation of Alpha version of the software			
<i>FY 2017 Plans:</i> Will complete development of updated software, which will provide automated subsistence inventory management, tracking, and storeroom locations for all storage areas with mobile scanning technology capabilities. Will conduct operational testing and will transition Technical Data Package, Commercial Item Descriptions, and equipment to the Navy.			
Accomplishments/Planned Programs Subtotals	2.983	1.430	0.759

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 643747.610: <i>Food Adv Dev 643747.610</i>	3.348	0.021	5.299	-	5.299	6.579	4.830	4.508	4.631	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
• 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
• OPA M65806: <i>Assault Kitchen, Field Feeding M65806</i>	4.889	3.632	7.750	-	7.750	4.608	4.129	4.565	6.145	Continuing	Continuing

Remarks

D. Acquisition Strategy

Complete Engineering and Manufacturing Development (EMD) and Demonstration of food items and equipment for transition into competitive procurement contract. Complete advanced research efforts to support Engineer Change Proposals for previously developed equipment.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>

E. Performance Metrics

N/A

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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 / 5				PE 0604713A / Combat Feeding, Clothing, and Equipment					548 / Mil Subsistence Sys						
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
CFP Management	C/FP	RDECOM : Natick, MA	2.430	0.164	Jul 2015	0.233	Jul 2016	0.204	Jul 2017	-		0.204	0	3.031	Continuing
SBIR+STTR	TBD	Various : Various	0.064	-		-		-		-		-	0	0.064	0
Subtotal			2.494	0.164		0.233		0.204		-		0.204	0.000	3.095	-
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
Various combat feeding equipment, multi fuel and water equipment	C/FP	RDECOM : Natick, MA	6.185	1.418	Jul 2015	0.549	Jul 2016	0.178	Jul 2017	-		0.178	0	8.330	Continuing
DOD Field Feeding Equipment	C/FP	Various : Various	3.615	0.920	Mar 2015	0.648	Mar 2016	0.203	Mar 2017	-		0.203	0	5.386	Continuing
Army Field Feeding Equipment Development	C/FP	PM Force Sustainment Systems (FSS) : Natick, MA	2.477	0.241	Mar 2015	-		-		-		-	0	2.718	Continuing
Subtotal			12.277	2.579		1.197		0.381		-		0.381	0.000	16.434	-
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 Field Feeding Equipment	Various	TECOM/OEC/ATC : Warren, MI	4.052	0.240	Mar 2015	-		-		-		-	0	4.292	Continuing
Joint Service Food/Combat Feeding Equipment	Various	Various : Various	0.000	-		-		0.174	Mar 2017	-		0.174	0	0.174	0
Subtotal			4.052	0.240		-		0.174		-		0.174	0.000	4.466	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Transition advanced USMC equipment and systems to USMC for procur	[Redacted]																											
Transition advanced USN equipment and systems to USN for procureme	[Redacted]																											
Conduct operational test of individual ration components/packaging	[Redacted]				[Redacted]																							
Conduct operational test of individual ration component/packaging	[Redacted]				[Redacted]								[Redacted]															
Transition individual rations/ration components documents to DLA /servi	[Redacted]																											
Transition individual ration/ration components documents to DLA /servic	[Redacted]																											
Conduct operational test of Unitized Group Ration components/packagin	[Redacted]				[Redacted]																							
Conduct operational test of Unitized Group Ration component/packaging	[Redacted]				[Redacted]				[Redacted]																			
Transition Unitized Group Ration component/packaging documents to D	[Redacted]																											
Transition Unitized Group Ration component/packaging document to DL	[Redacted]																											
Conduct Group Ration Airdrop Survivability Effort	[Redacted]				[Redacted]																							
Conduct Group Ration Airdrop Survivability Efforts	[Redacted]				[Redacted]				[Redacted]																			
Complete transition to new recipe development/nutritional analysis softw	[Redacted]				[Redacted]																							

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Transition subset of completed AFRS recipes to Joint Services																												
(1) Transition CK P3I to RESET				▲ 1																								
(2) Initiate PQT Prototypes for advanced modular appliances		▲ 2																										
(3) Transition Autonomous Shipboard Cleaning System to Navy				▲ 3																								
Conduct root cause analysis on MTRHS																												
Conduct market survey and procure a hydroponics system																												
Testing to validate AMMPS generator interface and performance with CK																												
Develop Tech Data in support of CK ECP																												
Complete Alpha version of NFSAT software																												
Expand NFSAT capabilities to include LPD amphibious warfare ship class																												
Transition prototype equipment and technical data to USMC.																												
Conduct EMS CDR, and in-house T&E to integrate EMS into BEAR kitchen																												
Conduct OT&E of EMS in the BEAR kitchen system																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Integrate JSERCS into BEAR system and conduct OT&E																												
(1) Update JSERCS TDP													▲ 1															
Refine heat recovery prototype for integration and conduct OT&E.																												
(2) Transition TDP for the EMS, JSERCS, and heat recovery system to																	▲ 2											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Transition advanced USMC equipment and systems to USMC for procurement.	1	2013	4	2022
Transition advanced USN equipment and systems to USN for procurement.	1	2014	4	2022
Conduct operational test of individual ration components/packaging	1	2009	4	2015
Conduct operational test of individual ration component/packaging	1	2018	4	2022
Transition individual rations/ration components documents to DLA /services	1	2009	4	2016
Transition individual ration/ration components documents to DLA /services	1	2018	4	2022
Conduct operational test of Unitized Group Ration components/packaging	1	2009	4	2015
Conduct operational test of Unitized Group Ration component/packaging	1	2016	4	2022
Transition Unitized Group Ration component/packaging documents to DLA-TS	1	2009	4	2016
Transition Unitized Group Ration component/packaging document to DLA-TS	1	2018	4	2022
Conduct Group Ration Airdrop Survivability Effort	2	2015	4	2015
Conduct Group Ration Airdrop Survivability Efforts	1	2017	4	2017
Complete transition to new recipe development/nutritional analysis software	2	2015	4	2015
Transition subset of completed AFRS recipes to Joint Services	1	2015	4	2015
Transition CK P3I to RESET	4	2015	4	2015
Initiate PQT Prototypes for advanced modular appliances	2	2015	2	2015
Transition Autonomous Shipboard Cleaning System to Navy	4	2015	4	2015
Conduct root cause analysis on MTRHS	2	2015	4	2015
Conduct market survey and procure a hydroponics system	3	2015	4	2015
Testing to validate AMMPS generator interface and performance with CK ECP	1	2015	2	2015
Develop Tech Data in support of CK ECP	3	2014	4	2015
Complete Alpha version of NFSAT software	1	2016	4	2016

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Expand NFSAT capabilities to include LPD amphibious warfare ship class and LCS	2	2015	4	2015
Transition prototype equipment and technical data to USMC.	1	2017	4	2017
Conduct EMS CDR, and in-house T&E to integrate EMS into BEAR kitchen system	2	2017	2	2017
Conduct OT&E of EMS in the BEAR kitchen system	3	2018	2	2019
Integrate JSERCS into BEAR system and conduct OT&E	1	2017	4	2017
Update JSERCS TDP	1	2018	1	2018
Refine heat recovery prototype for integration and conduct OT&E.	1	2018	3	2019
Transition TDP for the EMS, JSERCS, and heat recovery system to USAF	4	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>				Project (Number/Name) EL2 / <i>Army Field Feeding 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
EL2: <i>Army Field Feeding Equipment</i>	-	0.000	0.333	1.295	-	1.295	1.867	1.598	0.966	0.994	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the development and demonstration and Non-Developmental Item (NDI) Commercial Off The Shelf (COTS) evaluation of combat feeding equipment to enhance soldier efficiency and survivability, and to reduce food service logistics requirements for the Army. The project supports multi-fuel, rapidly deployable field food service equipment initiatives and engineering and manufacturing development to improve equipment, enhance safety in food service, and decrease fuel and water requirements. This project develops critical enablers that support the Army's Strategic Planning Guidance by developing and integrating critical expeditionary capabilities that maintain readiness; provide effective solutions that reduce the resource and operational energy footprint; provide modernized equipment; and enhance the field Soldier's well being. This project also reduces sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands on lift, the 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
<p>Title: Ice Making System</p> <p>Description: Develops an add-on ice making capability that automatically dispenses and seals 10 pound(lbs) bags at a rate of a minimum of 3,600 pounds of ice per day. This capability is based upon Army current operational requirements for ice which is four pounds per Soldier per day. This capability enables support for up to 900 personnel. Current operations require external support to provide personnel with ice for cooling drinking water in extremely arid environments. This capability will reduce the sustainment risk and cost associated with transporting this commodity from external sources. The objective requirement enables stockage of ice to assist with surge operations.</p> <p>FY 2016 Plans: Award contract for development of prototype Containerized Ice Making Systems and required Developmental Testing (DT).</p>	-	0.333	-
<p>Title: Battlefield Kitchen (BK)</p> <p>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</p>	-	-	1.295

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) EL2 / <i>Army Field Feeding Equipment</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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 2017 Plans: Oversee contractor integration of developmental components and mature government supplied components into working BK prototype. Maintain concurrent development of Integrated Logistics Support (ILS) documentation and provisioning of government supplied mature components and subsystems.			
Accomplishments/Planned Programs Subtotals	-	0.333	1.295

C. Other Program Funding Summary (\$ in Millions)												
			<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2017</u>					<u>Cost To</u>		
	<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>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 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
	• RDT&E 643747.EL1: <i>Army Field Feeding Programs</i>	-	0.280	1.948	-	1.948	0.452	-	0.509	-	Continuing	Continuing
	• OPA M65806: <i>Assault Kitchen, Field Feeding</i>	4.889	3.632	5.167	-	5.167	4.660	4.165	4.605	6.200	Continuing	Continuing

Remarks

D. Acquisition Strategy
Complete System Development and Demonstration of food items and equipment for transition into competitive procurement contract. Complete advanced research efforts to support Engineer Change Proposals for previously developed equipment.

E. Performance Metrics
N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) EL2 / <i>Army Field Feeding Equipment</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Complete prototype Containerized Ice Making Systems (CIMS)																												
Design and build Battlefield Kitchen prototypes																												
Conduct DT on the Battlefield Kitchen																												
Conduct OT on the Battlefield Kitchen																												
Complete Milestone C and transition Battlefield Kitchen into production																												
Design and build prototype DESERT Systems																												
Conduct Developmental Testing (DT) on the DESERT Systems																												
Conduct Limited User Evaluation on the DESERT Systems																												
(1) Complete ECP and transition DESERT into production																									▲			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) EL2 / <i>Army Field Feeding Equipment</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Complete prototype Containerized Ice Making Systems (CIMS)	1	2016	4	2016
Design and build Battlefield Kitchen prototypes	3	2017	1	2019
Conduct DT on the Battlefield Kitchen	1	2019	3	2019
Conduct OT on the Battlefield Kitchen	3	2019	4	2019
Complete Milestone C and transition Battlefield Kitchen into production	1	2020	2	2020
Design and build prototype DESERT Systems	2	2019	4	2019
Conduct Developmental Testing (DT) on the DESERT Systems	1	2020	4	2020
Conduct Limited User Evaluation on the DESERT Systems	1	2021	2	2021
Complete ECP and transition DESERT into production	3	2021	3	2021

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	8.775	27.155	30.774	0.033	30.807	31.084	28.360	24.978	26.341	Continuing	Continuing
241: <i>Nstd Combined Arms</i>	-	5.700	24.214	27.769	-	27.769	27.984	25.191	21.742	22.956	Continuing	Continuing
573: <i>Program Executive Office Simulation, Training Spt</i>	-	3.075	2.941	3.005	0.033	3.038	3.100	3.169	3.236	3.385	Continuing	Continuing

A. Mission Description and Budget Item Justification

Program Element funds development of Non-System Training Devices to support force-on-force training at the Combat Training Centers (CTC), general military training, and training on more than one item/system, as compared with system devices which are developed in support of a specific item/weapon system. Army training devices and training simulations contribute to the modernization of the forces by enabling readiness and strengthening combat effectiveness through realistic training solutions for the Warfighter. Training devices maximize the transfer of knowledge, skills, and experience from the training situation to a combat situation. Force-on-force training at the National Training Center (NTC), Ft. Irwin, CA; Joint Readiness Training Center (JRTC), Ft. Polk, LA, and Joint Multinational Readiness Center (JMRC), formerly the Combat Maneuver Training Center (CMTC), Hohenfels, Germany; and battle staff training in Battle Command Training Program (BCTP) provide increased combat readiness through realistic collective training in low, mid, and high intensity scenarios. Project 241, Non-System Training Devices-Combined Arms, develops simulation training devices for Army-wide use, including the CTCs. Project 573 funds key organizational support to Army/DoD Transformation via innovative simulation and training device efforts. Program Executive Office (PEO) Simulation, Training and Instrumentation (STRI's) unique geographic co-location with other services facilitates joint training solutions in a common environment.

FY 2017 Project 241 funds significant development efforts in support of U.S. Army Training and Readiness on the Combat Training Center Instrumentation Systems (CTC-IS), Instrumentable-Multiple Integrated Laser Engagement System (I-MILES), Home Station Instrumentation Training System (HITS), Common Training Instrumentation Architecture (CTIA), Target Modernization, Call for Fire Trainer (CFFT), Medical Simulation Training Center (MSTC), Engagement Skills Trainer (EST), Live, Virtual, Constructive Integrating Architecture (LVC-IA) and Comprehensive Soldier & Family Fitness (CSF2).

FY 2017 Project 573 will provide for minimum PEO STRI core operations supporting development of training devices and simulations by PEO STRI's three Project Management Offices.

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	8.943	27.155	41.087	-	41.087
Current President's Budget	8.775	27.155	30.774	0.033	30.807
Total Adjustments	-0.168	0.000	-10.313	0.033	-10.280
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.168	-			
• Adjustments to Budget Years	-	-	-10.313	0.033	-10.280

Change Summary Explanation

FY 2017 Funds were realigned to higher priority requirements.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>				Project (Number/Name) 241 / <i>Nstd Combined Arms</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
241: <i>Nstd Combined Arms</i>	-	5.700	24.214	27.769	-	27.769	27.984	25.191	21.742	22.956	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common Training Instrumentation Architecture (CTIA) program provides the common product-line architecture, product line software, standards, services, and architecture framework for developing the Live Training Transformation (LT2) Product Line of live training systems supporting Army-wide live instrumented Force-On-Force (FOF) and Force-On-Target (FOT) training requirements and is the core live architecture for the Live, Virtual, Constructive Integrated Training Environment (LVC-ITE).

Combat Training Center Instrumentation System (CTC-IS) funds the continued development of the existing Instrumentation Systems (IS) at the National Training Center (NTC), Joint Readiness Training Center (JRTC) and Joint Multinational Readiness Center (JMRC). CTC-IS funds the continued development of the Range Communication System at the NTC and JRTC, to provide high-fidelity live, virtual, and constructive brigade training rotations which prepare Brigade Combat Teams (BCTs), Joint partners, and supporting units to deploy in support of the Army Sustainable Readiness Model (SRM). The CTCs primary goal is to develop agile and adaptive leaders at the tactical, operational and strategic levels while providing BCTs the core training necessary to conduct decisive action in a dynamic operating environment.

The Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) program provides realistic, real-time casualty effects for force-on-force tactical engagement training scenarios and its ability to integrate into training instrumentation systems provide for high fidelity combined arms combat exercises supporting the 39th Chief of the Staff of the Army #1 priority of "Readiness". Due to their modular design, I-MILES is required for use at the Home Station, the Combat Training Centers (CTCs) and in theater of operations to meet force-on-force training requirements. I-MILES program funding provides the Development and Integration of new vehicle and dismount weapon systems meeting the Common Operating Environment (COE) requirements, as well as embedded Tactical Engagement Simulation (TES) development. This includes new development efforts of the Live Training Engagement Composition (LTEC), increasing simulation of Probability of Kill (Pk) for training realism and improving integration on new weapon platforms (i.e. Joint Light Tactical Vehicle (JLTV), Armored Multi-Purpose Vehicle (AMPV), M4A2 Plus Rifle and Stryker Engineering Change Proposal (ECP) with 30mm Gun).

The Home Station Instrumentation Training System (HITS) provides a high-fidelity deployable instrumented training capability to support platoon thru battalion level Live Force-on-Force Training. HITS tracks location of soldiers and vehicles and simulates weapons' effects and engagements, allowing units to "Train as they Fight" against live opponents. HITS provides accurate feedback to training units. HITS consists of light deployable components that can be rapidly assembled/disassembled and transported to support deployed training. HITS integrates with future and legacy MILES. HITS is a member of the Live Training Transformation (LT2) family of training systems and shares several hardware and software components with the Instrumentation Systems (IS). HITS provides the Live domain for Live-Virtual-Constructive (LVC) training integration.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
<p>The Medical Simulation Training Center (MSTC) provides realistic medical training to both medical and non-medical Soldiers in the Active, Reserve, and National Guard. MSTCs provide hands-on instruction on the latest battlefield trauma and critical care techniques based on Army Medical Department (AMEDD) approved performance oriented Program of Instruction (POI). Medical treatment validation exercises simulate the high stress of performing medical interventions in combat. MSTC supports Unit Medical Readiness by validating Combat Medic (68W) Emergency Medical Technician (EMT) biennial recertification requirements and provides Combat Lifesaver (CLS) training to non-medical Soldiers.</p> <p>The Engagement Skills Trainer (EST) is the unit/institutional, indoor, multipurpose, multi-lane, small arms, crew-served and individual anti-tank training simulation that enables training across three different modes: individual marksmanship; small unit (collective) gunnery and tactical training; and judgmental use of force (shoot/don't shoot), which includes escalation of force/graduated response scenarios.</p> <p>The Call for Fire Trainer (CFFT) family of systems is a lightweight, rapidly deployable, observed fire training system that provides simulated battlefield training for Fire Support Specialists (FSS), Joint Fires Observers (JFO), and Soldiers. The system provides simulated battlefield training to conduct Indirect Fires, Close Air Support, Close Combat Attack, and Naval Surface Fire Support. The CFFT Immersive System provides the capability for Army, Joint, Multinational and Special Operations Forces to conduct advanced, complex and realistic fires training at the FIRES Center of Excellence, Ft Sill, OK. CFFT is a critical training enabler to support Warfighters in applying precision fires on target to prevent fratricide and minimize collateral damage.</p> <p>The Live, Virtual, Constructive Integrating Architecture (LVC-IA) provides a net-centric linkage that collects, retrieves and exchanges data among LVC Training Aids, Devices, Simulations, and Simulators (TADSS) (to include: AVCATT, CCTT, GFT, HITS, JLCCTC and SE Core) and Mission Command Systems. The LVC-IA defines "how" information is exchanged among the different LVC domains and the Mission Command Systems. The LVC-IA provides enterprise level tools for exercise control, after action review, and system information assurance. It develops hardware and software to interface the different Live, Virtual, Constructive and Gaming communication protocols and to provide a correlated common operating picture for the training audience on their organic Mission Command equipment. The integration of the LVC TADSS with the Mission Command equipment will enable larger and more robust training events, to better prepare U.S. Soldiers for their missions at an overall reduced cost. The end-state goal is to enable an LVC Integrated Training Environment that can replicate Operational Environments in a cost effective manner to provide a high level of value-added training and mission rehearsal opportunities to Army Commanders and their Soldiers. In FY16, Version 2 testing and validation will be complete and the initiation of Version 3 development will follow. FY17 request will continue Version 3 development activities.</p> <p>The Target Modernization program provides a common architectural framework, standards, specifications, and interfaces for live fire target devices, a common target control system for all range types, and innovative technologies to enhance training realism and reduce life cycle costs on the ranges.</p> <p>Comprehensive Soldier & Family Fitness (CSF2) is research and development efforts that include Future Soldier Assessment Tool (DASH-R) Project, Global Assessment Tool (GAT) 3.0 Project, and Program Evaluation (PE) Project.</p> <p>FY 2017 Project 241 funds significant development efforts in support of U.S. Army Training and Readiness on the Combat Training Center Instrumentation Systems (CTC-IS), Instrumentable-Multiple Integrated Laser Engagement System (I-MILES), Home Station Instrumentation Training System (HITS), Common Training</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Continue EMD phase contract activities for the CTC-IS.</p> <p>FY 2015 Accomplishments: Combat Training Center Instrumentation System (CTC-IS) continued development of the existing Instrumentation Systems (IS) at the National Training Center (NTC), Joint Readiness Training Center (JRTC) and Joint Multinational Readiness Center (JMRC). Funding was used to continue develop of a common Range Communications System (RCS) that can be implemented at all both NTC and JRTC for increased entity tracking coverage and accuracy in order to increase After Action Review fidelity for Brigade Combat Team rotations to better prepare units for deployment.</p> <p>FY 2016 Plans: Combat Training Center Instrumentation System (CTC-IS) will fund the continued development of the existing Instrumentation Systems (IS) at the National Training Center (NTC), Joint Readiness Training Center (JRTC) and Joint Multinational Readiness Center (JMRC). Funding will be used to develop a common Range Communications System (RCS) that can be implemented at all both NTC and JRTC for increased entity tracking coverage and accuracy in order to increase After Action Review fidelity for Brigade Combat Team rotations to better prepare units for deployment.</p> <p>FY 2017 Base Plans: Combat Training Center Instrumentation System RDTE funding will focus on both architectures to support future instrumentation systems such as the Common Domain Solution (CDS) and IS Preparation; RDTE will provide up front analysis of new technologies and efficiencies needed to make Continuous Technology Refresh decisions that will reduce the Total logistical footprint of the system, improve reliability and performance and reduce cost of the system over its Total Life Cycle. These analysis will also focus on pre-positioning needed architectures and design to support the future IS.</p>					
<p>Title: Government Program Management for the Combat Training Center Instrumentation System (CTC-IS) program.</p> <p>Description: Government Program Management for the CTC IS program.</p> <p>FY 2015 Accomplishments: Program Management for the Combat Training Center Instrumentation System (CTC-IS) program.</p> <p>FY 2016 Plans:</p>	1.192	1.447	1.546	-	1.546

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Program Management for the Combat Training Center Instrumentation System (CTC-IS) program. FY 2017 Base Plans: Program Management for the Combat Training Center Instrumentation System (CTC-IS) program; providing support of program office management and administrative processes.					
Title: Government Program Management for the Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) Program. Description: Government Program Management for the I-MILES program. FY 2017 Base Plans: Government Program Management cost for the Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) Program. This is the first year of RDTE for the I-MILES program.	-	-	0.304	-	0.304
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Instrumentable-Multiple Integrated Laser Engagement System (I-MILES). Description: EMD phase contract activities for the I-MILES program. FY 2017 Base Plans: RDTE funding will assist in analyzing, developing and testing the Live Training Engagement Composition (LTEC) and integration of the Tactical Engagement Simulation (TES) Componentized Architecture into existing and new I-MILES capabilities to improve training realism during Force on Force (FoF) training increasing performance and reducing overall lifecycle costs. RDTE reduces the risk of integration into vehicle weapon platforms and Vehicular Integration for C4ISR/EW Interoperability (VICTORY) Architecture while maintaining relevancy into emerging Weapon Systems (Joint Lite Tactical Vehicle (JLTV), Armored Multi-Purpose Vehicle (AMPV), Stryker Engineering Change Proposal (ECP) with 30mm Gun). RDTE will assist in maintaining I-MILES relevancy as the Army premier Live Force-on-Force training system. This is the first year of RDTE for the I-MILES program.	-	-	1.041	-	1.041
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Home Station Instrumentation Training System (HITS) program. Description: EMD phase contract activities for the HITS program. FY 2016 Plans:	-	1.550	1.683	-	1.683

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Integrate and test the interface between HITS (v3 and v4) and the latest versions of the Live, Virtual, and Constructive Integrating Architecture (LVC-IA v2.0) to sustain the Integrated Training Environment (ITE) at Home Stations.</p> <p>FY 2017 Base Plans: Develop, integrate, and test the HITS interfaces with new versions of the Tactical Engagement Simulation System (TESS) (ex. VTESS) and provide upgrades to existing fielded Instrumentable-Multiple Laser Engagement System (I-MILES).</p>					
<p>Title: Government Program Management for the Home Station Instrumentation System (HITS) program.</p> <p>Description: Government Program Management for the Home Station Instrumentation System (HITS) program.</p> <p>FY 2015 Accomplishments: Program Management for the Home Station Instrumentation System (HITS) program.</p> <p>FY 2016 Plans: Program Management for the Home Station Instrumentation System (HITS) program.</p> <p>FY 2017 Base Plans: Program Management for the Home Station Instrumentation System (HITS) program.</p>	0.100	0.300	0.307	-	0.307
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Medical Simulation Training Center (MSTC).</p> <p>Description: EMD phase contract activities for the MSTC program.</p> <p>FY 2016 Plans: Medical Training - Command and Control (MT-C2) provides the capability to manipulate the environments in which scenarios take place, in order to maximize the positive impact and training experience of each fluid training event in the training sequence. The Medical Testing and Evaluation System (MTES) provides a hardware solution to MT-C2 in the form of an inherent server system, Wi-Fi router and Wi-Fi access points already installed in the MSTC, along with an approved network certification. The integration of MTES also provides the ability to expand memory capability to host the MT-C2 software.</p> <p>FY 2017 Base Plans: Enhancement of Birthing Simulator by developing realistic simulated tissue and sensors that will gather objective metrics regarding pressure, fetal position, etc. Enhancement of Intraosseous Fluid Resuscitation Training</p>	-	0.945	0.530	-	0.530

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B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
by including anatomical accuracy, tissue properties, and rapid refresh of the system to support high training OPTEMPO.						
<p>Title: Government Program Management for the Medical Simulation Training Center (MSTC) program.</p> <p>Description: Government Program Management for the MSTC program.</p> <p>FY 2016 Plans: Government Program Management for the Medical Simulation Training Center (MSTC) program.</p> <p>FY 2017 Base Plans: Government Program Management for the Medical Simulation Training Center (MSTC) program.</p>		-	0.177	0.167	-	0.167
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Engagement Skills Trainer (EST) program.</p> <p>Description: EMD phase contract activities for the Engagement Skills Trainer (EST) program.</p> <p>FY 2016 Plans: Develop EST Dynamic Terrain to accurately portray all battlefield effects, in accordance with the Contemporary Operating Environment (COE), across the full range of military operations including: friendly and enemy forces and their doctrine, tactics, techniques and procedures; all military recognized terrain; atmospheric and weather conditions; specific enemy and friendly vehicles and equipment; dynamic, correlated terrain; the effects of munitions on personnel, vehicles, structures; and develop prior years efforts (weapons, optics, etc). Develop enhanced capabilities in accordance with the capability manager's priorities.</p> <p>FY 2017 Base Plans: Will continue to develop EST Dynamic Terrain to accurately portray all battlefield effects, in accordance with the Contemporary Operating Environment (COE), across the full range of military operations including: friendly and enemy forces and their doctrine, tactics, techniques and procedures; all military recognized terrain; atmospheric and weather conditions; specific enemy and friendly vehicles and equipment; dynamic, correlated terrain; the effects of munitions on personnel, vehicles, structures; and develop prior years efforts (weapons, optics, etc). Develop enhanced capabilities in accordance with the capability manager's priorities.</p>		-	1.186	1.002	-	1.002
<p>Title: Call For fire Trainer (CFFT) Program Government System Test and Evaluation.</p> <p>Description: Government System Test and Evaluation for the Call For fire Trainer (CFFT) Program.</p>		-	-	1.314	-	1.314

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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> Develop updates to maintain currency of the CFFT in order to meet the needs of the operational and institutional force, informed by the Modernization of Force initiative including precision engagement and tactical software interoperability.</p>					
<p><i>Title:</i> Live, Virtual, Constructive Integrating Architecture (LVC-IA) Engineering and Manufacturing Development (EMD) phase contract activity.</p> <p><i>Description:</i> Continue EMD phase contract activities for the LVC-IA program.</p>	-	5.432	4.429	-	4.429
<p><i>FY 2016 Plans:</i> Live, Virtual, and Constructive – Integrating Architecture (LVC-IA) program will complete system integration and testing of the Version 2 capability and begin design and development LVC-IA Version 3 capability.</p> <p><i>FY 2017 Base Plans:</i> Continue system development, integration and demonstration of the LVC-IA Version 3 capability.</p>					
<p><i>Title:</i> Government Program Management for the Live, Virtual, Constructive Integrating Architecture (LVC-IA) Program.</p> <p><i>Description:</i> Government Program Management for the LVC-IA Program.</p>	0.915	1.756	1.782	-	1.782
<p><i>FY 2015 Accomplishments:</i> Provided program management, engineering and technical oversight, contract support and travel for the LVC-IA Program.</p> <p><i>FY 2016 Plans:</i> Will provide program management, engineering and technical oversight, contract support, and travel for the LVC-IA Program.</p> <p><i>FY 2017 Base Plans:</i> Will provide program management, engineering and technical oversight, contract support, and travel for the LVC-IA Program.</p>					
<p><i>Title:</i> Live, Virtual, Constructive Integrating Architecture (LVC-IA) Program Government System Test and Evaluation.</p> <p><i>Description:</i> Government System Test and Evaluation for the LVC-IA Program.</p>	-	1.133	2.199	-	2.199

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>FY 2016 Plans: LVC-IA will continue integration testing support on developed components for LVC-IA for interoperability with TADSS and other Mission Command Systems. LVC-IA will conduct Federation Integration, Functional Verification and System Measurement of Performance (SMP) events, complete Test Readiness Review (TRR) and Government Acceptance Testing for Version 2. The program will begin efforts for Version 3 in FY16 once Version 2 efforts are completed.</p> <p>FY 2017 Base Plans: LVC-IA will continue integration testing and evaluation activities in support of LVC-IA interoperability with TADSS and other Mission Command Systems. LVC-IA will conduct Federation Integration Events in preparation for final test activities for Version 3.</p>					
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Target Modernization program.</p> <p>Description: EMD phase contract activities for the Target Modernization program.</p> <p>FY 2016 Plans: Develop and integrate autonomous trackless moving type targets with behavioral capabilities into the Government owned target control system Targetry Range Automated Control and Recording (TRACR). The design includes a trackless target that can be utilized on unimproved terrain, and is capable of independent behaviors based on training doctrine, skills, readiness and style of learning to enhance realism and feedback for the Soldier. Bridge technology transition from an on-going SBIR effort that began in FY13.</p> <p>FY 2017 Base Plans: Continuation of FY16 efforts to develop and integrate autonomous trackless moving type targets with behavioral capabilities into the Government owned target control system Targetry Range Automated Control and Recording (TRACR). Transition technology to the Future Army System of Integrated Targets (FASIT) Program.</p>	-	2.005	2.054	-	2.054
<p>Title: Comprehensive Soldier & Family Fitness (CSF2)</p> <p>Description: Comprehensive Soldier & Family Fitness (CSF2), the Army community's premier resilience and health training program.</p> <p>FY 2015 Accomplishments:</p>	0.575	1.306	-	-	-

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Develops, tests and implements a variety of psychometric instruments administered on an electronic world-wide delivery platform; evaluation of Comprehensive Soldier and Family Fitness (CSF2) training effectiveness at influencing objective outcomes in the health and work performance domains; applying advanced statistical analysis techniques to emerging human subjects problems identified by the Army senior leadership (e.g., suicide, violent crime, sexual assault / harassment, etc).					
FY 2016 Plans: Developing, testing, and implementing a variety of psychometric instruments administered on an electronic world-wide delivery platform; evaluation of CSF2 training effectiveness at influencing objective outcomes in the health and work performance domains; applying advanced statistical analysis techniques to emerging human subjects problems identified by the Army senior leadership (e.g., suicide, violent crime, sexual assault / harassment, etc).					
Title: Soldier Fitness Program Description: Dollars belong to the Soldier Fitness Program.	-	-	0.973	-	0.973
FY 2017 Base Plans: Dollars belong to Soldier Fitness Program.					
Accomplishments/Planned Programs Subtotals	5.700	24.214	27.769	-	27.769

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>
• Training Devices, Non-System (OPA): <i>Training Devices, Non-System (OPA)</i>	117.093	278.236	253.050	-	253.050	260.137	277.370	199.834	191.596	Continuing	Continuing
• CTC Support (OPA): <i>CTC Support (OPA)</i>	76.362	74.916	75.359	-	75.359	76.695	71.702	89.898	74.601	Continuing	Continuing

Remarks

D. Acquisition Strategy

Competitive development efforts based on performance specifications.

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<p>Combat Training Center Instrumentation Systems (CTC-IS) –</p> <p>a. In FY17, Combat Training Center Instrumentation System RDTE funding will be used for development of a Cross Domain Solution (CDS) needed due to new IA requirements; will award a new delivery order (DO) to General Dynamics Missions Systems under the Live Training Transformation Consolidated Product-line Management Next (LT2 CPM Next) contract. CPM Next was completed as a Competitive 5 year Single Award Indefinite-Delivery/Indefinite-Quantity (IDIQ) Contract, the DO will have a one-year base and four single-year option period.</p> <p>b. In FY17, Combat Training Center Instrumentation System RDTE funding will also be used to fund a Life Cycle Product-line Management (LCPM) contract structured as a 5 year Single Award Indefinite-Delivery/Indefinite-Quantity (IDIQ) Contract for the implementation of a Hardware Product Line (HPL), the contractor is to be selected. The strategy is to efficiently and effectively address life cycle management of Live Training Systems. RDT&E will provide up front analysis of new technologies and efficiencies needed to make Continuous Technology Refresh decisions that will reduce the Total logistical footprint of the system, improve reliability and performance and reduce cost of the system over its Total Life Cycle. These analysis will also focus on pre-positioning needed architectures and design to support future Instrumentation Systems.</p> <p>Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) –</p> <p>In FY17, Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) will award a new delivery order (DO) to General Dynamics Mission Systems on the Live Training Transformation Consolidated Product-line Management Next (LT2 CPM Next) contract which will provide flexibility for unknown requirements and will address the known requirements that fall within multiple categories: Architecture Maturation; Common Operating Environment (COE); Embedded Training; System level testing of existing and future Live Training Engagement Composition (LTEC) services for dismount and vehicle use cases; Architecture Verification/Validation of LTEC and a componentized architecture; Retrofitting I-MILES systems (Individual Weapons System 1 & 2 (IWS), Tactical Vehicle System (TVS), Combat Vehicle Tactical Engagement Simulation System (CVTESS)) with LTEC and Live Player Area Network (LPAN); Development, Integration, Form, Fit & Function for new vehicles/systems platforms (Joint Lite Tactical Vehicle (JLTV), Armored Multi-Purpose Vehicle (AMPV), Stryker Engineering Change Proposal (ECP) with 30mm Gun). Software development that includes LTEC integration of Probability of Kill (Pk) and Small Arms Transmitters for TVS, integration into Vehicular Integration for C4ISR/EW Interoperability (VICTORY) and product improvement to address obsolescence and I-MILES relevancy until ATESS Increment 3 to maintain relevancy in the Force on Force (FoF) environment.</p> <p>Home Station Instrumentation Training System (HITS) –</p> <p>In FY16, the HITS program will award a delivery order (DO) to General Dynamics Missions Systems under the LT2 CPM Next contract. The DO has a one-year base and four single-year option periods beginning in January 2016. The contract provides the post deployment software support (PDSS) required to manage the configuration, maintain cyber security, and modernize the Home Station Instrumentation Training System (HITS) Exercise Control (ExCon) Subsystem. HITS is a product under the Live Training Transformation (LT2) Consolidated Product-line Management (LT2 CPM) effort, therefore configuration management and PDSS will be executed within the framework of the LT2 CPM. Configuration Management and PDSS efforts include but are not limited to software design, integration & testing, maintenance, modernization, and configuration management.</p> <p>Common Training Instrumentation Architecture (CTIA) –</p> <p>In FY15, the CTIA program awarded a contract to General Dynamics Mission Systems which has a one-year base and four single-year option periods beginning in February 2015. The contract provides the post deployment software support (PDSS) for fielded versions of the CTIA architecture across the LT2 product line and for</p>		

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<p>the technical insertion development activities for new versions of CTIA, specifically to upgrade the CTIA architecture to a Service Oriented Architecture (SOA) to remain aligned with ASA ALT Common Operation Environment (COE) initiatives and to allow LT2 live training products to utilize new mobile and cloud technologies.</p> <p>Target Modernization – In FY16, the Target Modernization (Target Mod) program will award a competitively competed contract to General Dynamics Mission Systems on the Live Training Transformation Consolidated Product-line Management Next (LT2 CPM Next) contract which will have a one-year base and four single-year option periods beginning in March 2016. The contract will provide for product development (from TRL 7 to TRL 9). The original effort was initiated under a Small Business Innovation Research (SBIR) contract. The LT2 CPM Next contract will continue development and transition the technology that includes trackless moving targets systems, enhanced infrared/thermal imaging, and non-contact hit sensing from the initial efforts into the various products, products lines and Program of Records that can utilize the systems.</p> <p>Call for Fire Trainer (CFFT) – In FY12, the CFFT program awarded a contract to Nova Technologies which has a one-year base and four single-year option periods beginning in August 2012. The contract provides a lightweight, rapidly deployable, observed fire training system that provides simulated battlefield training for Fire Support Specialists (FSS), Joint Fires Observers (JFO), and Soldiers. The system provides simulated battlefield training to conduct Indirect Fires, Close Air Support, Close Combat Attack, and Naval Surface Fire Support. The CFFT Immersive System provides the capability for Army, Joint, Multinational, and Special Operations Forces to conduct advanced, complex, and realistic fires training at the Fires Center of Excellence, Ft Sill, OK. CFFT is a critical training enabler to support Warfighters in applying precision fires on target to prevent fratricide and minimize collateral damage.</p> <p>Engagement Skills Trainer (EST) In FY14, the EST program awarded contract to Meggitt Training Systems, Inc. which has a one year base and four single year option periods beginning in FY15. The contract provides the unit/institutional, indoor, multipurpose, multi-lane, small arms, crew-served and individual anti-tank training simulation that enables training across three different modes: individual marksmanship; small unit (collective) gunnery and tactical training; and judgmental use of force (shot/don't shoot), which includes escalation of force/graduated response scenarios.</p> <p>Live, Virtual, Constructive Integrating Architecture (LVC-IA) - In FY10, the LVC-IA program awarded a contract to Cole Engineering and Science, Inc. (CESI) which had a two-year base and three single-year option periods beginning in June 2010. The contract provides for developing, fielding and training each version capability to the designated Basis of Issue Plan (BOIP) sites and provides Post-Deployment Software Support (PDSS) for all currently fielded versions. The LVC-IA Enhanced Capability contract will be a follow-on effort beginning the 3rd Quarter FY16. This award will have a two-year base and four single-year option periods. This effort will provide the additional capabilities for Version 3 and beyond.</p> <p><u>E. Performance Metrics</u> N/A</p>		

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

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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
OneTESS Program Management	Various	PEO STRI : Orlando, FL	8.046	-		-		-		-		-	0	8.046	8.046
OneTESS Program Management	Various	PEO STRI, : Orlando, FL	2.040	-		-		-		-		-	0	2.040	2.040
HITS Program Management	Various	PEO STRI : Orlando, FL	0.400	0.100	Jan 2015	0.300	Jan 2016	0.307	Jan 2017	-		0.307	Continuing	Continuing	Continuing
CTC-IS Program Management	Various	PEO STRI : Orlando, FL	4.059	1.192	Mar 2015	1.447	Mar 2016	1.546	Dec 2016	-		1.546	Continuing	Continuing	Continuing
MSTC Program Management	Various	PEO STRI : Orlando, FL	0.455	-		0.177	Mar 2016	0.167	Mar 2017	-		0.167	Continuing	Continuing	Continuing
I-MILES Program Management	Various	PEO STRI : Orlando, FL	0.000	-		-		0.304	Dec 2016	-		0.304	Continuing	Continuing	Continuing
EST Program Management	Various	PEO STRI : Orlando, FL	0.214	-		-		-		-		-	0	0.214	0.214
LVC-IA Program Management	Various	PEO STRI : Orlando, FL	4.909	0.915	Dec 2014	1.756	Dec 2015	1.782	Dec 2016	-		1.782	Continuing	Continuing	Continuing
Target Modernization	Various	PEO STRI : Orlando, FL	0.614	-		-		-		-		-	0	0.614	0.614
ETC-IS Program Management	Various	PEO STRI : Orlando, FL	0.164	-		-		-		-		-	0	0.164	0.164
CSF2	TBD	Multiple : Various	0.000	0.160		0.356		-		-		-	0.000	0.516	0.516
CTIA	Various	PEO STRI : ORLANDO, FL	0.000	-		0.364	Dec 2015	0.334	Dec 2016	-		0.334	Continuing	Continuing	Continuing
Soldier Fitness Program	TBD	Multitple : Various	0.000	-		-		0.973	Oct 2016	-		0.973	0	0.973	0.973
Subtotal			20.901	2.367		4.400		5.413		-		5.413	-	-	-

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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
OneTESS	SS/CPFF	General Dynamics : Fairfax, VA	124.769	-		-		-		-		-	0	124.769	124.769
OneTESS	SS/CPFF	General Dynamics C4 Systems : Orlando, FL 32826	10.430	-		-		-		-		-	0	10.430	10.430
CTIA	C/IDIQ	General Dynamics Mission Systems : Orlando, FL	9.371	-		4.285	Dec 2015	2.550	Dec 2016	-		2.550	Continuing	Continuing	Continuing
CTIA	C/CPFF	Lockheed Martin Inc. : Orlando, FL	57.091	-		-		-		-		-	0	57.091	57.091
I-MILES	C/IDIQ	General Dynamics Mission Systems : Orlando, FL	0.000	-		-		1.041	Mar 2017	-		1.041	Continuing	Continuing	Continuing
CTC-IS	C/IDIQ	General Dynamics Mission Systems : Orlando, FL	29.563	2.918	Apr 2015	2.328	Mar 2016	2.232	Jan 2017	-		2.232	Continuing	Continuing	Continuing
CTC-IS	C/IDIQ	TBS : TBS	0.000	-		-		3.322	Jul 2017	-		3.322	Continuing	Continuing	Continuing
HITS	C/FFP	Riptide : Orlando, FL	1.379	-		-		-		-		-	0	1.379	1.379
HITS	C/IDIQ	General Dynamics Mission Systems : Orlando, FL 32826	1.625	-		1.550	Jan 2016	1.683	Jan 2017	-		1.683	Continuing	Continuing	Continuing
MSTC Development	C/FP	Multiple : Various	3.034	-		0.945	Mar 2016	0.530	Jan 2017	-		0.530	Continuing	Continuing	Continuing
EST Development	C/FP	Cubic Simulation Systems, Inc. : Orlando, FL 32809-3813	1.528	-		-		-		-		-	0	1.528	1.528
EST	C/FP	Nova Technologies : Panama City, FL 32404-6747	0.609	-		-		-		-		-	0	0.609	0.609
EST Enhanced Capabilities	C/FFP	Meggitt Training Systems, Inc. : Suwanee, GA 30024-1247	0.000	-		1.186	Apr 2016	1.002	Mar 2017	-		1.002	Continuing	Continuing	Continuing

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EST Enhanced Capabilities Adaptive Marksmanship and Intelligent Tutoring	C/FFP	Dignitas Technologies : Orlando, FL 32817	0.776	-		-		-		-		-	0	0.776	0.776
CFFT Enhanced Joint Fires Observer (JFO) Training and Certification Requirements	C/IDIQ	Nova Technologies : Panama City, FL 32404-6747	0.000	-		-		1.314	Mar 2017	-		1.314	Continuing	Continuing	Continuing
LVC-IA Development	C/CPFF	Cole Engineering Services, Inc : Orlando, FL	29.822	-		-		-		-		-	0	29.822	29.822
LVC-IA Continued Development	C/CPFF	TBS : TBS	0.000	-		5.432	Apr 2016	4.429	Apr 2017	-		4.429	Continuing	Continuing	Continuing
Target Modernization	C/IDIQ	General Dynamics Mission Systems : Orlando, FL	4.671	-		2.005	Mar 2016	2.054	Mar 2017	-		2.054	Continuing	Continuing	Continuing
Congressional Add Center of Excellence for Military Operations in Urban Terrain and Cultural Trn	C/FP	Multiple : Various	2.996	-		-		-		-		-	0.000	2.996	2.996
ETC-IS	SS/CPFF	General Dynamics C4 Systems : Orlando, FL 32826	4.836	-		-		-		-		-	0	4.836	4.836
CSF2	TBD	Multiple : Various	0.000	0.020		0.039		-		-		-	0.000	0.059	0.059
Subtotal			282.500	2.938		17.770		20.157		-		20.157	-	-	-

Remarks
FY16 LVC-IA Continued Development Effort planned for award on 30 Apr 16.

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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			
OneTESS	Various	Various : Orlando, FL	6.596	-		-		-		-		-	0	6.596	6.596
OneTESS	Various	Various : Various	0.262	-		-		-		-		-	0	0.262	0.262
CTIA	Various	Various : Various	12.844	-		-		-		-		-	0	12.844	12.844
Target Modernization	Various	Various : Various	0.192	-		-		-		-		-	0	0.192	0.192
CSF2	TBD	Multiple : Various	0.000	0.047		0.158		-		-		-	0	0.205	0.228
Subtotal			19.894	0.047		0.158		-		-		-	0.000	20.099	20.122

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			
OneTESS Development & Test	Various	Multiple : Orlando, FL	4.162	-		-		-		-		-	0	4.162	4.162
OneTESS Test Support	Various	Multiple : Orlando, FL	1.280	-		-		-		-		-	0	1.280	1.280
HITS	Various	Various : Orlando, FL	0.740	-		-		-		-		-	0.000	0.740	0.740
LVC-IA Test Support	Various	Multiple : Orlando, FL	4.169	-		1.133	Apr 2016	2.199	Apr 2017	-		2.199	Continuing	Continuing	Continuing
IEDES	Various	Multiple : Orlando, FL	0.519	-		-		-		-		-	0	0.519	0.519
CSF2	TBD	Multiple : Various	0.000	0.348		0.753		-		-		-	0.000	1.101	1.101
Subtotal			10.870	0.348		1.886		2.199		-		2.199	-	-	-

Remarks
FY16 LVC-IA Test support effort planned for award on 30 Apr 16.

	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		334.165	5.700	24.214	27.769	27.769	-	-	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CTIA Development and Architectural Evolution																												
CTC IS Development																												
I-MILES Development																												
HITS Development																												
MSTC MT-C2 Development																												
MSTC Trainer Developments																												
EST Enhanced Capabilities Adaptive Marksmanship and Intelligent Tutoring																												
EST Enhanced Capabilities																												
CFFT Enhanced Joint Fires Observer (JFO) Training and Certification Requirements																												
LVC-IA - Version 2 (Development, Integration, Demonstration and Testing)																												
LVC-IA - Version 3 (Development, Integration, Demonstration and Testing)																												
LVC-IA - Version 4 (Development, Integration, Demonstration and Testing)																												
Target Modernization Development																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CSF2																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CTIA Development and Architectural Evolution	1	2012	4	2021
CTC IS Development	1	2010	4	2021
I-MILES Development	2	2017	4	2021
HITS Development	3	2012	4	2021
MSTC MT-C2 Development	2	2016	1	2018
MSTC Trainer Developments	2	2017	4	2021
EST Enhanced Capabilities Adaptive Marksmanship and Intelligent Tutoring	3	2015	2	2016
EST Enhanced Capabilities	3	2016	2	2018
CFFT Enhanced Joint Fires Observer (JFO) Training and Certification Requirements	2	2017	3	2018
LVC-IA - Version 2 (Development, Integration, Demonstration and Testing)	1	2014	3	2016
LVC-IA - Version 3 (Development, Integration, Demonstration and Testing)	4	2016	2	2018
LVC-IA - Version 4 (Development, Integration, Demonstration and Testing)	3	2018	2	2020
Target Modernization Development	1	2016	4	2021
CSF2	1	2015	4	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604715A / Non-System Training Devices - Eng Dev			Project (Number/Name) 573 / Program Executive Office Simulation, Training Spt				
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
573: Program Executive Office Simulation, Training Spt	-	3.075	2.941	3.005	0.033	3.038	3.100	3.169	3.236	3.385	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

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A. Mission Description and Budget Item Justification

In support of Non-System Training Devices (NSTD), this project funds the US Army Program Executive Officer Simulation, Training and Instrumentation (PEO STRI) core operations supporting development of Army training devices and simulations by PEO STRI project managers (PM TRADE, PM ITTS, and PM ITE) FY 2017 funds labor in support of PEO operations.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Government Program Management to support PEO STRI.	3.075	2.941	3.005	0.033	3.038
Description: Government Program Management to support PEO STRI.					
FY 2015 Accomplishments: Government Program Management to support PEO STRI labor for project managers in PM TRADE, PM ITTS, and PM ITE.					
FY 2016 Plans: Government Program Management to support PEO STRI labor for project managers in PM TRADE, PM ITTS, and PM ITE.					
FY 2017 Base Plans: Government Program Management to support PEO STRI labor for project managers in PM TRADE, PM ITTS, and PM ITE.					
FY 2017 OCO Plans: Base-to-OCO buyback					
Accomplishments/Planned Programs Subtotals	3.075	2.941	3.005	0.033	3.038

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 573 / <i>Program Executive Office Simulation, Training Spt</i>

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 573 / <i>Program Executive Office Simulation, Training Spt</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Government Program Management	Government Program Management																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 573 / <i>Program Executive Office Simulation, Training Spt</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Government Program Management	1	2010	1	2022

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

A. Mission Description and Budget Item Justification

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

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

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

The Counter-Rocket, Artillery, Mortar (C-RAM) system-of-systems (SoS) is an evolutionary, non-developmental program that detects RAM launches; provides localized warning to the defended area, with sufficient time for personnel to take appropriate action; intercepts rounds in flight, thus preventing damage to ground forces or

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>
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facilities; and enhances response to and defeat of enemy forces. The C-RAM capability is comprised of a combination of multi-service fielded and non-developmental item (NDI) sensors, command and control (C2) equipment, warning systems, and a modified U.S. Navy intercept system (Land-based Phalanx Weapon System (LPWS)), with a commercial off-the-shelf (COTS) wireless local area network. The Forward Area Air Defense Command and Control (FAAD C2) system, also under the management of the C-RAM Program Directorate, has been enhanced to integrate the sensors, weapons, and warning systems to provide C2 for the C-RAM SoS. The C-RAM SoS capability is currently deployed at multiple sites in Afghanistan, Iraq, and Egypt, providing correlated air and ground pictures, linking units to the Army Mission Command and the Joint Defense Network, and using various forms of communications to provide situational awareness and exchange of timely and accurate information to synchronize and optimize automated Shape, Sense, Warn, Intercept, Respond, and Protect decisions.

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

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

Change Summary Explanation

FY16 funding increase of \$10.000 million is a Congressional add to increase the overall effectiveness of the C-RAM system-of-systems through the integration of sensor communications and legacy systems and the development and integration of C-RAM network security enhancements.

FY17 funding increase of \$26.201 million includes \$17.076 million of AEPE funds transitioned from APE 655457 DU4 to APE 0604741A, Proj. 126, to respond to an OSD directive. The remainder of the increase supports completion of an LPWS cruise missile capability study and modification development effort.

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

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

Note

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

A. Mission Description and Budget Item Justification

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

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

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

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

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

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

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

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

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

N/A

Remarks

Not applicable for this item.

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

N/A

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

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

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

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

Schedule Details

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

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

A. Mission Description and Budget Item Justification

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

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

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

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

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

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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
communications, data processing and vehicle/shelter/power generation/environmental system block upgrade program for fielded systems. FY 2015 Accomplishments: Continued evaluation of AMDPCS FoS configurations. Further assessed and tested power system technologies. Evaluated the Cooperative Air Surveillance System (CASS) as a technology insertion. Continued evaluation of emerging secure wireless, secure VTC and data processing technologies. Supported ADAM at NIE 15.1. Supported IBCS-ADAM participation at NIE 15.2. FY 2016 Plans: Continue evaluation of emerging technologies for future application in AMDPCS. Support IBCS-ADAM COE configurations at NIE 16.1 and 16.2. Continue CASS development. Continue to work closely with PM IAMD to identify the ADAM cell configuration to support IBCS Fire Control Network (FCN). FY 2017 Base Plans: Continue evaluations of emerging technologies. Continue support of IBCS-ADAM COE configurations and CASS evaluations at NIE 17.1 and 17.2.					
Title: Software System Certification Testing, Accreditation, and Approval of Authority-to-Operate (ATO) Description: Continue software system certification testing, accreditation, and approval of ATOs for the various software systems; continue pursuit of approval of Host Based Security System (HBSS) or other authorized G6 systems; continue Army and Joint integration and interoperability assessments. FY 2015 Accomplishments: Continued software system certification testing, accreditation, and approval of ATOs. Continued Army and Joint integration and interoperability assessments. FY 2016 Plans: Continue software systems certification testing, accreditation, and approval of ATOs as required by the DOD Risk Management Framework process. Continue Army and Joint integration and interoperability assessments. FY 2017 Base Plans: Continue software systems certification testing, accreditation, and approval of ATOs as required by the DOD Risk Management Framework process. Continue Army and Joint integration and interoperability assessments.	0.781	0.946	0.856	-	0.856
Accomplishments/Planned Programs Subtotals	13.018	15.757	15.561	-	15.561

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

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

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

Remarks

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

D. Acquisition Strategy

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

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

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

N/A

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

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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Various	26.491	1.640	Dec 2014	1.757	Dec 2015	1.727	Dec 2017	-		1.727	Continuing	Continuing	0
Subtotal			26.491	1.640		1.757		1.727		-		1.727	-	-	0.000

Remarks
Not Applicable

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

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

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

Remarks

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

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

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021																	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4														
AWA 22.1																																					22.1					
NIE 16.2																					NIE 16.2																					
NIE 17.2																									17.2																	
NIE 18.2																													18.2													
NIE 19.2																																	19.2									
NIE 20.2																																					20.2					
NIE 21.2																																									21.2	

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

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

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

A. Mission Description and Budget Item Justification

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

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

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

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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016			
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B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: C-RAM C2 Software Development and Enhancements		2.276	4.377	4.465	-	4.465
Description: Funds system-of-systems development and upgrades based on changes in threat, integration of emerging requirements from external PMs (Mission Command) and other Services/agencies, technology insertions (IP-based communications), and interoperability requirements (Joint interoperability, MIL Standard), and provides development and regression testing to ensure C-RAM C2 enhancements do not negatively impact the performance of the other C-RAM pillars. Includes Host Based Security System (HBSS) (Information Assurance compliance).						
FY 2015 Accomplishments: Completed development of Land-based Phalanx Weapon System (LPWS) enhanced battle management and improved cueing for C-RAM C2 control over LPWS (increases overall system effectiveness). Began Multi-Mission Launcher (MML) integration for FY16 demonstration.						
FY 2016 Plans: Complete integration into C-RAM architecture for demonstration of MML capability. Incorporate LPWS advanced battle management upgrades, support C-RAM C2 v5.5C Materiel Release, and initiate C-RAM convergence with Integrated Air and Missile Defense (IAMD).						
FY 2017 Base Plans: Conduct C-RAM Sensor Resource Management effort to optimize the use of C-RAM system-of-systems sensors to increase overall system effectiveness (includes C-RAM sensor high priority sector search, target cueing, and fire control support). Continue advanced battle management updates for LPWS. Incorporate sensor measurement report processing for improved target tracking, and continue C-RAM convergence with IAMD.						
Title: Dynamic Clearance of Unplanned Fires (DCUF)		-	4.435	6.701	-	6.701
Description: Provides an automated unplanned fires clearance capability, enabling the safe engagement of targets that would not be possible with current, manual procedures. Provides more rapid clearance of airspace and more effective engagements of unplanned targets.						
FY 2016 Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Funds DCUF participation within the Maneuver Fires Integration Experiment (MFI) for the purpose of demonstrating the effectiveness of the DCUF contribution to the Brigade Combat Team (BCT) warfight and informing the TRADOC requirements generation process. FY 2017 Base Plans: Complete DCUF software development and Materiel Release activities based on the DCUF requirements established during FY16.					
Title: C-RAM Capability Enhancements Description: Funds capability enhancements to increase the overall effectiveness of the C-RAM system-of-systems through the integration of sensor communications and legacy systems and the development and integration of C-RAM network security enhancements. Completes LPWS cruise missile capability study and modification development efforts. FY 2016 Plans: Integrate sensor communications and legacy systems. Develop and integrate C-RAM network security enhancements. FY 2017 Base Plans: Complete LPWS cruise missile capability study and modification development efforts.	-	10.000	9.529	-	9.529
Accomplishments/Planned Programs Subtotals	2.276	18.812	20.695	-	20.695

C. Other Program Funding Summary (\$ in Millions)											
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
• SSN H30503: <i>SSN H30503, Rocket, Artillery, Mortar (RAM) Warn (Parent is IFPC Family of Systems: BZ0501)</i>	27.652	42.458	25.410	4.270	29.680	11.380	3.472	-	-	0.000	114.642
• SSN H30504: <i>SSN H30504, C-RAM Enhancements (Parent is IFPC Family of Systems: BZ0501)</i>	40.644	18.221	23.017	-	23.017	-	-	-	-	0.000	81.882
• PE 0604741A, Proj 146: <i>PE 0604741A, Proj 146,</i>	13.018	15.757	15.561	-	15.561	15.914	16.108	14.294	8.325	Continuing	Continuing

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

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

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

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

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

D. Acquisition Strategy

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

E. Performance Metrics

N/A

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army							Date: February 2016				
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>				Project (Number/Name) 149 / <i>Counter-Rockets, Artillery & Mortar</i>				
	Prior Years	FY 2015	FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	225.753	2.276	18.812		20.695	-	20.695	-	-	-	

Remarks

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

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

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

Schedule Details

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

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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	4.394	23.364	17.887	-	17.887	18.505	16.731	13.491	12.192	Continuing	Continuing
361: <i>Intelligence Simulation Systems</i>	-	0.519	5.513	5.851	-	5.851	6.206	5.683	3.249	2.647	Continuing	Continuing
362: <i>Jnt Land Component Constructive Trng</i>	-	3.875	17.851	12.036	-	12.036	12.299	11.048	10.242	9.545	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element funds the development of constructive and wargame simulations used to realistically train commanders and their battle staffs on today's complex battlefield conditions. Project 361 funds the development of the Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT) that provides Warfighting Commanders at all echelons the ability to train with Intelligence, Surveillance, and Reconnaissance (ISR) products based on realistic ISR assets, people (including the maneuver commander, G-2, G-3, collection manager, analyst/operator) and processes. IEWTPT provides a realistic Intelligence target environment for Multi-Intelligence disciplines. Signals Intelligence (SIGINT), Imagery Intelligence (IMINT), Human Intelligence (HUMINT), Counterintelligence (CI) and Geospatial Intelligence (GEOINT) and must stimulate multiple systems such as: Prophet, Distributed Common Ground Station-Army (DCGS-A), Joint Surveillance Target Attack Radar System-Common Ground Station (JSTARS-CGS), Tactical Unmanned Aerial Vehicle (TUAV), Tactical Exploitation System/Distributed Tactical Exploitation System (TES/DTES). IEWTPT is the only Army Simulation System supporting ISR training from the Warfighter to the Military ISR Analyst/System Operator. Project 362, Joint Land Component Constructive Training Capability (JLCCTC) supports Army Title X training worldwide for Army Commanders and their staff at Mission Training Complexes (MTC), Training and Doctrine Command (TRADOC) facilities, and other customer locations. JLCCTC trains Commanders and their staff in Decisive Actions to include offensive, defensive, stability, and civil support operations. JLCCTC is a software modeling and simulation capability that contributes to Army Training Mission Area by providing appropriate levels of model and simulation resolution and fidelity to support unit collective and combined arms training. The JLCCTC provides accurate representations of tactically and operationally relevant land warfare operations executed in a contemporary Joint operating environment/context in support of Army Training and Readiness.

FY 2017 funding continues product improvements with annual releases of the Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT) and continues development, integration and test, verification and validation activities of the Joint Land Component Constructive Training Capability (JLCCTC).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.394	23.364	15.043	-	15.043
Current President's Budget	4.394	23.364	17.887	-	17.887
Total Adjustments	0.000	0.000	2.844	-	2.844
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	2.844	-	2.844

Change Summary Explanation

FY 2017 budget adjustment received to achieve requirements.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>				Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
361: <i>Intelligence Simulation Systems</i>	-	0.519	5.513	5.851	-	5.851	6.206	5.683	3.249	2.647	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Intelligence & Electronic Warfare Tactical Proficiency Trainer (IEWTPT), a Non-System Training Device (NSTD), supports training intelligence soldiers by stimulating Military Intelligence (MI) organic or surrogate equipment. It enables sustainment of critical individual and collective tasks/skills and is the core of the United States Army Intelligence Center of Excellence (USAICoEs) and MI holistic training strategy. This includes both stand-alone and network enabled training capabilities. IEWTPT provides a realistic Intelligence target environment for Multi-Intelligence disciplines: Signals Intelligence (SIGINT), Imagery Intelligence (IMINT), Human Intelligence (HUMINT), Counterintelligence (CI) and Geospatial Intelligence (GEOINT) and must stimulate multiple systems such as: Prophet, Distributed Common Ground System-Army (DCGS-A), Tactical Ground Station (TGS), Joint Surveillance Target Attack Radar System-Common Ground Station (JSTARS-CGS), Tactical Unmanned Aerial Vehicle (TUAV), Tactical Exploitation System/Distributed Tactical Exploitation System (TES/DTES). IEWTPT provides static and dynamic training events (interactive environment for individual, collective, and Live, Virtual, and Constructive integrated mission rehearsals/exercises) in an integrated, playback, and stand alone mode. IEWTPT is composed of four components: Constructive Simulation, Technical Control Cell (TCC), Target Signature Arrays (TSA)/Simulation Interface, and the HUMINT Control Cell (HCC). The IEWTPT TCC provides critical Intel enhancements to a constructive simulation to stimulate go-to-war or surrogate Intelligence, Surveillance and Reconnaissance (ISR) systems where system operators/analysts are able to exploit exercise intelligence data during training, just as they would in a "real world" operation.

FY 2017 funding supports U.S. Army Readiness with the development of interface capabilities for the Intelligence, Surveillance, Reconnaissance (ISR) platform programs/systems of records, and funds the development of web-based capabilities and task analysis for "Cloud" training requirements for both the Human Control Cell (HCC) and Technical Control Cell (TCC).

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

	FY 2015	FY 2016	FY 2017
Title: IEWTPT development, integration and support.	-	4.684	5.022
Description: Continue IEWTPT development, integration and support to the user community.			
FY 2016 Plans:			
Will support V6.0 release for the development of detailed simulation interface capabilities for Intelligence, Surveillance, Reconnaissance (ISR) platform programs/systems in the PEO Intelligence Electronic Warfare & Sensors portfolio to support homestation intelligence training. The main effort will be to develop capabilities in IEWTPT that support the training requirements for the DCGS-A program Processing, Exploitation and Dissemination (PED) mission. Will develop HUMINT-Counter-intelligence and Human Intelligence Automated Reporting and Collection Systems (CHARCS) and Machine Foreign Language Translation,			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>gesture recognition, retinal projection, and machine learning for integration into simulation /user environment. Will finalize 12B receiver PM Prophet SIGINT collection training capabilities for testing, certification and integration into software baseline. Will develop and integrate Aerial ISR training capabilities into program baseline for the Enhanced Medium Altitude Reconnaissance Surveillance System (EMARSS). Will develop initial web-based delivery capability for the Human Control Cell (HCC) and tasks analysis for cloud capabilities to support Technical Control Cell (TCC) distributed training requirement.</p> <p>FY 2017 Plans: Will support V7.0 release for the development of detailed simulation interface capabilities for Intelligence, Surveillance, Reconnaissance (ISR) platform programs/systems in the PEO Intelligence Electronic Warfare & Sensors portfolio to support homestation intelligence training. The main effort will be to expand all source intelligence development in IEWTPT that support the training requirements for the DCGS-A program and their Processing, Exploitation and Dissemination (PED) mission. Expand HUMINT web-based implementation and Counter-intelligence and Human Intelligence Automated Reporting and Collection Systems (CHARCS) and Machine Foreign Language Translation, biometrics related intelligence for integration into the simulation /user environment. Initiate new PM Prophet 12C receiver SIGINT collection training capabilities for testing, certification and integration into software baseline. Develop and integrate new Aerial ISR communications intelligence sensor emulation capabilities into program baseline for the Enhanced Medium Altitude Reconnaissance Surveillance System (EMARSS). Will complete web-based delivery capability for the Human Control Cell (HCC) and begin prototype development for cloud capabilities to support Technical Control Cell (TCC) distributed training requirements. Will execute technology development and integration supporting product deliverables needed to meet Ft. Huachuca and Army G2 training strategy requirements. Develop linkages to migrate to designated Core Data Center/Common Operating Environment/Computing Environments.</p>				
<p>Title: Government Program Management for the Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT).</p> <p>Description: Government Program Management for the IEWTPT program.</p> <p>FY 2015 Accomplishments: Provided program oversight, lifecycle management planning, and Combat Developer support. Enabled the configuration control and oversight of interfaces with complementary programs. Allowed continuous participation in planning, integration, and testing of IEWTPT components in a federation (family of systems) environment. Covered market surveys, technology insertion studies and reviews of deliverables needed to be ready for contract activities supporting the program.</p> <p>FY 2016 Plans: Will provide for the continuation of program oversight, lifecycle management planning, and Combat Developer support. Will enable the configuration control and oversight of interfaces with complementary programs. Will allow continuous participation in planning,</p>		0.519	0.829	0.829

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
integration, and testing of IEWTPT components in a federation (family of systems) environment. Will cover technology insertion studies and reviews of deliverables needed to be ready for contract award for the program.			
<i>FY 2017 Plans:</i> Will provide for the continuation of program oversight, lifecycle management planning, and Combat Developer support. Will enable the configuration control and oversight of interfaces with complementary programs. Will allow continuous participation in planning, integration, and testing of IEWTPT components in a federation (family of systems) environment. Will cover technology insertion studies and reviews of deliverables needed to be ready for contract award for the program.			
Accomplishments/Planned Programs Subtotals	0.519	5.513	5.851

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
• Appropriation NA0102: <i>Appropriation NA0102; Training Devices, Nonsystem, Intelligence</i>	3.115	3.797	5.377	-	5.377	6.868	6.867	5.622	3.447	Continuing	Continuing
• TBWG, OMA 121: <i>TBWG, OMA 121</i>	0.234	2.097	4.318	-	4.318	4.440	2.723	2.785	2.779	Continuing	Continuing

Remarks

D. Acquisition Strategy
A future IEWTPT system contract, will continue the development, testing, version 6.0 cyber security, production, integration, fielding, training, hardware/software updates, and exercise support of the IEWTPT system. Software version releases are planned, as well as engineering for product improvement maintenance releases.

E. Performance Metrics
N/A

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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 / 5				PE 0604742A / Constructive Simulation Systems Development				361 / Intelligence Simulation Systems							
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Program Management	Various	PEO STRI : Orlando, FL	8.012	0.519		0.829		0.829		-		0.829	Continuing	Continuing	Continuing
Subtotal			8.012	0.519		0.829		0.829		-		0.829	-	-	-
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
TCC Technology	C/CPFF	TBD : TBD	6.600	-		1.300	Jun 2016	5.022	Jan 2017	-		5.022	Continuing	Continuing	Continuing
Eng & Manufacturing Dev.	C/CPFF	General Dynamics C4 Systems : Orlando, FL	55.386	-		3.384	Jun 2016	-		-		-	Continuing	Continuing	Continuing
Subtotal			61.986	-		4.684		5.022		-		5.022	-	-	-
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 & Technical Support	TBD	TBD : TBD	2.743	-		-		-		-		-	0	2.743	2.743
Subtotal			2.743	-		-		-		-		-	0.000	2.743	2.743
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
TEMP Support	Various	Multiple : Various	0.319	-		-		-		-		-	0	0.319	0.319
Test Engineering Support	Various	Multiple : Various	1.313	-		-		-		-		-	0	1.313	1.313
Subtotal			1.632	-		-		-		-		-	0.000	1.632	1.632

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>				Project (Number/Name) 361 / <i>Intelligence Simulation Systems</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	74.373	0.519	5.513		5.851	-	5.851	-	-	-	

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TCC/HCC Development/Integration/Test																												
(1) Version 5.0 Security Accred.																												
(2) Version 5.0 Release																												
(3) Version 6.0 Security Accred.																												
(4) Version 6.0 Release																												
(5) Version 7.0 Security Accred.																												
(6) Version 7.0 Release																												
(7) Version 8.0 Security Accred.																												
(8) Version 8.0 Release																												
(9) Version 9.0 Security Accred.																												
(10) Version 9.0 Release																												
(11) Version 10.0 Security Accred.																												
(12) Version 10.0 Release																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TCC/HCC Development/Integration/Test	4	2007	4	2021
Version 5.0 Security Accred.	3	2015	3	2015
Version 5.0 Release	4	2015	4	2015
Version 6.0 Security Accred.	3	2016	3	2016
Version 6.0 Release	4	2016	4	2016
Version 7.0 Security Accred.	2	2017	2	2018
Version 7.0 Release	3	2017	3	2018
Version 8.0 Security Accred.	3	2018	3	2018
Version 8.0 Release	4	2018	4	2018
Version 9.0 Security Accred.	3	2019	3	2019
Version 9.0 Release	4	2019	4	2019
Version 10.0 Security Accred.	3	2020	3	2020
Version 10.0 Release	4	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>				Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</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
362: <i>Jnt Land Component Constructive Trng</i>	-	3.875	17.851	12.036	-	12.036	12.299	11.048	10.242	9.545	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Land Component Constructive Training Capability (JLCCTC) supports Army Title X training worldwide for Army Commanders and their staff at Mission Training Complexes (MTCs), Training and Doctrine Command (TRADOC) facilities, and other customer locations. JLCCTC trains Commanders and their staff in Decisive Actions to include offensive, defensive, stability, and civil support operations. JLCCTC is a software modeling and simulation capability that contributes to Army Training Mission Area by providing appropriate levels of modeling and simulation resolution and fidelity to support unit collective and combined arms training. JLCCTC provides a composable federation configurable to any combination of models and simulations, as required by training exercise intent/design. JLCCTC provides accurate representations of tactically and operationally relevant land warfare operations executed in a contemporary Joint operating environment/context and in support of Army Training and Readiness.

FY17 funding supports development, integration and test, and verification and validation activities of JLCCTC Version 8.1, supporting the Constructive Simulation Strategy implementation activities for a Constructive Standalone Capability to train Commanders and their Staff. In addition, JLCCTC will support the integration activities with Live, Virtual, Constructive-Integrating Architecture (LVC-IA) as we head towards a Single Federation solution.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Improve JLCCTC software models to comply with emerging Common Operating Environment (COE)/Computing Environment (CE) requirements.</p> <p>Description: Improve JLCCTC software models to comply with emerging COE/CE requirements.</p> <p>FY 2016 Plans: Will continue improvements of JLCCTC software models for COE compliance.</p> <p>FY 2017 Plans: Will continue improvements of JLCCTC software models for COE compliance.</p>	-	1.900	0.900
<p>Title: Improve JLCCTC software models to meet emerging Mission Command (MC) stimulation and Information Assurance (IA) requirements.</p> <p>Description: Improve JLCCTC software models to meet emerging Mission Command (MC) stimulation and Information Assurance (IA) requirements.</p>	-	3.551	1.559

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
FY 2016 Plans: Will continue improvements of JLCCTC software models to support MC and IA requirements.				
FY 2017 Plans: Will continue improvements of JLCCTC software models to support MC and IA requirements.				
Title: Improve JLCCTC software models to meet emerging warfighter requirements for Training Relevance of Commander and staff training (Battalion thru Theater Level). Description: Improve JLCCTC software models to meet emerging warfighter requirements for Training Relevance of Commander and staff training (Battalion thru Theater Level). FY 2016 Plans: Will continue enhancing/improving JLCCTC software models to support Commander and staff training. FY 2017 Plans: Will continue enhancing/improving JLCCTC software models to support Commander and staff training.		-	2.050	2.130
Title: Technical Engineering Services/Support for JLCCTC Program Description: Technical Engineering Services/Support for JLCCTC Program FY 2016 Plans: Will continue Engineering and Support for the JLCCTC Program.		-	1.300	-
Title: Engineering and Manufacturing Development (EMD) phase contract activity for Constructive Strategy Implementation Description: Constructive Strategy Implementation FY 2016 Plans: Constructive Strategy Implementation FY 2017 Plans: Engineering and Manufacturing Development (EMD) phase contract activities to complete Phase I (Standalone Capability) and to support Phase II (LVC-IA Integration) of the Constructive Strategy Implementation		-	3.650	2.165
Title: Government System Test and Evaluation for the Joint Land Component Constructive Training Capability (JLCCTC) Program. Description: Government System Test and Evaluation for the Joint Land Component Constructive Training Capability (JLCCTC).		-	1.200	1.317

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>FY 2016 Plans: Will develop and evaluate system performance and conduct system test events (Integration and Testing, Value Engineering, Operational Readiness Event).</p> <p>FY 2017 Plans: Will develop and evaluate system performance and conduct system test events (Integration and Testing, Value Engineering, Operational Readiness Event).</p>			
<p>Title: Government Program Management for the Joint Land Component Constructive Training Capability (JLCCTC) Program. Description: Supports Government program management, engineering, logistics, contracting support and continues operational evaluation support for JLCCTC.</p> <p>FY 2015 Accomplishments: Supported Government program management, engineering, logistics, contracting support and operational evaluation support for JLCCTC.</p> <p>FY 2016 Plans: Supports Government program management, engineering, logistics, contracting support and continues operational evaluation support for JLCCTC.</p> <p>FY 2017 Plans: Supports Government program management, engineering, logistics, contracting support and continues operational evaluation support for JLCCTC.</p>	3.875	4.200	3.965
Accomplishments/Planned Programs Subtotals	3.875	17.851	12.036

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>
• NSTD Command & Control: OPA, NA0103	26.137	40.172	41.959	-	41.959	45.986	46.441	46.941	47.739	Continuing	Continuing
• TBWG: OMA, 121	7.284	10.400	10.668	-	10.668	10.900	11.135	11.297	12.753	Continuing	Continuing

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>

D. Acquisition Strategy

JLCCTC Indefinite Delivery/Indefinite Quantity (ID/IQ) contract was awarded to Lockheed Martin on 27 March 2013. This contract has a period of performance of five years with a total ceiling amount not to exceed \$146M.

Activities under this contract include System Engineering, Software Development, Integration & Test, support to validation events and PDSS/P3I support.

JLCCTC produces a major software release/version every 12 to 24 months, which is then distributed/fielded to over 40 MTCs worldwide in support of Army Command and Staff Training.

E. Performance Metrics

N/A

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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 / 5				PE 0604742A / Constructive Simulation Systems Development				362 / Jnt Land Component Constructive Trng							
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	Various	PEO STRI : Orlando, FL	51.188	3.875		4.200		3.965		-		3.965	Continuing	Continuing	Continuing
Subtotal			51.188	3.875		4.200		3.965		-		3.965	-	-	-
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
Constructive Strategy Implementation	C/CPFF	Various : Various	0.000	-		3.650	Mar 2016	2.165	Jan 2017	-		2.165	Continuing	Continuing	Continuing
Integration of JLCCTC	SS/FFP	Various : Various	56.851	-		-		-		-		-	Continuing	Continuing	Continuing
Improve JLCCTC to meet emerging warfighter requirements.	C/CPFF	Lockheed Martin : Orlando, FL	0.000	-		2.050	Jan 2016	2.130	Jan 2017	-		2.130	Continuing	Continuing	Continuing
MC Systems Stimulation and Information Assurance	C/CPFF	Lockheed Martin : Orlando, FL	0.000	-		3.551	Mar 2016	1.559	Mar 2017	-		1.559	Continuing	Continuing	Continuing
COE Compliance	C/CPFF	Lockheed Martin : Orlando, FL	0.000	-		1.900	Mar 2016	0.900	Mar 2017	-		0.900	Continuing	Continuing	Continuing
MRF-W Development of Army Training System	C/CPFF	Various : Various	10.200	-		-		-		-		-	Continuing	Continuing	Continuing
Development of logistics model	Various	Tapestry : San Diego, CA	20.615	-		-		-		-		-	0	20.615	20.615
WARSIM Development of Army Training System	SS/CPFF	Lockheed Martin Info Systems : Orlando, FL	122.061	-		-		-		-		-	0	122.061	122.570
Subtotal			209.727	-		11.151		6.754		-		6.754	-	-	-

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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 / 5				PE 0604742A / Constructive Simulation Systems Development					362 / Jnt Land Component Constructive Trng						
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 & Tech Spt (SE, CM, Lab, Documentation)	Various	Various : Various	10.112	-		1.300	Jan 2016	-		-		-	Continuing	Continuing	Continuing
Subtotal			10.112	-		1.300		-		-		-	-	-	-
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
System T&E (I&T, VE, ORE)	Various	Various : Various	19.648	-		1.200	May 2016	1.317	May 2017	-		1.317	Continuing	Continuing	Continuing
Verification, Validation and Accreditation	Various	Various : Various	13.244	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			32.892	-		1.200		1.317		-		1.317	-	-	-
Project Cost Totals			303.919	3.875		17.851		12.036		-		12.036	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JLCCTC V5.6 / V7.1 / V8.0 System Engr / Develop / I&T / Validation	JLCCTC V5.6 / V7.1 / V8.0																											
(1) JLCCTC Version 5.6 / Version 8.0 Release	JLCCTC Version 5.6 / Version 8.0 Release																											
JLCCTC Version 8.1 System Engr / Develop / I&T / Validation																												
(2) JLCCTC V8.1 Release																												
JLCCTC Version 9.0 System Engr / Develop / I&T / Validation																												
(3) JLCCTC Version 9.0 Release																												
JLCCTC Version 10.0 System Engr / Develop / I&T / Validation																												
(4) JLCCTC Version 10.0 Release																												
JLCCTC Integration into LVC-IA	LVC-IA Integration																											
JLCCTC Constructive Strategy Implementation (Single Federation)	JLCCTC Constructive Strategy Implementation (Single Federation)																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JLCCTC V5.6 / V7.1 / V8.0 System Engr / Develop / I&T / Validation	4	2014	4	2016
JLCCTC Version 5.6 / Version 8.0 Release	4	2016	4	2016
JLCCTC Version 8.1 System Engr / Develop / I&T / Validation	4	2016	4	2017
JLCCTC V8.1 Release	4	2017	4	2017
JLCCTC Version 9.0 System Engr / Develop / I&T / Validation	1	2018	4	2019
JLCCTC Version 9.0 Release	4	2019	4	2019
JLCCTC Version10.0 System Engr / Develop / I&T / Validation	4	2019	4	2021
JLCCTC Version 10.0 Release	4	2021	4	2021
JLCCTC Integration into LVC-IA	1	2014	4	2021
JLCCTC Constructive Strategy Implementation (Single Federation)	2	2015	4	2019

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	10.685	8.960	8.813	-	8.813	10.362	11.572	9.790	9.974	Continuing	Continuing
L59: <i>Diagnost/Expert Sys</i>	-	6.830	4.699	6.034	-	6.034	6.440	6.720	5.792	5.948	Continuing	Continuing
L65: <i>Test Equipment Development</i>	-	3.855	4.261	2.779	-	2.779	3.922	4.852	3.998	4.026	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element (PE) provides for development and testing of general-purpose test equipment, state-of-the-art diagnostics and prognostics technologies, and software and systems to support the increasingly complex electronic components of the Army's new and upgraded weapon systems. It focuses on implementation of commercial test and diagnostic technologies across multiple weapon platforms to minimize the cost of troubleshooting and maintenance of Army equipment in the field.

Modular, reconfigurable automatic and semi-automatic systems are being developed under this program to satisfy weapon system test and diagnostics requirements. The Next Generation Automatic Test System (NGATS), currently under development, provides state-of-the-art test and diagnostic capabilities to support current and future weapon systems. It is the platform for transitioning Agile Rapid Global Combat Support System (ARGCS) technologies into the Army weapon system support structure, and it will replace several aging automatic test systems (ATS) that are becoming prohibitively expensive to operate and maintain.

This PE also provides for continued development and improvement of general-purpose test equipment and calibration standards with emphasis on the incorporation of digital electronics and tailoring of configurations to improve deployability, mobility and survivability of the support equipment. It includes development, demonstration and testing of calibration standards and techniques to support new Army test equipment requirements. It also includes feasibility studies, market research, inventory analyses, bid sample testing and prototyping to support acquisition of calibration systems and general-purpose test and diagnostics equipment.

FY 2017 Base funding for this program continues development of the Army's standard NGATS which will improve deployability and mobility of test and diagnostic equipment. The NGATS provides state-of-the-art test and diagnostic capabilities and a means for reducing the Army's test equipment operating and support costs and the costs for supporting a number of the Army's vital warfighting systems. The FY 2017 funding will develop or significantly modify test equipment to satisfy modular force and homeland security support requirements that cannot be accommodated with test equipment currently available in the commercial marketplace such as radio frequency (RF) and electro-optic (EO) testing capability. It will also provide for technology enhancements to the Army's standard at-system tester to meet test and diagnostic requirements of the supported weapon systems, develop/redesign test program sets and hardware for support of legacy and emerging weapon systems, develop a network centric software framework for NGATS, and develop and test general-purpose test equipment and calibration standards to meet Army weapon system support requirements.

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	11.079	8.960	11.014	-	11.014
Current President's Budget	10.685	8.960	8.813	-	8.813
Total Adjustments	-0.394	0.000	-2.201	-	-2.201
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.394	-			
• Adjustments to Budget Years	-	-	-2.201	-	-2.201

Change Summary Explanation

FY 2017, \$2.201 million reduction to support higher priority projects

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>				Project (Number/Name) L59 / <i>Diagnost/Expert Sys</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
L59: <i>Diagnost/Expert Sys</i>	-	6.830	4.699	6.034	-	6.034	6.440	6.720	5.792	5.948	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds development of and system enhancements for the Next Generation Automatic Test System (NGATS) and the Maintenance Support Device (MSD). The NGATS is a general-purpose automatic test system (ATS) that provides test and diagnostic capabilities required to support current and future weapons and combat support systems and will facilitate retirement of aging and obsolete test equipment that is imposing increasing logistics and operations and support cost burdens. It is the platform for transitioning Agile Rapid Global Combat Support System (ARGCS) Advanced Concept Technology Demonstration (ACTD) technologies into the Army weapon system support structure. The ARGCS ACTD initiative was sponsored by the Department of Defense, and all Services are expected to transition demonstrated technologies into their ATS programs. The MSD is the Army's standard at-system tester and requires continuing upgrades to support technology advancements in the supported weapon systems. This project funds development projects to incorporate the most current relevant technology into the next generation MSD, supports capability enhancement of a wireless at-platform test set (WATS) connectivity, develops capabilities to minimize or eliminate Army dependency on expensive proprietary software to support tactical vehicles, integrates MSD into the Brigade Combat Team information structure as the at-platform data collection device for the Army's condition-based maintenance plus (CBM+) initiative and maintains compatibility with emerging aviation platform hardware bus technology and aviation notebook software interface requirements. This project also provides for continuing efforts in the development and testing of common procedures utilizing existing test program sets and software applications; and market surveys of commercially available test equipment, methods and procedures to determine applicability to Army requirements. The test and diagnostic systems and procedures developed under this project are essential for ensuring the operational readiness, accuracy and effectiveness of the Army's warfighting systems.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: NGATS Radio Frequency (RF) Test Capability	1.000	0.500	1.000	-	1.000
Description: Develop and integrate NGATS RF test capability					
FY 2015 Accomplishments: Completed development of stand-alone commercial off-the-shelf RF test asset for NGATS.					
FY 2016 Plans: Initiate RF Interface Unit development, prototyping and integration of the entire RF test asset into the NGATS.					
FY 2017 Base Plans: Continue prototyping and integration of RF subsystem into the NGATS.					
Title: NGATS Increment 2	1.100	0.885	0.500	-	0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L59 / Diagnost/Expert Sys

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Develop and test hardware and software for NGATS Increment 2 support capability</p> <p>FY 2015 Accomplishments: Continued development and testing of hardware and software for support of Increment 2 systems (Avenger, Multiple Launch Rocket System, TOW Missile System, Paladin and Common Remotely Operated Weapons Station (CROWS II)).</p> <p>FY 2016 Plans: Continue development and testing of hardware and software for support of Increment 2 systems (Avenger, Multiple Launch Rocket System, TOW Missile System, Paladin and CROWS II).</p> <p>FY 2017 Base Plans: Continue development and testing of hardware and software for support of additional Increment 2 systems (Counter RCIED (Radio-Controlled Improvised Explosive Device) Electronic Warfare (CREW) Duke, Precision Fires, Armored Multi-Purpose Vehicle (AMPV), Stryker Mobile Gun System (MGS), and Joint Assault Bridge (JAB)).</p>					
<p>Title: NGATS Electro-Optics (EO) Subsystem</p> <p>Description: Develop and test hardware and software for NGATS electro-optics (EO) subsystem (to include the capability to support new ground and aerial sensors for unmanned air and ground vehicles)</p> <p>FY 2015 Accomplishments: Completed development, prototyping and testing of stand-alone EO subsystem for NGATS.</p> <p>FY 2016 Plans: Initiate hardware and software integration/testing of the EO subsystem into the NGATS for use by test program set (TPS) developers and depots.</p> <p>FY 2017 Base Plans: Continue integration/testing of EO subsystem into NGATS for use by Modified Table of Organization and Equipment (MTOE) locations.</p>	0.500	0.200	0.500	-	0.500
<p>Title: Developmental and Operational Follow-on Testing of NGATS Increment 1 Capability (Provides Abrams/Bradley/Stryker Support Capability)</p> <p>Description: Complete developmental and operational follow-on testing activities</p>	-	1.000	0.800	-	0.800

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L59 / <i>Diagnost/Expert Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>FY 2016 Plans: Initiate developmental and operational follow-on testing activities to include Reliability Testing, Logistics Demonstration/TM Verification and Transportability Testing in support of a production decision. Includes also the assessment/verification of the development of remaining, needed capability of existing systems to operate with all existing test program sets used with legacy automatic test equipment.</p> <p>FY 2017 Base Plans: Continue and complete remaining required testing, assessment and verification events.</p>					
<p>Title: Additional Software Capabilities for Use with NGATS</p> <p>Description: Develop software capabilities to incorporate common logistics operating environment (CLOE)/ netcentric and embedded diagnostics data collection and analysis for closed loop diagnostic maintenance in support of condition-based maintenance</p> <p>FY 2015 Accomplishments: Continued development of a network centric software framework to facilitate message communication.</p> <p>FY 2016 Plans: Continue development of a network centric software framework to facilitate configuration status accounting.</p> <p>FY 2017 Base Plans: Continue development of a network centric software framework to facilitate data exchange with other components of the global information grid (GIG).</p>	0.250	0.250	0.270	-	0.270
<p>Title: NGATS Performance Enhancement</p> <p>Description: NGATS core instrument/software modifications to increase NGATS performance</p> <p>FY 2015 Accomplishments: Initiated development of NGATS core instrument/software modifications to increase NGATS performance to include redesign of the Automatic Test Equipment (ATE) interface perimeter engagement system.</p> <p>FY 2016 Plans: Continue development of NGATS core instrument/software modifications to increase NGATS performance to include redesign of the ATE interface perimeter engagement system.</p> <p>FY 2017 Base Plans:</p>	0.217	0.300	0.730	-	0.730

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L59 / <i>Diagnost/Expert Sys</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete prototype and evaluation of the redesigned perimeter engagement system and initiate development of increased processor speed with NGATS controller to add additional capabilities.					
Title: Smart TPSs/Enhanced Self Test Description: Develop enhanced smart TPS hardware and software and enhanced self test FY 2015 Accomplishments: Initiated development of enhanced self test strategy for NGATS.	0.508	-	-	-	-
Title: Abrams/Bradley TPS Design Description: Design, test and evaluate Abrams/Bradley TPSs to utilize modern core NGATS instrumentation vice continuing to execute on single-purpose instrumentation specifically developed to emulate Abrams/Bradley legacy test equipment (i.e., Direct Support Electrical System Test Set (DSESTS)) FY 2015 Accomplishments: Continued design, test and evaluation of Abrams/Bradley TPSs to include analysis of Abrams/Bradley TPSs against NGATS resources and incorporation of health monitoring into the instrumentation required for testing Abrams/Bradley line replaceable units (LRU). FY 2017 Base Plans: Redesign Abrams/Bradley TPSs to execute on core commercial NGATS instrumentation versus continuing to execute on single purpose instrumentation specifically developed for testing Abrams/Bradley LRUs.	0.500	-	0.750	-	0.750
Title: Electro-Optic (EO) TPS Development Description: Develop Increment 2 and 3 EO TPSs for use with NGATS EO asset to utilize (Army standard) core NGATS instrumentation vice legacy automatic test systems such as DSESTS and Base Shop Test Facility (BSTF)(V)5 FY 2016 Plans: Initiate development of re-hosted EO TPSs to include 4 each Abrams/Bradley. FY 2017 Base Plans: Continue development of re-hosted EO TPSs to include 2 each CROWS and 2 each Stryker Remote Weapons Station.	-	0.200	0.750	-	0.750
Title: NGATS System Level Calibration/Verification Program	1.200	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L59 / <i>Diagnost/Expert Sys</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Develop and test the NGATS system level calibration/verification program					
FY 2015 Accomplishments: Continued development and testing of the NGATS system level calibration/verification program.					
Title: NGATS Logistics Support Products					
Description: Develop NGATS initial logistics support products (including provisioning, technical manuals and calibration)					
FY 2015 Accomplishments: Continued development of initial logistics support products for the core NGATS.					
FY 2016 Plans: Initiate development of initial logistics support products for the NGATS EO and RF subsystems.					
FY 2017 Base Plans: Continue development of NGATS EO and RF logistics products.					
	0.750	0.500	0.500	-	0.500
Title: MSD Technology Enhancements					
Description: Incorporate current relevant technology into the next-generation MSD and support capability enhancement of the wireless at-platform test set (WATS). Develop capabilities to minimize or eliminate Army dependency on proprietary software to support tactical vehicles, integrate MSD into the Brigade Combat Team information structure as the at-platform data collection device for the Army's CBM+ initiative, and maintain compatibility with emerging aviation platform hardware bus technology and aviation notebook software interface requirements.					
FY 2015 Accomplishments: Initiated development of the architectural software shell for WATS diagnostic software to accept modular platform testing software insertions. Continued enhancement of WATS radio technology and common electronics package augmentation to provide at-platform wireless test support for Army vehicle and weapon systems platforms. Devised methods to minimize or eliminate Army dependency on proprietary software to support current and future tactical vehicles.					
FY 2016 Plans:					
	0.805	0.864	0.234	-	0.234

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L59 / <i>Diagnost/Expert Sys</i>
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete enhancement of WATS radio technology, the common electronics package augmentation and WATS architectural software shell to provide at-platform wireless test support for Army vehicle and weapon systems platforms. Continue to devise methods to minimize or eliminate Army dependency on proprietary software to support current and future tactical vehicles.					
<i>FY 2017 Base Plans:</i> Incorporate enhanced WATS radio technology, the common electronics package augmentation and new WATS software architecture into WATS prototype, conduct developmental testing, and develop draft Technical Data Package for at-platform wireless testing of Army vehicle and weapon systems platforms. Continue to investigate new methods to minimize or eliminate Army dependency on proprietary software to support current and future tactical vehicles.					
Accomplishments/Planned Programs Subtotals	6.830	4.699	6.034	-	6.034

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>
• ∴ OPA3, SSN MB4000, Integrated Family of Test Equipment (IFTE)	37.482	34.487	29.781	-	29.781	26.752	26.745	27.502	34.446	Continuing	Continuing

Remarks

None.

D. Acquisition Strategy

This developmental project consists of organic and contractual actions. When the necessary expertise and capability are available within the Department of Defense, services required for the individual development projects are ordered from the government source; otherwise, commercial contracts are used. Equipment required for developmental projects is obtained by contract from the commercial supplier. Developmental efforts for the Next Generation Automatic Test System (NGATS) are being completed under a number of contracts awarded to the prime contractor for the Integrated Family of Test Equipment off-platform testers and other contractors with automatic test equipment (ATE) and test program set development capabilities. NGATS is following an evolutionary acquisition strategy using incremental development to satisfy Army depot and field testing requirements for new and existing systems. It will replace existing legacy Army ATE (i.e., Base Shop Test Facility (BSTF)(V)3, BSTF(V)5, and Direct Support Electrical System Test Set) as well as Army depot system-specific ATE.

E. Performance Metrics

N/A

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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 / 5				PE 0604746A / Automatic Test Equipment Development					L59 / Diagnost/Expert Sys						
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management	Various	Various : Various	0.000	-		0.150	Jan 2016	0.200	Nov 2016	-		0.200	Continuing	Continuing	Continuing
Subtotal			0.000	-		0.150		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
Software Development/ Verification/Validation	Various	Various, : Various	33.703	2.112	Aug 2015	1.101	May 2016	1.435	Feb 2017	-		1.435	Continuing	Continuing	Continuing
Hardware/Support Items Development	Various	Various, : Various	61.252	3.668	Aug 2015	1.591	May 2016	2.899	Feb 2017	-		2.899	Continuing	Continuing	Continuing
Subtotal			94.955	5.780		2.692		4.334		-		4.334	-	-	-
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 Support	Various	Various, : Various	48.528	0.850	Mar 2015	0.657	May 2016	0.450	Dec 2016	-		0.450	Continuing	Continuing	Continuing
Other Direct	Various	Various, : Various	3.790	0.200	Mar 2015	0.200	May 2016	0.200	Dec 2016	-		0.200	Continuing	Continuing	Continuing
Subtotal			52.318	1.050		0.857		0.650		-		0.650	-	-	-
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/ Operational Testing	Various	Various, : Various	1.046	-		1.000	Jul 2016	0.850	Nov 2016	-		0.850	Continuing	Continuing	Continuing
Subtotal			1.046	-		1.000		0.850		-		0.850	-	-	-
Remarks															
Test program set (TPS) and contractor developmental test and evaluation are included in the product development cost.															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army							Date: February 2016				
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development				Project (Number/Name) L59 / Diagnost/Expert Sys				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	148.319	6.830	4.699	6.034	-	6.034	-	-	-		

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L59 / Diagnost/Expert Sys
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Full Materiel Release									FMR																			
(2) First Unit Equipped													2 FUE															
(3) Full Rate Production Decision Review													3 FRP-DR															
NGATS Testing (Increment 1 Follow-On DT/OT)																												
NGATS Full-Rate Production (Increment 1)																												
NGATS System Development and Demonstration (SDD) (Increment 2)																												
NGATS Testing (Increment 2)																												
(4) FOT&E Completed (DT)									4																			
NGATS Development (EO Subsystem)																												
NGATS Development (RF Subsystem)																												
NGATS EO Integration																												
NGATS RF Integration																												
NGATS Testing (EO & RF Subsystems)																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L59 / Diagnost/Expert Sys
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NGATS Product Improvements - Netcentric																												
New Systems Test Capability																												
MSD Technology Enhancements																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L59 / Diagnost/Expert Sys

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Full Materiel Release	3	2017	3	2017
First Unit Equipped	4	2017	4	2017
Full Rate Production Decision Review	3	2017	3	2017
NGATS Testing (Increment 1 Follow-On DT/OT)	1	2016	3	2016
NGATS Full-Rate Production (Increment 1)	3	2017	4	2021
NGATS System Development and Demonstration (SDD) (Increment 2)	4	2009	4	2017
NGATS Testing (Increment 2)	4	2010	4	2017
FOT&E Completed (DT)	2	2017	2	2017
NGATS Development (EO Subsystem)	4	2010	4	2015
NGATS Development (RF Subsystem)	1	2015	4	2017
NGATS EO Integration	3	2016	4	2018
NGATS RF Integration	3	2017	4	2018
NGATS Testing (EO & RF Subsystems)	4	2012	4	2018
NGATS Product Improvements - Netcentric	4	2011	4	2021
New Systems Test Capability	2	2011	4	2021
MSD Technology Enhancements	2	2015	4	2021

Note

Test program set (TPS) compatibility testing runs continually throughout the product development process

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>				Project (Number/Name) L65 / <i>Test Equipment 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
L65: <i>Test Equipment Development</i>	-	3.855	4.261	2.779	-	2.779	3.922	4.852	3.998	4.026	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports development and demonstration of state-of-the-art calibration standards and techniques, and upgrades/improvements to existing Army calibration systems. It provides feasibility studies, market research, inventory analyses, bid sample testing, and prototyping to support calibration systems and general-purpose test, measurement and diagnostic equipment (TMDE) acquisitions. Primary efforts under this project include development of calibration software, calibration capability for chemical and biological agent detection systems, and improvement of test and measurement equipment performance envelopes. This project provides for product improvements and development/evaluation of advanced technologies to increase reliability of calibration systems and general-purpose TMDE. The product improvements eliminate gaps in existing organic capabilities and ensure operational readiness, accuracy, effectiveness, and safety of Army weapons and combat support systems. These improvements employ reconfigurable open-electronics architecture and computer-based instrumentation where feasible and focus on reduced test equipment footprint to improve deployability and mobility in areas of operation.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Calibration Sets (CALSETS) Software Environment and Calibration	1.004	1.368	0.785	-	0.785
Description: Develop and test an Army automated calibration environment and develop calibration procedures. Test efforts in support of DoD Information Assurance Certification and Accreditation Process (DIACAP).					
FY 2015 Accomplishments: Developed and evaluated calibration procedures. Developed, tested and evaluated enhanced calibration software environment. Developed and tested DIACAP for calibration instrument controllers.					
FY 2016 Plans: Continue development and evaluation of automated calibration procedures. Evaluate feasibility of incorporating commercial procedures and calibration system performance monitoring within the software environment. Test and evaluate prototype calibration procedure development engine.					
FY 2017 Base Plans: Initiate addition of ISO 17250 accreditation reporting to calibration software environment and calibration procedures. Develop and evaluate automated calibration procedures.					
Title: Physical Instruments	1.258	1.236	0.833	-	0.833

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L65 / <i>Test Equipment Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Research, develop, and test physical parameter calibration instrumentation to support areas such as chemical/biological agent detection systems, night vision testers, small arms gages, pneumatic pressure systems, temperature, etc.</p> <p>FY 2015 Accomplishments: Completed development and test of hydrocarbon flow calibration and test standards. Continued development, automation, and test of prototype small arms gage calibration standards. Initiated development and test of chemical agent detectors and protective equipment testers and calibrators. Initiated development of pneumatic standards to support avionic systems.</p> <p>FY 2016 Plans: Continue development and test of prototype small arms gage calibration standards. Continue development and test of calibration systems for biological agent detectors and protective equipment. Continue development of pneumatic standards to support avionic systems. Perform market research, evaluate commercial equipment, and complete specifications for acquisition.</p> <p>FY 2017 Base Plans: Continue development and testing of prototype small arms gage calibration standards. Continue development and test of calibration systems for biological agent detectors and protective equipment. Complete tests of pneumatic standards to support avionic systems. Perform market research, evaluate commercial equipment, and complete specifications for acquisition.</p>					
<p>Title: Electrical Instruments</p> <p>Description: Research, develop, and test electrical calibration instrumentation to support areas such as deployable recertification set, intrinsic electrical standards, and electrical transport standards.</p> <p>FY 2015 Accomplishments: Performed market research, evaluated commercial equipment and developed performance specifications for acquisition. Completed testing of DC intrinsic voltage system and continued testing of AC intrinsic voltage system. Completed testing of electronic transport standards.</p> <p>FY 2016 Plans:</p>	1.208	1.272	0.776	-	0.776

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L65 / <i>Test Equipment Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Perform market research, evaluate commercial equipment and develop performance specifications for acquisition. Complete development and test of high voltage multiplier for AC intrinsic voltage system. Develop and test prototype microwave reference standard. FY 2017 Base Plans: Perform market research, evaluate commercial equipment and develop performance specifications for acquisition. Continue development of prototype microwave reference standards. Research improvements in reliability, transportability and supportability of DC intrinsic voltage standards.					
Title: Test Equipment Modernization (TEMOD) Description: Perform market research, bid sample testing, and evaluation of commercial general-purpose electronic test equipment (GPETE) and develop performance specifications for TEMOD acquisitions. FY 2015 Accomplishments: Performed market research and evaluation of commercial GPETE and developed performance specifications for future acquisitions. Conducted bid sample testing to support acquisition program. FY 2016 Plans: Perform market research and evaluation of commercial GPETE and develop performance specifications for equipment to support acquisition program. Conduct bid sample testing to support acquisition program. FY 2017 Base Plans: Perform market research and evaluation of commercial GPETE and develop performance specifications for improved capability spectrum analysis test equipment. Conduct bid sample testing to support acquisition program.	0.385	0.385	0.385	-	0.385
Accomplishments/Planned Programs Subtotals	3.855	4.261	2.779	-	2.779

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
• SSN N10000: <i>Calibration Sets Equipment</i>	5.726	4.650	4.963	-	4.963	5.564	8.515	4.459	3.964	Continuing	Continuing
• SSN N11000: <i>Test Equipment Modernization</i>	11.711	11.083	6.342	1.140	7.482	9.880	10.769	9.914	9.916	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L65 / <i>Test Equipment 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>
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Remarks

D. Acquisition Strategy

Projects are focused on use of commercial and nondevelopmental item technologies. Department of Defense services provide programmatic, engineering expertise and capability for individual development projects; otherwise, commercial service contracts are used to obtain these capabilities. Equipment required for development projects is obtained from commercial suppliers. Candidate commercial equipment and nondevelopmental items are identified and evaluated through market research and government test and evaluation.

E. Performance Metrics

N/A

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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 / 5				PE 0604746A / Automatic Test Equipment Development				L65 / Test Equipment 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
In-house Engineering	SS/LH	Civ Labor : various	4.431	0.902	Jan 2015	0.596	Jan 2016	0.680	Oct 2016	-		0.680	Continuing	Continuing	0
Subtotal			4.431	0.902		0.596		0.680		-		0.680	-	-	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
CALSETS Software Environment and Calibration	Various	Various : Various	5.818	0.351	Mar 2015	0.616	Apr 2016	0.368	Jan 2017	-		0.368	Continuing	Continuing	0
Physical Instruments	Various	Various : Various	6.365	0.529	Mar 2015	0.582	Apr 2016	0.253	Dec 2016	-		0.253	Continuing	Continuing	0
Electrical Instruments	Various	Various : Various	9.029	0.503	Mar 2015	0.553	Apr 2016	0.302	Jan 2017	-		0.302	Continuing	Continuing	0
Test Equipment Modernization	Various	Various : Various	0.370	0.160	Feb 2015	0.208	Jan 2016	-		-		-	Continuing	Continuing	0
Subtotal			21.582	1.543		1.959		0.923		-		0.923	-	-	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
Contract Engineering	C/FFP	Various : Various	1.977	0.228	May 2015	0.282	Jan 2016	0.300	Dec 2016	-		0.300	Continuing	Continuing	0
Subtotal			1.977	0.228		0.282		0.300		-		0.300	-	-	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
CALSETS Software Environment and Calibration	Various	Various : Various	0.570	0.311	Mar 2015	0.456	Apr 2016	0.382	Mar 2017	-		0.382	Continuing	Continuing	0

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army											Date: February 2016				
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development					Project (Number/Name) L65 / Test Equipment Development					
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
Physical Instruments	Various	Various : Various	1.463	0.358	Mar 2015	0.433	Apr 2016	0.242	Feb 2016	-		0.242	Continuing	Continuing	0
Electrical Instruments	Various	Various : Various	1.515	0.303	Mar 2015	0.358	Apr 2016	0.152	Feb 2017	-		0.152	Continuing	Continuing	0
Test Equipment Modernization	Various	Various : Various	0.336	0.210	Feb 2015	0.177	Jan 2016	0.100	Dec 2016	-		0.100	Continuing	Continuing	0
Subtotal			3.884	1.182		1.424		0.876		-		0.876	-	-	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			31.874	3.855	4.261		2.779		-		2.779	-	-	0.000	
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L65 / <i>Test Equipment Development</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Physical Instruments																												
CALSETS Software Environment and Calibration																												
Electrical Instruments																												
Test Equipment Modernization																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L65 / <i>Test Equipment Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Physical Instruments	2	2007	4	2021
CALSETS Software Environment and Calibration	2	2007	4	2021
Electrical Instruments	2	2007	4	2021
Test Equipment Modernization	1	2011	4	2021

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604760A / Distributive Interactive Simulations (DIS) - Eng Dev
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	9.699	9.138	10.487	-	10.487	10.847	10.791	15.726	16.024	Continuing	Continuing
C74: Devel Simulation Tech	-	1.051	0.951	1.255	-	1.255	1.243	1.514	2.264	2.311	Continuing	Continuing
C77: Army Geospatial Data Master Plan	-	0.574	0.540	0.431	-	0.431	0.460	0.606	0.629	0.641	0.000	3.881
C78: One Semi-Automated Forces	-	8.074	7.647	8.801	-	8.801	9.144	8.671	12.833	13.072	Continuing	Continuing

A. Mission Description and Budget Item Justification

The program element "Distributive Interactive Simulations - Engineering Development" applies to the Army's Advanced Simulation Program, which enables operational readiness and the development of concepts and systems for the Future Force through the application of new simulation technology and techniques. The development and application of simulation technology will provide the means to link electronically a range of various simulation tools in a manner that is transparent to the user. The amalgam of simulations and tools is linked together to enable execution of an event; to verify the scenarios, tactics/techniques and procedures; to train testers on new hardware/software; and to conduct trial test runs before costly live field tests. The tools developed are available for reuse by developers and users of simulations throughout the Army.

Project C74 provides the resources necessary to perform the formally chartered mission of the Army's Simulation-to-C4I* Interoperability Overarching Integrated Product Team (SIMCI OIPT). (*C4I = Command, Control, Communications, Computers and Intelligence.) Project C77, Army Geospatial Data Master Plan, focuses on activities that start with data acquisition from multiple sources and culminate in (1) accurate, robust and timely geospatial data and data management and (2) integration and conversion tools that support multiple battle command, training and mission-rehearsal applications. Project C78 develops the One Semi-Automated Forces (OneSAF) program, which will combine and improve the functionality and behaviors of several current semi-automated forces to provide a single SAF for Army use in simulations.

FY 2017 funding for Project C74 continues progress with embedding simulation into Mission Command Systems via the Ozone Widget Framework, management of the SIMCI OIPT's Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. Project C77 continues development efforts associated with the Ground-Warfighter Geospatial Data Model(GGDM) and Geospatial Data Standards. Project C78 continues development of software as required to provide OneSAF Pre-Planned Product Improvements (P3Is) as prioritized and approved by the Training and Doctrine Command.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	10.022	9.138	11.232	-	11.232
Current President's Budget	9.699	9.138	10.487	-	10.487
Total Adjustments	-0.323	0.000	-0.745	-	-0.745
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-0.323	-	-0.745	-	-0.745

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>				Project (Number/Name) C74 / <i>Devel Simulation Tech</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>C74: Devel Simulation Tech</i>	-	1.051	0.951	1.255	-	1.255	1.243	1.514	2.264	2.311	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project C74 funds the HQDA-chartered mission of the Simulation-to-Mission Command Interoperability (SIMCI) Overarching Integrated Product Team (OIPT) in support of Army Training and Readiness. The SIMCI OIPT mission is to provide policy recommendations to Army senior leadership to improve organizations by allowing Soldiers to fight in the same manner in which they train. This is accomplished by interoperability between Mission Command (MC) systems and the Modeling and Simulation (M&S) systems the Army uses to stimulate MC systems for training Soldiers and their Leaders. SIMCI also invests in targeted solutions to critical problem areas that exist between MC and Simulations. The SIMCI OIPT, led by Program Executive Office (PEO) Simulation, Training, and Instrumentation (STRI) and PEO Command Control Communications-Tactical (C3T), uses focused collaborative processes among its 30+ Army organizations to identify key/critical interoperability shortfalls and the required materiel solutions.

The SIMCI OIPT provides the following: (1) Advisor to Army Leadership--improve MC and M&S interoperability programs, policies, directives, resourcing, and procedures; (2) Technical Investment--sponsor/support initiatives that seek common solutions to critical interoperability issues surrounding MC and M&S systems; (3) Outreach--conduct & participate in interoperability outreach activities. SIMCI investments consist primarily of cost-sharing initiatives, leveraging initial system solutions of acquisition programs to enhance the interoperability of multiple systems in the Joint Operational Environment. SIMCI investments accelerate implementation within MC and M&S systems, of common data models and information exchanges that are used by other Services and coalition nations, thus enhancing the inherent ability of Army systems to interoperate seamlessly in a Joint, Interagency, Intergovernmental, and Multinational (JIIM) environment.

FY 2017 funding continues progress with embedding simulation into Mission Command Systems via the Ozone Widget Framework, continues management of the SIMCI OIPT's Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. It is focused first on reducing costs and improving capabilities in the areas of automating Operational Plans, Orders, and Reports in support of Army, Joint, and Coalition operations. Objectives are: identify and articulate to HQDA senior leadership specific standards that require Army-wide implementation; co-develop data standards, architecture standards, implementation specifications and Joint/Coalition products; continue transition of SIMCI knowledge and proof-of-principle products to Army and Joint acquisition programs.

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

	FY 2015	FY 2016	FY 2017
Title: Program Management for the SIMCI Overarching Integrated Product Team (OIPT) Projects.	1.051	0.951	1.255
Description: Program Management of the SIMCI OIPT's Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. The OIPT consists of a Product Director, engineers, and finance personnel. This is in addition to overhead expenses.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Continued management of the SIMCI OIPT'S Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. It was focused first on reducing costs and improving capabilities in the of automating Operational Plans, Orders, and Reports in support of Army, Joint, and Coalition operations. Objectives were to: identify and articulate to HQDA senior leadership specific standards that require Army-wide implementation; co-develop data standards, architecture standards, implementation specifications and Joint/Coalition products; continue transition of SIMCI knowledge and proof-of-principle products to Army and Joint acquisition programs.</p> <p><i>FY 2016 Plans:</i> Will continue management and support of the SIMCI OIPT'S Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. It is currently focused on gap-analysis of the current model and simulation programs and capabilities in the areas of Live, Virtual, and Constructive (LVC) simulations. This will support the Vice Chief of Staff of the Army's request to find redundancy within the Modeling and Simulation (M&S) community and reduce it. Objectives are to compare the current M&S capabilities with what will be required in the upcoming LVC-Information Assurance (LVC-IA) and Integrated Training Environment (ITE) environments, which will eventually become the STE in 2025. This will be Army-wide, as well as, Joint combined interagency products.</p> <p><i>FY 2017 Plans:</i> Will continue management and support of the SIMCI OIPT'S Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. Will continue focus on gap-analysis of the current model and simulation programs and capabilities in the areas of Live, Virtual, and Constructive (LVC) simulations. This will support the Vice Chief of Staff of the Army's request to find redundancy within the Modeling and Simulation (M&S) community and reduce it. Objectives are to compare the current M&S capabilities with what will be required in the upcoming LVC-Information Assurance (LVC-IA) and Integrated Training Environment (ITE) environments, which will eventually become the Simulated Training Environment (STE) in 2025. This will be Army-wide, as well as, Joint combined interagency products. Focus on ITE with the creation of the blueprint for STE, which is slated to be implemented in 2025.</p>			
Accomplishments/Planned Programs Subtotals	1.051	0.951	1.255

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

Remarks
Currently SIMCI has no contract vehicle specific to their program. SIMCI uses other contract vehicles (internal/external) and awards money to work on specific technical projects. This provides the opportunity to leverage technical expertise from different agencies. SIMCI chooses projects that enhance current capabilities, closes the gaps of existing capabilities, and makes the determination for future projects that affect both the Mission Command and Live, Virtual, Constructive simulations

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>

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

environment. SIMCI only chooses those projects that meet specific requirements and criteria as stated above. It is one of SIMCI's missions to locate, utilize, or upgrade those projects or specific products that do just that.

D. Acquisition Strategy

SIMCI Overarching Integrated Product Team (OIPT) resources are allocated to multiple organizations in both the Mission Command (MC) and Modeling and Simulation (M&S) Communities. The funds are contracted to execute approved functions and to projects that advance the efforts of SIMCI and components-based architecture alignment. Products developed transition to the lead or sponsor's program which then maintains the product for the cost savings of itself and other programs in both Communities. The primary focus for these projects are the following: Embedded simulations with current Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems, gap-analysis for current simulations, and the proper implementation of Next-Generation modeling and simulation capabilities in regards to the Synthetic Training Environment (STE).

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	PEO STRI : Orlando, FL	9.673	0.150	Oct 2014	0.150	Oct 2015	0.150	Oct 2016	-		0.150	Continuing	Continuing	Continuing
SBIR/STTR	TBD	PEO STRI : Orlando, FL	0.086	-		-		-		-		-	0	0.086	0
Subtotal			9.759	0.150		0.150		0.150		-		0.150	-	-	-

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			
Transition of simulation initialization capability	Various	TBD : TBD	3.134	-		-		-		-		-	Continuing	Continuing	Continuing
Geospatial Initiative	Various	TBD : TBD	1.388	-		-		-		-		-	Continuing	Continuing	Continuing
Data Model applications and reference implementations	Various	TBD : TBD	2.363	-		-		-		-		-	Continuing	Continuing	Continuing
Implementation of Initialization Products	Various	TBD : TBD	2.255	-		-		-		-		-	Continuing	Continuing	Continuing
Initialization Study Implementation	Various	TBD : TBD	1.038	-		-		-		-		-	Continuing	Continuing	Continuing
Mission Comand systems data mediation/web services	Various	TBD : TBD	2.910	-		-		-		-		-	Continuing	Continuing	Continuing
Expanding MTOE System Architecture (SA) Data	Various	TBD : TBD	1.821	-		-		-		-		-	Continuing	Continuing	Continuing
C2 Adapter Web Services and Tools	Various	TBD : TBD	2.660	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			17.569	-		-		-		-		-	-	-	-

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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 / 5				PE 0604760A / Distributive Interactive Simulations (DIS) - Eng Dev					C74 / Devel Simulation Tech						
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
SIMCI Program/OIPT Support	Various	Various : Various	2.245	0.876	Dec 2014	0.776	Dec 2015	1.080	Dec 2016	-		1.080	Continuing	Continuing	Continuing
Army Initialization Program and Technical Work Groups (TWG)	Various	Various : Various	0.606	0.025	Dec 2014	0.025	Dec 2015	0.025	Dec 2016	-		0.025	Continuing	Continuing	Continuing
Subtotal			2.851	0.901		0.801		1.105		-		1.105	-	-	-
			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			30.179	1.051		0.951		1.255		-		1.255	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Implementation of Initialization Products	[Redacted]																											
Transition of simulation initialization capability	[Redacted]																											
Initialization Study Implementation	[Redacted]																											
Data Model applications and reference implementations	[Redacted]																											
C2 Adapter Web Services and Tools	[Redacted]																											
Quarterly SIMCI OIPT Meeting	[Redacted]																											
Annual Project Call	[Redacted]																											
	[Redacted]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Implementation of Initialization Products	1	2010	4	2021
Transition of simulation initialization capability	1	2010	4	2021
Initialization Study Implementation	1	2010	4	2017
Data Model applications and reference implementations	1	2010	4	2021
C2 Adapter Web Services and Tools	1	2010	4	2021
Quarterly SIMCI OIPT Meeting	1	2010	4	2021
Annual Project Call	1	2010	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>				Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</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>C77: Army Geospatial Data Master Plan</i>	-	0.574	0.540	0.431	-	0.431	0.460	0.606	0.629	0.641	0.000	3.881
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project C77 addresses the implementation and acceleration of objectives focused on geospatial standards that were identified in the Army Geospatial Data Integrated Master Plan (AGDIMP), approved by the Chief of Staff, Army in April 2005 and newer guidance and directives including the Army's Geospatial Information Office (GIO) GIO Charter, Army Regulation for Geospatial Information and Services updated in 2014 (AR 115-11), and Army COE (Common Operating Environment (Implementation Plan's Geospatial Annex. The AGDIMP and the GIO charter, Geospatial Annex to COE IP, and AR 115-11 require the establishment of an enterprise architecture framed around geospatial standards that address geospatial/GEOINT data, services, and applications to enable the Army Geospatial Enterprise (AGE). This Army Geospatial Enterprise serves the Army's Programs/Systems, Organizations (most importantly our soldiers) to provide the geospatial foundation of accurate, robust, and timely geospatial data, robust tools and services that support mission command, intelligence, training, mission-rehearsal and other mission-applications. Project C77 addresses a geospatial/GeoINT standard-base framework that supports the ground-warfighter. This geospatial standard framework must also fit within the broader National System for Geospatial-Intelligence (NSG) and Allies Systems for GeoINT (ASG) architecture and standards. The establishment of a ground-warfighter, standards-based framework support the management, dissemination, and update of geospatial data and services from National systems and organization to tactical systems and ground-warfighter in an enterprise fashion that will minimal translation into unique and often proprietary data formats and internal application databases.

FY 2017 funding continues development efforts associated with the Ground-Warfighter Geospatial Data Model (GGDM) and Geospatial Data Standards.

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

	FY 2015	FY 2016	FY 2017
Title: Ground-Warfighter Geospatial Data Model (GGDM) formerly Army Geospatial Data Model (AGDM)	0.266	0.250	0.150
Description: The GGDM incorporates common data elements that conform to standards mandated by the Department of Defense Information Technology Standards Registry (DISR) for the National System for Geospatial Intelligence (NSG). Incorporating common geospatial data standards into the GGDM makes the Programs of Record (POR) consistent with new DISR-mandated geospatial intelligence standards for the NSG.			
FY 2015 Accomplishments: Performed data modeling actions necessary to develop the next version of the GGDM (ver 2.3) including aligning content from Aviation, Human Geography and adding and aligning new content from NGA's 9 domain data stores.			
FY 2016 Plans: Will complete the development of GGDM 3.0 and alignment with National System for GeoINT (NSG) NSG Application Schema) NAS 7.0. Will develop/enhance data translation tools from various Government geospatial data sources into GGDM and training			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>materials to support translation of existing data into GGDM 3.0. Will build GGDM compliant geospatial database schema based upon NAS. Perform interoperability experiments with US Army, NGA, USMC and American-British-Canadian- Australian-New Zealand Allies</p> <p>FY 2017 Plans: Will develop/enhance GGDM tools including web enabling tools. Will develop additional training materials to support the use of GGDM. Will provide metadata tools to insure NSG compliance.</p>				
<p>Title: Geospatial Data Standards</p> <p>Description: Army Geospatial Standards including data standards and standards for services to manage process and disseminate and utilize geospatial data.</p> <p>FY 2015 Accomplishments: Developed and ensured consistent integration of geospatial enterprise data standards, including standard practices for production and management of geospatial data, into Army Mission Command, Simulation and Training programs, systems and organizations.</p> <p>FY 2016 Plans: Will develop and maintain Geospatial Standards compliance matrix, Std-V1, in alignment with updated NSG standards and next cycle updates of DISR standards and coordinate results with Army Chief Info Officer (CIO/G6) and Asst. Sec. of Army Acquisition, Logistics & Tech ASA(ALT) Programs. Will develop enhancements to the Open Geospatial Consortium (OGC) Geopackage Standard to potentially include elevation data and routing data results in Version 2.0 of this standard. Will provide SME support on geospatial data and technology standard to Army PORs.</p> <p>FY 2017 Plans: Will work on standards and technology that support rendering and symbology rules to be incorporated in mobile and handheld applications. Will continue to maintain Geospatial Standards compliance matrix, Std-V1, in alignment with quarterly updated NSG standards and DISR cycle updates of GeoINT standards and coordinate results with Army CIO/G6 and ASA(ALT) Programs. Will provide SME support on geospatial data and technology standard to Army PORs.</p>		0.308	0.290	0.281
Accomplishments/Planned Programs Subtotals		0.574	0.540	0.431
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>

D. Acquisition Strategy
Resources are allocated to several critical geospatial projects in support of the Army Geospatial Data Integrated Master Plan (AGDIMP) and the Army Geospatial Enterprise (AGE).

E. Performance Metrics
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>				Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Army Geospatial Model and Data Standards	Various	TBD : TBD	4.178	0.574		0.540		0.431		-		0.431	0	5.723	3.614	
Subtotal			4.178	0.574		0.540		0.431		-		0.431	0.000	5.723	3.614	
			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			4.178	0.574		0.540		0.431		-		0.431	0.000	5.723	3.614	
Remarks																

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Ground Warfighter Geospatial Data Model																												
Geospatial Data Standards																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Ground Warfighter Geospatial Data Model	1	2010	4	2021
Geospatial Data Standards	1	2010	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>				Project (Number/Name) C78 / <i>One Semi-Automated Forces</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>C78: One Semi-Automated Forces</i>	-	8.074	7.647	8.801	-	8.801	9.144	8.671	12.833	13.072	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

One Semi-Automated Forces (OneSAF) develops and delivers a software application that represents activities of units and forces in simulation to support Army Training and Readiness. The application is used by Army agencies to support the concept evaluation, experimentation, materiel acquisition and training throughout the communities. The focus of this project is systems/software engineering and design for development and evolution of the architecture and software tools for a universal system of Army computer-generated forces -- OneSAF. OneSAF is a high fidelity brigade-and-below SAF that represents a full range of operations, systems and control processes in support of stand-alone and embedded training and Research, Development and Acquisition (RDA) simulation applications. OneSAF is fully interoperable with the Army's emerging virtual, live, and division-and-above constructive simulations and provides next-generation simulation products. OneSAF replaces a variety of legacy simulations used within the Army to support analytic and training simulation activities.

FY 2017 funding allows for continued development of the software product line by addressing OneSAF Pre-Planned Product Improvements (P3Is) as prioritized and approved by the Training and Doctrine Command (TRADOC). This funding also provides for the management of the infrastructure, equipment, laboratories, and processes needed to develop, test, and release the required product baseline.

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

	FY 2015	FY 2016	FY 2017
Title: Engineering and Manufacturing Development (EMD) phase contract activities for the One Semi-Automated Forces program.	4.908	4.997	5.951
Description: Continue EMD phase contract activities for the OneSAF program.			
FY 2015 Accomplishments: Continued the development of software capabilities based on OneSAF P3Is as prioritized and approved by the TRADOC OneSAF Project Office. Continued the software development of functionality that enhanced architectural services, components, synthetic environment and infrastructure of the OneSAF Product Line and provided for software integration, test and release of Version 8.0 and 8.0 International.			
FY 2016 Plans: Continues the development of software capabilities based on OneSAF Pre-Planned Product Improvements (P3Is) as prioritized and approved by TRADOC. Continues the software development of functionality that enhances architectural services, components, synthetic environment and infrastructure of the OneSAF product Line and provides for software integration, test and release of Version 8.6.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C78 / <i>One Semi-Automated Forces</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Will continue the development of software capabilities based on OneSAF P3Is as prioritized and approved by TRADOC. Will continue the software development of functionality that enhances architectural services, components, synthetic environment and infrastructure of the OneSAF Product Line and will provide for software integration, test and release of required software refreshes and Version 9.0.				
<p>Title: Government System Test and Evaluation for the One Semi-Automated Forces (OneSAF) program.</p> <p>Description: Government System Test and Evaluation for the OneSAF program.</p> <p>FY 2015 Accomplishments: Provided for the conducting of software, test, integration and release for Version 8.0 and 8.0 international. Provided support to the user community in conducting experiments and validation events as needed for integration into the Home Station Training federation, Network Integration events, and LVC applications.</p> <p>FY 2016 Plans: Provides for the conducting of software, test, integration and release for Version 8.6. Provides support to the user community in conducting experiments and validation events as needed for integration into the Home Station Training federation, Network Integration events, and LVC applications.</p> <p>FY 2017 Plans: Will provide for the conducting of software, test, integration and release for Version 9.0. Will provide support to the user community in conducting experiments, analyses, and validation events for integration into the Home Station Training Federation, Network Integration Events (NIE), Battle Lab Collaborative Simulation Environment (BLCSE), and other LVC applications.</p>		1.100	0.850	1.000
<p>Title: Government Program Management for the One Semi-Automated Forces (OneSAF) program.</p> <p>Description: Government Program Management for the One Semi-Automated Forces (OneSAF) program.</p> <p>FY 2015 Accomplishments: Provided program management, engineering and technical oversight, contract support, and travel for support of site surveys and Subject Matter Experts for the development of OneSAF.</p> <p>FY 2016 Plans: Will provide program management, engineering and technical oversight, contract support, and travel for support of site surveys and Subject Matter Experts for the development of OneSAF.</p> <p>FY 2017 Plans:</p>		2.066	1.800	1.850

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C78 / <i>One Semi-Automated Forces</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Will provide program management, engineering and technical oversight, contract support, and travel for support of site surveys and Subject Matter Experts for the development of OneSAF.			
Accomplishments/Planned Programs Subtotals	8.074	7.647	8.801

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
• OMA: OMA, 121014000	3.518	4.825	4.947	-	4.947	5.113	6.952	7.013	7.154	Continuing	Continuing

Remarks

D. Acquisition Strategy

Continue the yearly release of the OneSAF Software (SW) versions containing performance enhancements resulting from the development and integration of both approved Product Improvements and integration of Co-Developer handovers. PM OneSAF continues to manage two Delivery Orders for the Development, Integration, Interoperability, and Support (I2S) of capabilities products, data, and documentation that fully serves the current and evolving needs of the user community.

The enhancements will be executed within the development line as modifications to the released baseline via Engineering Change Proposals (ECPs); Change Requests (CRs): Pre-Planned Product Improvements (P3I); and correction of deficiencies identified as Problem Test Reports (PTRs) and Deficiency Reports (DRs) by the user community.

E. Performance Metrics

N/A

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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 / 5				PE 0604760A / Distributive Interactive Simulations (DIS) - Eng Dev				C78 / One Semi-Automated Forces							
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	Various	PEO STRI, Orlando, FL : Various	20.990	2.066		1.800		1.850		-		1.850	Continuing	Continuing	Continuing
Subtotal			20.990	2.066		1.800		1.850		-		1.850	-	-	-
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
Architecture Dev & System Integration	C/CPFF	Science Applications International Corp : Orlando, FL	51.466	-		-		-		-		-	0	51.466	51.466
Model and Tools Development	C/CPFF	Science Applications International Corp : Orlando, FL	27.625	-		-		-		-		-	0	27.625	27.625
Environmental Runtime Component	C/CPFF	Science Applications : Orlando, FL	7.981	-		-		-		-		-	0	7.981	7.981
OneSAF Component Development	C/CPFF	Various : Various	9.648	-		-		-		-		-	0	9.648	9.648
Integrated Environment Dev	C/CPFF	Advanced Systems Technology, Inc : Orlando FL	11.702	-		-		-		-		-	0	11.702	11.702
OneSAF Bridge Contract	C/CPFF	Science Applications International Corp : Orlando, FL	3.797	-		-		-		-		-	0	3.797	3.797
Integration, Interoperability, and Support (I2S)	C/CPFF	Cole Engineering Services, Inc. : Orlando, FL	3.072	1.368	Dec 2014	1.850	Dec 2015	-		-		-	Continuing	Continuing	Continuing
Software Development	C/CPFF	Leidos : Orlando, FL	16.528	1.230	Dec 2014	1.227	Dec 2015	-		-		-	Continuing	Continuing	Continuing
Software Development	C/CPFF	TBD : Orlando, FL	0.000	-		-		3.801	Nov 2016	-		3.801	Continuing	Continuing	Continuing
Subtotal			131.819	2.598		3.077		3.801		-		3.801	-	-	-

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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 / 5				PE 0604760A / Distributive Interactive Simulations (DIS) - Eng Dev				C78 / One Semi-Automated Forces							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Analysis	Various	Various : Various	6.397	0.200	Oct 2014	-		-		-		-	Continuing	Continuing	Continuing
Domain Analysis	Various	Various : Various	5.660	0.100	Oct 2014	0.150	Dec 2015	0.250	Oct 2016	-		0.250	Continuing	Continuing	Continuing
Integrated Development Environment	Various	Various : Various	5.251	1.660	Oct 2014	1.570	Oct 2015	1.750	Oct 2016	-		1.750	Continuing	Continuing	Continuing
Architecture Engr & Tech Spt	SS/FP	MITRE FFRDC : Ft. Monmouth, NJ	4.749	0.350	Oct 2014	0.200	Oct 2015	0.150	Oct 2016	-		0.150	Continuing	Continuing	Continuing
Subtotal			22.057	2.310		1.920		2.150		-		2.150	-	-	-
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
OneSAF integration, evaluation and test	Various	Various : Various	10.329	0.900	Dec 2014	0.750	Dec 2015	0.850	Dec 2016	-		0.850	Continuing	Continuing	Continuing
OneSAF Verification, Validation & Accreditation	Various	Various : Various	6.797	0.200	Dec 2014	0.100	Dec 2015	0.150	Dec 2016	-		0.150	Continuing	Continuing	Continuing
Subtotal			17.126	1.100		0.850		1.000		-		1.000	-	-	-
Project Cost Totals			191.992	8.074		7.647		8.801		-		8.801	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C78 / <i>One Semi-Automated Forces</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
P3I Requirements Development	P3I																											
(1) OneSAF Version Release 8.0 (Concurrency Updates)	v8.0 ▲				v8.5 ▲																							
(2) OneSAF Version Release 8.6 (Concurrency Updates)																												
(3) OneSAF Version Release 9.0 (Concurrency Updates)																												
(4) OneSAF Version Release X.0 (Concurrency Updates)																												
(5) OneSAF Version Release X.1 (Concurrency Updates)																												
(6) OneSAF Version Release X.2 (Concurrency Updates)																												
(7) OneSAF Version Release X.3 (Concurrency Updates)																												
OneSAF Support	Life Cycle Software Support																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C78 / <i>One Semi-Automated Forces</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
P3I Requirements Development	1	2006	4	2021
OneSAF Version Release 8.0 (Concurrency Updates)	1	2015	1	2015
OneSAF Version Release 8.6 (Concurrency Updates)	3	2016	3	2016
OneSAF Version Release 9.0 (Concurrency Updates)	3	2017	3	2017
OneSAF Version Release X.0 (Concurrency Updates)	2	2018	2	2018
OneSAF Version Release X.1 (Concurrency Updates)	2	2019	2	2019
OneSAF Version Release X.2 (Concurrency Updates)	2	2020	2	2020
OneSAF Version Release X.3 (Concurrency Updates)	2	2021	2	2021
OneSAF Support	1	2006	4	2021

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	33.422	21.622	15.068	-	15.068	18.053	21.360	21.711	17.740	Continuing	Continuing
571: <i>Close Cbt Tact Trainer</i>	-	0.789	0.749	0.998	-	0.998	1.092	1.002	0.995	0.000	Continuing	Continuing
577: <i>Gaming Technology In Support Of Army Training</i>	-	1.701	2.999	1.979	-	1.979	1.692	2.210	2.223	2.230	Continuing	Continuing
582: <i>Synthetic Envir Core</i>	-	19.711	16.658	9.322	-	9.322	10.177	10.194	10.267	10.308	Continuing	Continuing
585: <i>Aviation Combined Arms Tactical Trainer</i>	-	11.221	1.216	2.769	-	2.769	5.092	7.954	8.226	5.202	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Combined Arms Tactical Trainers (CATT) represent a family of combined arms simulation systems designed to support the Army's simulation-based, Combined Arms Training Strategy. The CATT program portfolio directly supports the Army's Training Strategy and progressive training model by providing realistic training events and comprehensive After Action Reviews (AAR). CATT enables units, from crew to the battalion task force level, to conduct a wide variety of combat tasks on a realistic, interactive, synthetic battlefield. CATT's combination of manned simulators and staff officer workstations enables units to train as a combined arms team in a cost effective manner. The primary CATT system is the Close Combat Tactical Trainer (CCTT) which provides the underlying baseline architecture and AAR for CATT expansions, Pre-Planned Product Improvements (P3I) and system enhancements. The Reconfigurable Vehicle Simulator (RVS) and the Dismounted Soldier Training System (DSTS) variants support combat convoy operations and Improvised Explosive Devices (IED) tasks. Synthetic Environment (SE) Core provides for the expansion of the synthetic environment baseline to include enhanced interoperability and the products and infrastructure to support current and future combat operations and mission rehearsal required for Unified Land Operations. The first synthetic environments expanded were in the Aviation Combined Arms Tactical Trainer (AVCATT) and the CCTT for both the Active and Reserve components. Gaming Technology provides an application to train and rehearse convoy-operations, platoon level, mounted infantry tactics, dismounted operations, rules-of-engagement training, cross-cultural communications training, IED defeat training, route clearance, ground-air coordination, Unmanned Aerial Vehicle (UAV) integration, and other small unit and individual training and mission rehearsal requirements. Soldiers can train in a common environment on geotypical or geospecific virtual terrain. It is also possible to link Gaming technology to actual communication, command, control, computer, and intelligence (C4I) systems and other CATT simulation systems to increase the utility and realism of the training. By practicing skills in CATT, units are able to effectively prepare for costly live fire and maneuver exercises, as well as training tasks deemed too hazardous to conduct in a live training environment. Fielded in both fixed site and mobile versions, CATT enables both Active and Reserve component units to prepare for real world contingency missions. By being able to use a wide array of training terrain databases and modify the behavior of the computer generated opposing forces, CATT offers an unlimited array of training options to support the Army's many regional combat missions. The combination of tough field and live fire training, and realistic simulation training in CATT, is the formula to prepare Soldiers and their Leaders for the uncertainties they face in combat operations.

FY 2017 core funding of \$.998 million for CCTT enables gaming technology and visualization for maneuver training, and the P3I for the CCTT, to include virtualization and other Better Buying Power initiatives in order to reduce life cycle costs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>
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FY 2017 base funding of \$1.979 million for Games for Training will provide for modifications to the Games for Training (GFT) system to ensure compliance with the Live, Virtual, Constructive/Integrated Training Environment (LVC-ITE) in support of Force 2025 and Beyond. It will also integrate new commercial and Government technology products into the current gaming system.

FY 2017 base funding of \$9.322 million will continue the efforts of providing development of the capability to produce common terrain databases to maintain concurrency with supported training systems. FY 2017 funds will continue modifying the Terrain Development process for constructive terrain databases, and continue to enhance OneSAF in the SE Core Architecture. Base funding also provides continuous development of new OneSAF capabilities for virtual simulations and enables interoperability with the Live, Virtual, Constructive Integrated Training Environment (LVC ITE); this is a cost avoidance for individual virtual simulators in that they do not develop and maintain separate Semi-Automated Forces (SAFs). SE Core will continue to upgrade, integrate and refine the Common Virtual Components, and continue to develop common visual models and transportation networks. FY17 base funding request decreased significantly from the PB16 submission due to a de-scoping of program requirements.

FY 2017 base funding of \$2.769 million will complete the design, development, and testing for the first article test for a virtualized AVCATT manned module architecture in order to reduce the current computer hardware footprint in preparation for FY18 planned hardware modernization.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	34.712	21.622	30.692	-	30.692
Current President's Budget	33.422	21.622	15.068	-	15.068
Total Adjustments	-1.290	0.000	-15.624	-	-15.624
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-1.290	-	-15.624	-	-15.624

Change Summary Explanation

FY 2017 funding was realigned to higher priority requirements.

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 571 / <i>Close Cbt Tact Trainer</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
571: <i>Close Cbt Tact Trainer</i>	-	0.789	0.749	0.998	-	0.998	1.092	1.002	0.995	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Close Combat Tactical Trainer (CCTT) immersively and comprehensively trains Armor, Cavalry, Infantry, Mechanized Infantry, and Armored Reconnaissance units from squad through Battalion/Squadron level, to include their staffs. The primary training audience operates from full-crew simulators, reconfigurable command posts, and live battalion command posts to accomplish their combined arms training tasks. CCTT is a ground based, collective training device composed of three systems: the CCTT, the Reconfigurable Vehicle Tactical Trainer (RVTT), and the Dismounted Soldier Training System (DSTS). CCTT is comprised of full fidelity, manned simulators for the M1 Abrams main battle tank, M2 Bradley Fighting Vehicles (BFV) variants, and Cavalry Fighting Vehicles (CFV). RVTT is a CCTT Reconfigurable Vehicle Simulator (RVS) comprised of full fidelity, manned simulators for the HMMWV and Heavy Expanded Mobility Tactical Truck (HEMTT). DSTS is a virtual trainer providing an ability to immerse the individual soldier into the synthetic virtual environment.

FY 2017 core funding of \$1.138 million for CCTT enables: the continued development and integration of gaming technology, development of visualization technology, support of maneuver training, and the P3I to include virtualization and other Better Buying Power initiatives to reduce life cycle costs.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Government Program Management for the Close Combat Tactical Trainer (CCTT) program.</p> <p>Description: Government Program Management for the CCTT program.</p> <p>FY 2015 Accomplishments: Supports government program management, engineering, technical, contracting support, and continues operational evaluation support.</p> <p>FY 2016 Plans: Supports government program management, engineering, technical, contracting support, and continues operational evaluation support.</p> <p>FY 2017 Plans: Will support government program management, engineering, technical, contracting support, and will continue operational evaluation support.</p>	0.157	0.159	0.163
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for CCTT, and Interoperability between CCTT.</p> <p>Description: Continue EMD phase contract activities for CCTT.</p>	0.632	0.590	0.835

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 571 / <i>Close Cbt Tact Trainer</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Enables the integration of gaming technology into CCTT in support of maneuver training for Armor Brigade Combat Teams.</p> <p><i>FY 2016 Plans:</i> Enables the integration of gaming technology into CCTT in support of maneuver training for Armor Brigade Combat Teams.</p> <p><i>FY 2017 Plans:</i> Will enable the continued development and integration of gaming technology; and development of virtualization technology into CCTT in support of maneuver training for Armor Brigade Combat Teams.</p>			
Accomplishments/Planned Programs Subtotals	0.789	0.749	0.998

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
• OPA3, Appropriation NA0170: <i>OPA3, Appropriation NA0170</i>	13.406	45.210	48.271	-	48.271	45.718	47.135	51.322	39.503	Continuing	Continuing
• OMA, Appropriation 121018000: <i>OMA, Appropriation 121018000</i>	-	2.687	2.960	-	2.960	3.246	3.660	3.906	3.986	Continuing	Continuing

Remarks
The RDT&E efforts are essential to provide enhancements for the hardware and software of the program to meet warfighter mission priorities and validated requirements. These enhancements, after proper testing, will be procured and fielded with the programs procurement funds.

D. Acquisition Strategy
All CCTT development will utilize small business competitively awarded contract vehicles or agreements with the Army Research Laboratory (ARL) for support of research and development.

E. Performance Metrics
N/A

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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 / 5				PE 0604780A / Combined Arms Tactical Trainer (CATT) Core					571 / Close Cbt Tact Trainer						
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, Engineering, Technical, Contracting Support	Various	PEO STRI : Orlando, FL	17.425	0.157		0.159		0.163		-		0.163	Continuing	Continuing	Continuing
Subtotal			17.425	0.157		0.159		0.163		-		0.163	-	-	-
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
CCTT Post Deployment Software Support	C/T&M	AVT Simulation : Orlando, FL	0.640	0.632	Mar 2015	0.590	Mar 2016	0.835	May 2017	-		0.835	0	2.697	0
Subtotal			0.640	0.632		0.590		0.835		-		0.835	0.000	2.697	0.000
Project Cost Totals			18.065	0.789		0.749		0.998		-		0.998	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 571 / <i>Close Cbt Tact Trainer</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
P3I in Support of Gaming Technology and Virtualization for Maneuver Tr																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 571 / <i>Close Cbt Tact Trainer</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
P3I in Support of Gaming Technology and Virtualization for Maneuver Training	2	2015	2	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604780A / Combined Arms Tactical Trainer (CATT) Core				Project (Number/Name) 577 / Gaming Technology In Support Of Army Training			
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
577: Gaming Technology In Support Of Army Training	-	1.701	2.999	1.979	-	1.979	1.692	2.210	2.223	2.230	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

The Games for Training (GFT) Program prepares Soldiers and leaders for combined arms maneuver operations for Force 2025 and beyond in support of the Joint Force and allies with tailorable and scalable training and mission rehearsal capabilities. Gaming Technology provides an application to train and rehearse convoy-operations, platoon level, mounted infantry tactics, dismounted operations, rules-of-engagement training, cross-cultural communications training, IED defeat training, route clearance, groundair coordination, Unmanned Aerial Vehicle (UAV) integration, and other small unit and individual training and mission rehearsal requirements. The GFT program satisfies the Active, the National Guard, and the Army Reserves' educational requirements in the Operational, Institutional, and Self-Development Training Domains with a low-overhead, flexible, persistent training capability on geo-specific and geo-typical terrain that is relevant with all military platforms and weapon systems. GFT comprehensively trains Company and below formations to operate in today's dynamic combat environment. GFT trains higher multi-echelon units and staffs without troops to meet Combatant Commanders' requirements.

FY 2017 base funding of \$1.979 million will continue the integration of the GFT flagship product into the Live, Virtual, Constructive/Integrated Training Environment (LVC-ITE). Additionally, base funding will also fund market research for Engineering and Manufacturing Development (EMD) phase of GFT increment II.

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

	FY 2015	FY 2016	FY 2017
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Games for Training (GFT) program.	1.371	2.669	1.692
Description: Continue EMD phase contract activities for the GFT program.			
FY 2015 Accomplishments: Funding integrated the flagship product into the LVC. It also integrated new commercial and government technology products into the current gaming system.			
FY 2016 Plans: Funding will provide modifications to the GFT system to ensure compliance with the LVC in support of Force 2025 and beyond. It will also integrate new commercial and Government technology products into the current Gaming System.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 577 / <i>Gaming Technology In Support Of Army Training</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Funding will provide concurrency modifications to the GFT system to ensure integration compliance with Live, Virtual and Constructive simulations and Mission Command Systems in support of Force 2025 and beyond training. Funding will allow for Engineering and Manufacturing Development of the GFT system into Common Operating Environment (COE) for Data Cloud and Hand Held environments. Funding provides market research for GFT increment II EMD.			
Title: Government Program Management for the GFT program. Description: Government Program Management for the GFT program.	0.330	0.330	0.287
FY 2015 Accomplishments: Government program management, engineering, technical, contract and test activities provided fielding, integration of software and web hosted support to Soldier tactical training.			
FY 2016 Plans: Government program management, engineering, technical, contract and test activities will provide integration of software, fielding, and web hosted support to U.S. Army Soldier tactical training.			
FY 2017 Plans: Government program management, engineering, technical, contract and test activities will provide integration of software, fielding, and web hosted support to U.S. Army Soldier tactical training.			
Accomplishments/Planned Programs Subtotals	1.701	2.999	1.979

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 3: OPA 3, Appropriation NA0176 Gaming Technology in Support of Army Training	10.165	9.793	11.543	-	11.543	12.303	15.002	17.994	18.653	Continuing	Continuing
• OMA: OMA, Appropriation 121018000, TCAT	-	-	0.250	-	0.250	0.250	0.250	0.250	0.250	0	1.250

Remarks
R&D funding provides development and integration of new models and visual concurrency to ensure compliance with program requirements and integration into the Live, Virtual, Constructive/ Integrating Training Environment. Funding also supports initial market research for the EMD phase for the next generation gaming capability needed for the envisioned Increment II capability. OMA funding will be used to fund Games for Training hardware and software Information Assurance (IA) and Risk Management Framework requirements (RMF).

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 577 / <i>Gaming Technology In Support Of Army Training</i>

D. Acquisition Strategy

The acquisition strategy is to annually procure an Army-wide software license for a commercial game based training system Virtual Battlespace 3 (VBS3) and associated Games for Training system hardware that consists of a common desktop or laptop computer, headset, and peripherals. In support of concurrency initiatives to the COTS solution, the GFT program conducts development and integration activities for new models and visual concurrency into the VBS3 flagship software baseline.

The government awarded a single award, multiple year Firm Fixed Price contract with a single base year awarded in FY13 and option years exercised in FY14, FY15, and FY16. FY17 will be the final option year and will result in an Army wide perpetual license.

A Basis of Issue for 139 Games For Training Suites was decided in FY15.

Efforts for the next generation gaming capability are currently being initiated for an FY18 start.

E. Performance Metrics

N/A

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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 / 5				PE 0604780A / Combined Arms Tactical Trainer (CATT) Core				577 / Gaming Technology In Support Of Army Training								
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Government Program Management	Various	PEO STRI : Orlando, FL	1.303	0.330		0.330		0.287	Oct 2016	-		0.287	Continuing	Continuing	Continuing	
Subtotal			1.303	0.330		0.330		0.287		-		0.287	-	-	-	
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	
Games for Training	Various	PEO STRI : Orlando, FL	5.255	1.371	Jun 2015	2.669	Jun 2016	1.692	Jan 2017	-		1.692	Continuing	Continuing	Continuing	
Subtotal			5.255	1.371		2.669		1.692		-		1.692	-	-	-	
Project Cost Totals			6.558	1.701		2.999		1.979		-		1.979	-	-	-	
Remarks																

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 577 / <i>Gaming Technology In Support Of Army Training</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GFT Increment I Integration with LVC																												
GFT Increment I Flagship Verification Testing																												
GFT Increment I Software Development and Integration																												
GFT Increment I COE Development and Integration																												
GFT Increment II Market Research																												
GFT Increment II Engineering and Manufacturing Development																												
GFT Increment II Production and Deployment																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 577 / <i>Gaming Technology In Support Of Army Training</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GFT Increment I Integration with LVC	1	2010	4	2022
GFT Increment I Flagship Verification Testing	4	2013	4	2022
GFT Increment I Software Development and Integration	1	2016	4	2022
GFT Increment I COE Development and Integration	1	2017	4	2022
GFT Increment II Market Research	1	2017	2	2018
GFT Increment II Engineering and Manufacturing Development	2	2018	4	2020
GFT Increment II Production and Deployment	1	2021	4	2021

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
582: <i>Synthetic Envir Core</i>	-	19.711	16.658	9.322	-	9.322	10.177	10.194	10.267	10.308	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the Synthetic Environment Core (SE Core) Program. SE Core's mission is to ensure the Army's training systems and simulators are integrated and interoperable in support of U.S. Army Readiness. SE Core provides virtual simulators with visual models (buildings and vehicles), terrain (over which the simulator moves), and entity behaviors (models performing realistic and appropriate actions such as movement and weapon effects) that are relevant and realistic to Force 2025 and beyond. The result is a "Fair Fight" capability; no simulator or operator will have an inherent advantage over another. Fair Fight allows for air and ground to have coordinated and integrated training events that accurately replicate combat operations. Additionally, SE Core is building the Army's Common Virtual Environment (CVE) that provides the linkage between simulators and establishes a common environment for interoperability, allowing various simulators to be linked together for a train-as-we-fight capability. SE Core is a foundational element in the Integrated Training Environment linking the embedded systems, multi-mode Live, Virtual, Constructive, Gaming (LVCG) training capability with current systems.

The SE Core components are Virtual One Semi-Automated Forces (OneSAF) integration; terrain database production; common visual models; virtual systems architecture; a dynamic environment; and mission command development. A major SE Core component is the Standard Terrain Database Generation Capability (STDGC) process used to produce the synthetic terrain used in simulators and simulations. This terrain is a key component for virtual simulators and constructive simulations and will meet the demands of today's and future simulations.

FY 2017 base funding of \$9.322 million will continue the efforts of providing development of the capability to produce common terrain databases to maintain concurrency with supported training systems. FY 2017 funds will continue modifying the Terrain Development process for constructive terrain databases, and continue to enhance OneSAF in the SE Core Architecture. Base funding also provides continuous development of new OneSAF capabilities for virtual simulations and enables interoperability with the Live, Virtual, Constructive Integrated Training Environment (LVC ITE); this is a cost avoidance for individual virtual simulators in that they do not develop and maintain separate Semi-Automated Forces (SAFs). SE Core will continue to upgrade, integrate and refine the Common Virtual Components, and continue to develop common visual models and transportation networks.

FY17 base funding request decreased significantly from the PB16 submission due to a de-scoping of program requirements.

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

	FY 2015	FY 2016	FY 2017
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Synthetic Environment Core (SE Core) program.	18.482	15.028	7.730
Description: Continue EMD phase contract activities for the SE Core program.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Provided expansion of the terrain generation capability to meet the growing demand for synthetic terrain for training, including constructive simulations and Regionally Aligned Forces (RAF). Efforts to improve interoperability across simulators and simulations continued.</p> <p><i>FY 2016 Plans:</i> Increment 2 will provide expansion of the terrain generation capability to meet the demand for synthetic terrain for training including constructive simulation and gaming. Efforts to improve interoperability across simulators and simulations continue to include transportation networks.</p> <p><i>FY 2017 Plans:</i> Continues to satisfy requirements in preparation to complete Increment 2. Efforts will automate the terrain generation capability to meet the demand for synthetic terrain for constructive and gaming training. Will also increase interoperability across simulators and simulations by improving subterranean capabilities and transportation networks.</p>				
<p><i>Title:</i> Government Program Management for the Synthetic Environment Core (SE Core) program.</p> <p><i>Description:</i> Government Program Management for the SE Core program.</p> <p><i>FY 2015 Accomplishments:</i> Provided program management, engineering and technical oversight, contract support, and travel for support of site surveys and Subject Matter Experts for the development of SE Core.</p> <p><i>FY 2016 Plans:</i> Will provide program management, engineering and technical oversight, contract support, and travel for support of site surveys and Subject Matter Experts for the development of SE Core. Will provide acquisition management for the solicitation and evaluation for a new SE Core contract award.</p> <p><i>FY 2017 Plans:</i> Will provide program management, engineering and technical oversight, contract support, and travel for support of site surveys and Subject Matter Experts for the development of SE Core.</p>		1.229	1.630	1.592
Accomplishments/Planned Programs Subtotals		19.711	16.658	9.322

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OMA, Appropriation, 121018000: OMA, Appropriation 121018000, TBWG	14.512	16.366	16.878	-	16.878	17.556	20.423	20.891	20.975	Continuing	Continuing

Remarks

OMA funds are used to generate and maintain the synthetic terrain, models, and virtual OneSAF for the Army's Integrated Training Environment (ITE) concept.

D. Acquisition Strategy

The SE Core program is post Milestone B and will remain in the Engineering and Manufacturing Development phase for the remainder of its lifecycle. SE Core does not field a training system. SE Core is a "software only" program that continues development of products and virtual models to enhance the performance of existing training systems. It does not field products to the end user, therefore the program will not require a Milestone C decision or go into the Production phase. The SE Core program is developing the software tools and processes to develop the Army's common virtual environment to link simulation devices (to include: CCTT, AVCATT, GFT, LVC-IA, HITS, JLCCTC, FIRESIM, OneSAF) into an interoperable environment and maintaining the synthetic terrain, models, and virtual OneSAF for the Army's Integrated Training Environment (ITE) concept.

The government awarded Increment 2 as a single award, cost plus fixed fee (CPFF), indefinite delivery indefinite quantity (IDIQ) contract to Leidos in August 2011 with a period of performance start date of December 2011. Leidos was formerly known as Science Applications International Corporation (SAIC). This contract has a one-year base with four one-year options. The government exercised the first option in December 2012, the second option in December 2013, the third option in December 2014 and the fourth option in December 2015. The government will award a final delivery order in 2016 that extends the period of performance of the Increment 2 contract into December 2017.

In keeping with the original SE Core acquisition strategy of continuous development, the government intends to award the Increment 3 contract as a single award, CPFF, IDIQ contract in FY18. The contract will have a one year base and three one-year options with a target end date of 2021.

E. Performance Metrics

N/A

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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 / 5				PE 0604780A / Combined Arms Tactical Trainer (CATT) Core				582 / Synthetic Envir Core							
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
Management Services	Various	Various : Various	3.622	-		-		-		-		-	0	3.622	3.622
Government Program Management Support	Various	PEO STRI : Orlando, FL	20.789	1.229	Oct 2014	1.630	Oct 2015	1.592	Nov 2016	-		1.592	Continuing	Continuing	Continuing
Subtotal			24.411	1.229		1.630		1.592		-		1.592	-	-	-
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
Technology Development - Architecture and Integration	C/CPFF	SAIC : Orlando, FL	6.946	-		-		-		-		-	0	6.946	6.946
Technology Development -Architecture and Integration	C/CPFF	SAIC : Orlando, FL	50.785	-		-		-		-		-	0	50.785	50.785
Technology Development -Database Virtual Environment Development	C/CPFF	CAE, USA : Orlando, FL	56.179	-		-		-		-		-	0	56.179	56.179
Technology Development-Common Virtual Environment & Management	C/CPFF	Leidos : Orlando, FL	36.543	18.482	Dec 2014	15.028	Dec 2015	7.730	Dec 2016	-		7.730	0	77.783	0
Subtotal			150.453	18.482		15.028		7.730		-		7.730	0.000	191.693	113.910
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
Technology Development - Test Support	Various	Test Community : Various	0.125	-		-		-		-		-	0	0.125	0.125
Subtotal			0.125	-		-		-		-		-	0.000	0.125	0.125

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

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	174.989	19.711	16.658	9.322	-	9.322	-	-	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Increment 2 (Development and Integration)																																				
Increment 3 (Development and Integration)																																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Increment 2 (Development and Integration)	4	2013	1	2018
Increment 3 (Development and Integration)	1	2018	1	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>				Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</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
585: <i>Aviation Combined Arms Tactical Trainer</i>	-	11.221	1.216	2.769	-	2.769	5.092	7.954	8.226	5.202	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Aviation Combined Arms Tactical Trainer (AVCATT) is Army Aviation's only Collective Training Program of Record for Active, Reserve and Army National Guard Aviation Units. AVCATT enables unit collective and combined arms air-ground training for AH-64, UH-60, CH-47, OH-58, and UH-72 aircrews within the Live, Virtual and Constructive (LVC) Integrated Training Environment (ITE). The AVCATT also supports the training of Non-Rated crew members in crew coordination, flight, aerial gunnery, hoist and slingload related tasks via the Non-Rated Crew Member Manned Module (NCM3); which can be linked to AVCATT's UH-60 and CH-47 cockpit configurations to support a unit's specific Mission Training Requirements.

FY 2017 base funding will complete the design, development, and testing for the first article test for a virtualized AVCATT manned module architecture in order to reduce the current computer hardware footprint in preparation for FY18 planned hardware modernization.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Government Program Management for the Aviation Combined Arms Tactical Trainer (AVCATT) program.</p> <p>Description: Government Program Management for the AVCATT program.</p> <p>FY 2015 Accomplishments: Supports government program management, engineering, technical, contracting support, and continues operational evaluation support.</p> <p>FY 2016 Plans: Supports government program management, engineering, technical, contracting support, and continues operational evaluation support.</p> <p>FY 2017 Plans: Will support government program management, engineering, technical, contracting support, and continues operational evaluation support.</p>	1.364	0.185	0.185
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Aviation Combined Arms Tactical Trainer (AVCATT) program.</p> <p>Description: Continue EMD phase contract activities for the AVCATT program.</p>	9.857	1.031	2.584

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Continues development and testing for new capabilities to enhance training when using the AVCATT and NCM3 in combined mode, including improved communications, hoist operations, slingload operations, and visual system realism improvements.</p> <p>Continues the integration and test phase for a persistent dynamic terrain capability in AVCATT which will improve the simulated representation of terrain in the virtual Aviation environment.</p> <p>Continues the development, integration, and testing of new capabilities to enhance training when using the AVCATT and NCM3 in a combined mode.</p> <p>Conducts training effectiveness analysis of the AVCATT system in meeting Army Aviation collective training requirements.</p> <p>Designs, develops, and tests new and improved architecture supporting virtual machines in support of reduction in future AVCATT operation and sustainment costs.</p> <p><i>FY 2016 Plans:</i> Will complete development and testing for new interfaces and protocols for an Integrated Digital Modem (IDM) system to remain synchronized with improvements of digital messaging systems and common operating environment of simulated aircraft platforms.</p> <p>Will continue design, development, and test of new and improved architecture. This architecture will support virtual machines in support of reduction in future AVCATT operation and sustainment costs.</p> <p><i>FY 2017 Plans:</i> Will complete the design, development, and testing for the first article test for a virtualized AVCATT manned module architecture in order to reduce the current computer hardware footprint in preparation for FY18 planned hardware modernization.</p>			
Accomplishments/Planned Programs Subtotals	11.221	1.216	2.769

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
• Other Procurement, Army: OPA3, Appropriation NA0173 Aviation Combined Arms Tactical Trainer	10.040	30.068	40.000	-	40.000	36.929	33.922	36.120	35.141	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</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>
• Operations and Maintenance, Army: OMA, Appropriation 121018000 Aviation Combined Arms Tactical Trainer	0.150	0.100	-	-	-	-	-	-	-	0	0.250

Remarks

D. Acquisition Strategy

The government awarded a single award, cost plus fixed fee (CPFF), indefinite delivery indefinite quantity (IDIQ) contract to Applied Visual Technologies, a minority owned, small disadvantaged business, in December 2012. The period of performance of the base contract is through December 2017. Additional tasks are exercised through delivery orders which each have multiple options for development. The most recently awarded fourth delivery order, awarded in September 2014, includes options for gunnery enhancements, integrated data modem development, training environment virtualization, aviation mission planning software development, maintenance tool kit development, manned unmanned teaming, and AH-64E concurrency development.

AVCATT utilizes small business competitively awarded contract vehicles when able. Currently small businesses are conducting development for dynamic terrain enhancements, NCM3 development, and training effectiveness analysis.

The AVCATT program is post Milestone C. Although the system is in the production phase, continuous research, development, testing, and engineering is required in order to maintain concurrency with the real world aircraft and systems that the AVCATT simulates in the virtual training environment. The AVCATT program has fielded the full base order of issue of 23 suites but continues to release incremental hardware and software upgrades at approximate semiannual intervals.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AVCATT Program Management Support	Various	PEO STRI : Orlando, FL	0.577	1.364	Oct 2014	0.185	Oct 2015	0.185	Oct 2016	-		0.185	0	2.311	0
Subtotal			0.577	1.364		0.185		0.185		-		0.185	0.000	2.311	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			
AVCATT Visual Display Research	C/CPFF	Batelle Memorial Institute : Columbus, OH	0.318	-		-		-		-		-	0	0.318	0
AVCATT Manned Unmanned Teaming (MUM-T)	C/CPFF	Applied Visual Technologies : Orlando, FL	1.880	1.942	Feb 2015	-		-		-		-	0	3.822	0
AVCATT Dynamic Terrain	SS/CPFF	Dignitas Technologies, LLC : Orlando, FL	0.100	0.400	Dec 2015	-		-		-		-	0	0.500	0
AVCATT NCM3 Development	C/CPFF	CymStar : Broken Arrow, Oklahoma	2.301	1.322	Mar 2015	-		-		-		-	0	3.623	0
AVCATT/NCM3 Gunnery KPP	C/CPFF	Applied Visual Technologies : Orlando, FL	0.721	3.483	Feb 2015	-		-		-		-	0	4.204	0
AVCATT Training Effectiveness Analysis	SS/CPFF	Batelle Memorial Institute : Columbus, OH	0.000	0.879	May 2015	-		-		-		-	0	0.879	0
AVCATT Virtualization	C/CPFF	Applied Visual Technologies : Orlando, FL	0.000	0.740	Feb 2015	-		-		-		-	0	0.740	0
AVCATT Integrated Digital Modem Development	C/CPFF	Applied Visual Technologies : Orlando, FL	0.000	0.717	Feb 2015	-		-		-		-	0	0.717	0
AVCATT Integrated Digital Modem Development	C/CPFF	Aviation and Missile Research,	0.000	0.374	Feb 2016	0.300	Jun 2016	-		-		-	0	0.674	0

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Development, and Engineering Center : Huntsville, AL													
AVCATT Maintenance Tool Kit	C/CPFF	Applied Visual Technologies : Orlando, FL	0.000	-		0.358	Mar 2016	-		-		-	0	0.358	0
AVCATT Aviation Mission Planning Software Development	C/CPFF	Applied Visual Technologies : Orlando, FL	0.000	-		0.373	Mar 2016	-		-		-	0	0.373	0
AVCATT Virtualization - Manned Module	TBD	TBS : TBD	0.000	-		-		2.584	Jan 2017	-		2.584	0	2.584	0
Subtotal			5.320	9.857		1.031		2.584		-		2.584	0.000	18.792	0.000

Remarks
 Change in FY15 reflect actuals as well as funding the effort to correct discovered gaps in the capability of the Apache Helicopter to communicate and share video with Unmanned Aerial Vehicles (UAV) i.e. Manned/Unmanned-Teaming (MUM-T) capability.

 Change in FY16 reflects that the Government Purpose Rights (GPR) Voice Communication Upgrade is no longer required due to extension of the current commercial off the shelf (COTS) solution. Funds reallocated for maintenance tool kit and aviation mission planning software. Due to the additional efforts, program support has been extended into both FY16 and FY17.

	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	5.897	11.221	1.216	2.769	-	2.769	0.000	21.103	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AVCATT Visual Display Research																												
AVCATT Manned Unmanned Teaming (MUM-T)																												
AVCATT Dynamic Terrain																												
Non-Rated Crew Member Manned Module (NCM3) Development																												
AVCATT NCM3 Gunnery KPP																												
AVCATT Training Effectiveness Analysis																												
AVCATT Virtualization - Training Environment																												
AVCATT Integrated Digital Modem Development																												
AVCATT Maintenance Tool Kit																												
AVCATT Aviation Mission Planning Software Development																												
AVCATT Virtualization - Manned Module																												
AVCATT/NCM3 EMD																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AVCATT Visual Display Research	1	2015	4	2015
AVCATT Manned Unmanned Teaming (MUM-T)	4	2013	3	2016
AVCATT Dynamic Terrain	4	2014	4	2016
Non-Rated Crew Member Manned Module (NCM3) Development	4	2014	4	2016
AVCATT NCM3 Gunnery KPP	1	2016	4	2016
AVCATT Training Effectiveness Analysis	3	2015	3	2016
AVCATT Virtualization - Training Environment	3	2015	3	2016
AVCATT Integrated Digital Modem Development	1	2015	4	2016
AVCATT Maintenance Tool Kit	2	2016	4	2016
AVCATT Aviation Mission Planning Software Development	2	2016	4	2016
AVCATT Virtualization - Manned Module	2	2017	4	2017
AVCATT/NCM3 EMD	2	2017	4	2021

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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604798A / Brigade Analysis, Integration and Evaluation
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	82.957	99.242	89.716	-	89.716	101.538	102.831	104.105	107.950	Continuing	Continuing
DY3: NIE Test & Evaluation	-	4.440	12.215	65.844	-	65.844	67.311	67.899	68.478	71.719	Continuing	Continuing
DY4: Network Integration Support	-	16.382	14.131	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.513
DY5: Production/Field Coordination for Capability Sets	-	2.802	4.601	3.960	-	3.960	4.099	4.194	4.286	4.374	Continuing	Continuing
DY6: Brigade and Platform Integration Support	-	33.629	45.504	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	79.133
DY7: Army Systems Engineering, Architecture & Analysis	-	16.988	16.416	14.166	-	14.166	24.176	24.651	25.123	25.505	Continuing	Continuing
DZ6: Army Integration Management & Coordination	-	8.716	6.375	5.746	-	5.746	5.952	6.087	6.218	6.352	Continuing	Continuing

A. Mission Description and Budget Item Justification

The FY 2017 funding supports the Army conducting Network Integration Evaluation (NIE) and Army Warfighting Assessment (AWA) events, System of Systems Engineering and Architecture , Common Operating Environment (COE), Cyber Focal, Capability Set Synchronized Fielding, Integration and Management support. The specific evaluation requirements will support Mission Command Network 2020 and Force 2025 objectives and planned Focused End States.

Project DY3; NIE Test & Evaluation, in FY 2017, provides for the planning and conduct of detailed experiments (NIE and AWAs), tests and evaluation of potential Network, Software and Hardware systems for procurement and integration into the Army's Warfighter system. It includes all test support activities such as Blade time for Helicopters, Satellite time for the network, medical evacuation, and protection for the soldier.

Project DY4; Network Integration Support, in FY 2017 the mission requirements and the funding to support those requirements have been moved to DY3; NIE Test & Evaluation to increase transparency.

Project DY5; Production/Fielding Coordination for Capability Sets, in FY 2017, provides for the development and coordination of Programs to produce, integrate, and field the NIE evaluated Brigade improvements to the Brigade Combat Teams (BCTs). This effort does not fund the production, or integration, or fielding of the Capability Sets, but it does fund the coordination of requirements and integration along with scheduling of all activities for the Army through the supporting Program Executive Offices (PEOs), Program Managers (PMs) and Research, Development and Engineering Centers (RDECs).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>
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Project DY6; Brigade and Platform Integration Support, in FY 2017 the mission requirements and the funding to support those requirements have been moved to DY3; NIE Test & Evaluation to increase transparency.

Project DY7; Army System Engineering, Architecture & Analysis, in FY 2017, provides System of System (SOS) engineering and analysis, Basis of Issue Plans (BOIP), and designs that feed planned Capability Sets and NIE plans. These efforts support Army Modernization Processes, the Common Operating Environment (COE), and Cyber planning and implementation.

Project DZ6; Army Integration Management & Coordination, in FY 2017, provides for all "shared" functions (Human resources, Budget development and executions, Acquisition, Operations, Program Coordination, Facilities management) and headquarters functions that supports the technical aspects of the Network integration, Platform integration, Brigade Integration and the Production Integration and coordination and synchronized fielding teams.

Execution of the above projects is in accordance with the Army Acquisition Executive's NIE and CS Business Execution Ground Rules dated August, 1, 2012

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	85.246	99.242	122.407	-	122.407
Current President's Budget	82.957	99.242	89.716	-	89.716
Total Adjustments	-2.289	0.000	-32.691	-	-32.691
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.289	-			
• Adjustments to Budget Years	-	-	-32.691	-	-32.691

Change Summary Explanation

The Army has determined the funding for this Program Element should remain at approximately \$100M. The adjustment to FY 2017 aligns the funding requirements to execute two events (NIE & AWA).

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>				Project (Number/Name) DY3 / <i>NIE Test & Evaluation</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
DY3: <i>NIE Test & Evaluation</i>	-	4.440	12.215	65.844	-	65.844	67.311	67.899	68.478	71.719	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project DY3; Network Integration Evaluation Test & Evaluation, in FY 2017 provides for synchronizing, integrating and managing System of Systems network capabilities evaluations in both a laboratory and operational Brigade Combat Team environments to assess network improvements, interoperability and operational readiness to inform Army Capability Set Fielding decisions. In FY17, the .2 NIE will focus on integrated assessments of Program of Record capabilities for Capability Set (CS) synchronized fielding of Network systems, whereas the .1 NIE/Army Warfighter Assessment (AWA) will focus on Force 2025 concepts, interoperability & Army Warfighting Challenges, and emerging capabilities. During the .1 NIE/AWA these funds only support integrated network requirements. These funds also support the four major efforts associated with integration; (1) Integration Planning: planning and coordination with all stakeholders to resource personnel, services, support, equipment, products, and other deliverables needed for platform integration; (2) Preparation: developing engineering design packages and network data products, procuring equipment and materials, performing installation and checkout, and validating the network; (3) Execution: technical support during soldier-led phases of the event, including test execution, (4) Close-out: Recovering platforms, de-installing equipment, returning platforms to their original configurations, updating documentation, and reporting. These funds provide Subject Matter Expertise to plan, coordinate, integrate and execute the risk reduction for the full System of Systems network/architecture designs in the NIE and AWA in controlled environments to minimize integration, configuration and interoperability risk in the events, execute diverse and independent portfolio of Network System of Systems performance analyses involving multiple-Program Executive Office (PEO) systems (Command, Control and Communications – Tactical (C3T), Intelligence and Electronic Warfare & Sensors (IEW&S), Soldier, Ground Combat Systems (GCS), Simulation, Training, and Instrumentation (STRI)) and their cross- PEO integration which enables key acquisition-level decisions, Mission Command Network (MCN) and Capability Portfolio Reviews (CPRs). It also enables capability set (CS) architecture product Courses of Action (COAs) development and validation and provides Army Acquisition Executives (AAEs) and Office of the Secretary of Defense (OSD) with independent evaluations of PEO/PM solutions and services, as the advanced collaboration and coordination with platforms and network system Product/Project/Program Managers (PMs) to ensure Capability Set (CS) fielding platform integration design decisions are based on CS Reference Architecture products for CS16-22 to be evaluated in Network Integration Evaluation (NIE) events.

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

	FY 2015	FY 2016	FY 2017
Title: NIE Test and Evaluation Costs	2.708	7.451	-
Description: These funds provide for planning and conducting detailed experiments, tests and evaluations of potential Network, Software and Hardware systems for procurement and integration into the Army's Warfighter system.			
FY 2015 Accomplishments:			
For baselining events, completed test planning, coordination of requirements, assets planning, range planning, and soldier planning. Conducted test planning and management which included coordination of requirements with Army Evaluation Command (AEC), Operational Test Center (OTC), White Sands Missile Range (WSMR). This coordination included development and			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY3 / <i>NIE Test & Evaluation</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>procurement of modeling and simulation tools, instrumentation for data collection, facilities required to store and maintain equipment, facilities required to integrate capabilities, other test equipment, and REDFORCE systems. Conducted safety and operational assessments, data collection, data analysis and report development. Conducted experimentation, tests, and evaluation by coordinating and procuring range resources to include range time, range personnel, test engineering support, operators and subject matter experts on systems under evaluation. Included costs of management of the test/experiment and support all experiments and tests. Includes costs for distributed networking capability (i.e. Defense Research Engineering (DREN), I/ O Range, circuits, etc.) and other electronic infrastructure data transfer media between Aberdeen Proving Grounds (APG), Electronic Proving Grounds (EPG), FT Bliss and White Sands Missile Range. Conduct coordination with AEC on the development of System Evaluation Plans (SEP) and Operational Milestone Assessment Reports (OMAR) and maintain all data bases of evaluation analysis. Conduct Red/Blue Force Team Cyber assessments in the lab and in the field.</p> <p>FY 2016 Plans: Complete test planning, coordination of requirements, assets planning, range planning, and soldier planning. Conduct test planning and management which includes, conduct coordination of requirements with Army Evaluation Center (AEC), Operational Test Command (OTC), White Sands Missile Range (WSMR). This coordination includes development and procurement of modeling and simulation tools, instrumentation for data collection, facilities required to store and maintain equipment, facilities required to integrate capabilities, other test equipment, and REDFORCE systems. Conduct safety and operational assessments, data collection, data analysis and report development. Conduct experimentation, tests, and evaluation by coordinating and procuring range resources to include range time, range personnel, test engineering support, operators and subject matter experts on systems under evaluation. Includes costs of management of the test/experiment and support all experiments and tests. Includes costs for distributed networking capability (i.e. Defense Research Engineering (DREN), I/O Range, circuits, etc.) and other electronic infrastructure data transfer medias between Aberdeen Proving Ground (APG), Electronic Proving Ground (EPG), FT Bliss and White Sands Missile Range. Conduct coordination with AEC on the development of System Evaluation Plans (SEP) and Operational Milestone Assessment Reports (OMAR) and maintain all data bases of evaluation analysis. Conduct Red/Blue Force Team Cyber assessments in the lab and in the field.</p>				
<p>Title: Other Support Cost</p> <p>Description: Other Support Cost required for NIE Event.</p> <p>FY 2015 Accomplishments: Procured and managed satellite time, POL, security support, facilities, MEDEVAC support, blade time for helicopters, and others services, equipment and maintenance of facilities to ensure a successful evaluation/test.</p> <p>FY 2016 Plans:</p>		1.732	4.764	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY3 / <i>NIE Test & Evaluation</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Procure and manage satellite time, POL, security support, facilities, MEDEVAC support, blade time for helicopters, and others services, equipment and maintenance of facilities to ensure a successful evaluation/test.				
<p>Title: Integrated Evaluations</p> <p>Description: These funds provide for integration of network solutions onto Soldier and vehicle systems to enable operational evaluations and assessments of integrated networks established across the battlespace of a Brigade Combat Team. Network Integration Evaluations (NIEs) focus on operational evaluations of network Programs of Record; Army Warfighting Assessments (AWAs) provide the venue for operational assessments of advanced networked concepts and technologies. It supports all Capability Package Directorate (CPD) activities associated with integrating systems and ancillary equipment onto the tactical platforms associated with a Brigade Combat Team (BCT). The FY17 effort funds Government activities in Army Warfighting Assessment (AWA) 17.1, Network Integration Evaluation (NIE) 17.2, and AWA 18.1. These funds also support early integration planning activities for NIE 18.2.</p> <p>FY 2017 Plans: These funds provide for:</p> <ul style="list-style-type: none"> - AWA 17.1 close-out. This support consists of: performing detailed analysis of up to 2000 SIF trouble tickets to identify System, and/or System of Systems, trends that manifested themselves during any given phase of the AWA, and publishing a formal report. - NIE 17.2 and AWA 18.1 planning and preparation. Support listed here is common to both events, unless otherwise noted, and will consist of: - For each event, providing technical input on platform Size Weight and Power (SWAP) constraints or restrictions that must be considered for placement of candidate systems in the Horse Blanket; participation in Bull Pen sessions to; finalize candidate system parameters and characteristics needed for platform/system engineering designs; verify accreditation status for all network systems; identify supporting hardware and software requirements; and finalize delivery schedules for the respective events; conduct planning and coordination for Tier 1 Integrated Master Schedule (IMS), as well as development of lower tier schedules for integration; complete the development of Engineering Design packages (drawings, diagrams, manuals) and Bills of Materials (BOMs) for integrating system A/B Kits on up to 250 tactical platforms, (This includes development of up to 50 Prototype (Golden) Vehicles (GV) and for NIE 17.2 only, engineering design packages also include instrumentation needed for System-Under-Test data collection); complete the development of Network Engineering designs, plans, and schedules for integrating and configuring on up to 3000 C4ISR systems, to include baseline and legacy systems, enabling these systems to join and operate on the network; complete the implementation of Configuration Management (CM) for up to 250 Tactical Platform architectural implementations, engineering designs, A-Kits, B-Kits, and the Integrated Master Schedules; procure up to 20,000 materials, 		-	-	64.959

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY3 / <i>NIE Test & Evaluation</i>

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

	FY 2015	FY 2016	FY 2017
<p>fasteners, cables, components, and other items needed for installing NIE/AWA systems on up to 250 tactical platforms; fabricate of up to 1,000 special cables and up to 1,000 metal plates, racks, and brackets, needed for system installation on up to 250 platforms; coordinate hardware and software system deliveries to the Integration Motor Pool (IMP) at Fort Bliss, TX; provide access control and badging for IMP and field operations for up to 5000 personnel; conduct planning and Coordination with BMC for developing and issuing Operational Orders (OPORDS), Fragmentary Orders (FRAGOS), and other directives, for 2/1 AD, and other Unit, support.</p> <p>- For NIE17.2 only, coordination with CS design teams for CS-19 equipment baseline implementation: To ensure equipment and network interface designs support the CS-19 architecture, CS-19 training support requirement, to establish the methods to be followed for informing the CS design teams on CS-19 issues and/or trends, to address Integrated Logistics System (ILS) requirements, and capture Lessons Learned in the form of After Action Reviews, Technical Reports, and Feedback on CS-19 systemic issues encountered during Integration, conduct field Based Risk Reduction testing for up to 4 complex platform builds, and preparation of up to 50 integrated platforms (25 for AWA 18.1) for safety release testing.</p> <p>- IMP operations for each event, including; Administrative support for up to 600 Program Managers (PMs), Original Equipment Manufacturers (OEMs), and Field Service Representatives (FSRs) Office space, Internet access, conferencing, etc., managing and coordinating technical support, during GV design, and during GV/Fleet Build for up to 500 FSRs and OEMs, packaging and shipping up to 200 packages of components and equipment and receiving up to 4000 packages of equipment, components and materials, warehousing up to 2,000 pieces of equipment and up to 20,000 components and materials, supporting inspection teams for up to 250 tactical platforms delivered for subsequent integration, managing up to 250 Tactical Platforms, including movement into IMP High Bays, security for the IMP and for technical field support bases, enforce safety standards, conduct hazardous waste management, support installation teams for up to 250 tactical platforms, conduct System of System Checkouts on over 400 platforms, to verify all installed systems and equipment interoperate with each other, as well as with legacy C4ISR/Vehicular Systems, conduct QA/QC checkouts for up to 250 integrated platforms.</p> <p>- For each event, coordinate New Equipment Training (NET) Quality Control and Scheduling, provide troubleshooting support for integration related issues/problems during the Validation and Communications Exercise phases (VALEX and Garrison COMMEX), Utilization of Single Interface to the Field (SIF) failure reporting and corrective action system (FRACAS), for generating trouble tickets and assigning technical support teams to resolve problems or issues reported during VALEX.</p> <p>- For NIE 17.2, Coordinating with System Owners, vendors, and Brigade Modernization Command (BMC), for NET Training Package development and delivery. Coordinating with BMC and with System owners/vendors for scheduling and providing NET for up to 1,000 soldiers. Perform detailed analysis of up to 2000 SIF trouble tickets to identify System, and/or System of Systems,</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY3 / <i>NIE Test & Evaluation</i>

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

	FY 2015	FY 2016	FY 2017
<p>trends that manifested themselves during any given phase of the NIE, and publishing a formal report, develop and publish up to 20 formal technical reports for C4ISR systems integrated and installed as part of the NIE.</p> <p>- For AWA 18.1, NET support outlined above is only provided for Networked Systems. Non-Networked systems NET support is TRADOCs responsibility.</p> <p>- NIE17.2/AWA 18.1 Execution/Closeout: For each event, establishing field operations for Technical Support teams to operate from during Field COMMEX and Event Execution, provide field support will include a Higher Control (HICON) element, two Regional Support Teams (RSTs), and up to six Unit Support Teams (USTs), ensure that the HICON, RSTs, and USTs is strategically emplaced throughout the NIE footprint to enable technical support teams to respond to, and resolve, problems reported by soldiers in the field, ensure utilization of SIF FRACAS, managed at the HICON, for generating trouble tickets and assigning technical support teams to resolve problems or issues reported by the soldiers, and establishing logistics cells at the IMP and at strategic locations in the NIE footprint, enabling rapid response times for spare parts and components needed to repair and resolve NIE system issues while the Unit is in the field, de-modifying integrated C4ISR systems from up to 250 platforms and returning those platforms to their original configurations, oversee the updating and finalizing up to 50 engineering design drawings based on the outcomes of VALEX, Garrison COMMEX, Field COMMEX, and Event Execution.</p> <p>- After each event, recovery of up to 250 Tactical Platforms back to the CPD Integration Motor Pool (IMP), at Fort Bliss, Texas.</p> <p>- NIE 18.2 Early Planning: Provide technical input on platform SWAP constraints or restrictions that must be considered for placement of candidate systems in the Test Brigade Horse Blanket, participate in Bull Pen sessions to: finalize candidate system parameters and characteristics in order to support platform/system engineering designs; verify accreditation status for all network systems; identify supporting hardware and software requirements; and finalize delivery schedules for the respective events and conduct the planning and coordination for Tier 1 Integrated Master Schedule (IMS), as well as development of lower tier schedules for integration.</p> <p>- NIE Network Integration and Validation: Funds provide for loading, establishing, integrating, and validating that the Network Integration Evaluation / Army Warfighter Assessment (NIE/AWA) network is stable, and that NIE/AWA networked systems, are integrated on tactical platforms, and can join and operate on the NIE/AWA network. It supports all activities associated with planning, coordination, preparation, and execution of Network Validation Exercises (VALEX) for NIE 17.2 and AWA 18.1, as well as planning, coordination, and preparation for VALEX during AWA18.2. Once Platform Integration for NIE 17.2 and AWA 18.1 is complete, Capability Package Directorate (CPD) conducts VALEX to verify and demonstrate that integrated networked systems are properly configured and loaded to operate on the NIE network. At the same time CPD also verifies and validates the</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY3 / <i>NIE Test & Evaluation</i>

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

	FY 2015	FY 2016	FY 2017
<p>overarching NIE/AWA network is stable and operating nominally, prior to being handed over to BMC and 2/1 AD for NIE/AWA execution.</p> <p>- For each event, Capability Package Directorate's Trail Boss teams (consisting of Government and Contractor personnel), along with Platform Integration engineers and technicians, and ILS personnel, perform intensive planning and coordination leading up to the VALEX: oversee the planning and coordinating for; the Integration Motor Pool (IMP) layout for Command Posts and for integrated and legacy platforms that will be involved in VALEX, working to identify and resolve security issues associated with running classified/Coalition networked operations at the IMP, Data Products needed to load, configure, and initialize NIE/AWA networked systems and the underlying network devices (routers, switches, drivers, etc.), securing Information Assurance Accreditations for all networked C4ISR systems, including baseline and legacy systems, conduct coordination with; Lab Based Risk Reduction representatives for development of priority technical mission threads that will be used to validate the NIE network, ensure the development of; the battle rhythm (VALEX activities, meetings, technical forums for problem identification and resolution, leadership updates, etc.) for VALEX teams to follow during actual VALEX execution. The development of Network and Interconnecting Diagrams that are critical for defining networked system configurations, routing schemes, and routing architectures for networked systems and devices and Spectrum Plan for allocating and de-conflicting operating frequencies for all radiating systems involved in the NIE/AWA, including all NIE/AWA systems and all legacy systems.</p> <p>- For NIE 17.2 only, planning and coordination with ATEC to verify installed instrumentation is properly configured for data collection.</p> <p>For each event, unless otherwise noted, execute and provide technical support for each of the VALEX major phases:</p> <p>- During the LOADEX phase, CPD Trail Boss teams, working with Program of Record (POR) representatives, Legacy System Field Service Representatives (FSRs), and Vendor FSRs, and other key stakeholders, perform the following functions: Install networked system's hard drives, operating system software, software applications, and firmware on up to 2500 systems, Set IP addresses and configure all network systems, and load and initialize Radio Mission Plans, System configuration files and system parameters on up to 400 platforms. For NIE 17.2 only, load software on up to 250 instrumentation packages and configure as required for data collection. Perform test/fix/test processes at the system and component levels.</p> <p>- During the ESTABLISH phase, CPD Trail Boss teams, working with vendor FSRs, Legacy FSRs, and POR technical representatives, and other key stakeholders, perform the following functions: Verify networked hardware and software performance at the platform level, troubleshoot issues associated with network system configurations, Verify each integrated platform can perform its mission while operating on the NIE network. These activities typically involve up to 400 ESTABLISH tasks.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY3 / <i>NIE Test & Evaluation</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>- During the INTEGRATE phase, CPD trail boss teams, working with vendor FSRs, Legacy FSRs, and POR technical representatives, and other key stakeholders, perform the following functions: Verify networked hardware and software performance and networked communications at each echelon (i.e., between platforms and soldiers at the Platoon Level), as well as between echelons, all the way up to the Brigade level, and at echelons above Brigade, Troubleshoot any issues between units and at each echelon, and ensure tactical units information exchange enables units to support their intended missions.</p> <p>- For NIE 17.2 only, verify instrumentation is operational and is collecting and storing data as required. These activities typically involve up to 400 INTEGRATE tasks, and continue providing over-the-shoulder training for Soldiers who will be using the new BCT network during the NIE.</p> <p>During the VALIDATE phase, CPD trail boss teams, working with vendor FSRs, Legacy FSRs, and POR technical representatives, and other key stakeholders, execute up to 40 mission threads to: route messaging and information along specified critical nodes on the NIE/AWA Network, enabling operational missions to be executed by the soldiers, demonstrate the NIE/AWA Overarching Network's ability to enable the BCT commander to utilize key capabilities that rely on the network such as Networked Services (Server-Client Systems such as CPOF, Intel, VOIP conferencing, etc.)</p> <p>For NIE 17.2 only, ensure instrumentation is properly configured for capturing and logging data, enabling ATEC and TRADOC assessments and evaluations.</p> <p>- Lab Based Risk Reduction (LBRR) to support Integrated Evaluations: These funds provide SME to plan, coordinate, integrate and execute the risk reduction for the full System of Systems network/ architecture designs in the Network Integration Evaluation (NIE) and Army Warfighter Assessment (AWA) in controlled environments to minimize integration, configuration and interoperability risk in the events. LBRR efforts are used to: reduce risk in the Network Integration Evaluation (NIEs) 17.2 and the Army Warfighter Assessment (AWA) 18.1 and planning for 18.2, coordinate logistics and equipment delivery of resources planned for LBRR, build, integrate and configure the System of Systems network architecture in the lab using actual Program of Record hardware and COE software in preparation for risk reduction execution. Configuration also includes support for loading of the actual NIE/AWA data products for validation, lead and coordinate the NIE/AWA System of Systems testing between external sites participating in risk reduction, develop. The risk reduction plan includes: functional testing, routing, thread testing, as well as the design of the lab network in order to effectively represent the NIE/AWA architecture to provide for AWA and NIE executions. Provides SME during AWA and NIE execution to help design the network configuration and address any network issues. This is done in the lab and in the field. LBRR personal also interface with PORs to ensure their successful integration into the network. It also leverages network resources to conduct network analysis efforts to improve future Army networks, end states, in support of future AWAs and NIEs, executes blue teaming/red teaming and other cyber tasks to inform on early Network Cyber requirements, provides lab evaluations of POR and demonstration systems and reports on how they meet Network 2020 or Force 2025B</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017
<p>requirements and supports the management of trouble tickets and test incident reports for configuration management of testing issues to effectively report resolved and outstanding items as LBRR transitions into the Validation Exercise (VALEX).</p> <p>- Network Architecture & Thread Development to support Integrated Evaluations: These funds provide SME to coordinate the NIE/AWA 17.2, 18.1 and 18.2 architecture planning & development to meet all event test and evaluation objectives. Lead the documentation of the overall NIE/AWA network architecture and technical System of System threads.</p> <p>- These funds also provides for: collaboration with BMC, ATEC & G3/5/7 on the development of the detailed System of Systems Architecture to meet all evaluation and operational test requirements. Detailed development includes node by node systems planning, to build NIE/AWA Horse Blankets, lead Focused End States and other factors in forward planning and candidate assessments of the NIE/AWA Strategic Planning Review (SPR), Co-lead the NIE/AWA 17.2 and 18.1 Bullpen Sessions to ensure all architecture systems meet stakeholder evaluation requirements and finalize the NIE/AWA Horse Blanket, development of the detailed SoS Network Architecture in the form of the Transport View Diagrams and designing and maintaining the System of Systems Technical Threads of the NIE/AWA 17.2 and 18.1 in order to show operational use cases applied over the NIE/AWA. Development activities include leading the Critical Design Reviews of individual threads with both material/Program Manager (PM) and TRADOC stakeholders. It supports: LBRR during the thread risk reduction event and PM CP during the Validation Exercise (VALEX) during NIE/AWA 17.2 and 18.1 leading the coordination of individual thread validations to show SoS interoperability within the integrated architecture after all network integration and configuration have completed and it also supports maintaining the current custom scripts that enable data migration between the ARCADIE-derived Horse Blanket spreadsheet and the MagicDraw tool that is used to diagram the Transport View and Technical Threads deck.</p> <p>- System of Systems (SoS) Network Performance Analysis to support Integrated Evaluations: These funds provide the Subject Matter Expertise to execute diverse and independent portfolio of Network System of Systems performance analyses involving multiple-PEO systems (C3T, IEW&S, Soldier, GCS, STRI) and their cross-PEO integration which enables key acquisition-level decisions, Mission Command network (MCN) Capability portfolio reviews (CPRs), it also enables capability set (CS) architecture product Courses of Action COAs development and validation and provides Army Acquisition Executives (AAEs) and OSD with independent evaluations of PEO/PM solutions and services.</p> <p>- These funds also enable SMEs to conduct Transport Convergence of Intel/C2/Logistics/Medical performance analysis and network performance requirements development (all C4ISR/EW PEOs), Integrated Network Performance Assessments (INPA) of NIE 17.2 and AWA 18.1, and assessments of Current and Future Network Cyber vulnerabilities and provide recommendations for solutions and/or architectural changes to resolve and/or mitigate them. Enduring analytical capabilities that enable these analysis will also be strengthened and standardized, to include: Army real-time OSD-metrics-driven Big Data performance analytics and Mission Essential / Mission Enhanced (MEME) operational impact assessment methodology (aka from technical to operational).</p>			

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

	FY 2015	FY 2016	FY 2017
<p>- NIE /AWA and Alternate Venue Planning (Module 1-3): These funds provide for strategic planning to solicit and synchronize candidates and objectives for NIE and AWA bi-annual events. It establishes initial objectives, solidifies the architecture baseline and will establish a viable candidate list for Network Integration Evaluation (NIE) and Army Warfighter Assessment (AWA). Addresses planning for operational assessments to occur at venues other than NIE or AWA. Complete test planning, coordination of requirements, assets planning, and soldier planning.</p> <p>It supports the compilations of potential solutions that could meet the Army's Mission Command gaps and the US Army Training and Doctrine Command (TRADOC) identified opportunities. It includes the coordinated efforts between System of Systems Integration (SOSE&I), ASA(ALT) Program Executive Offices, Deputy Chief of Staff G3/5/7, Brigade Modernization Command (BMC) Ft Bliss and the Army Test and Evaluation Command (ATEC). Project also includes the initial integration phase where Systems Under Test (SUT) and government/industry System Under Evaluation (SUE) hardware and software are integrated and initially evaluated for follow-on consideration for lab assessments. These funds provide for planning detailed experiments, tests and evaluations of potential Network, Software and Hardware systems for procurement and integration into the Army's Warfighter system. Effort to solicit and select capabilities for inclusion in the NIE and AWA bi-annual events supporting Army's Network 2020 Endstates and Objectives and Forces 2025 beyond. Effort includes correspondence to NIE and AWA Participants, consolidation, analysis and publishing post-event reports and findings, analyze and consolidate event findings and development of implementation plans and to develop and maintain NIE and AWA specific Integrated Master Schedule (IMS). Effort to finalize the architecture, requirements, and horseblanket for each NIE and AWA and maintains horseblanket and IMS under formal CM processes, incorporates analysis and architecture objectives to influence CS fielding, facilitating platform reviews. Customers include HQDA G-3/5/7, G-8. TRADOC, ASA(ALT) PEOs, CIO/G-6, ATEC, deploying units, industry partners.</p> <p>- These fund also provide for the following: stakeholder Synchronization, Gatekeeper Management, Horse Blanket Initial development and analysis, Gov/Industry Solicitation, participant proposal evaluation, participation coordination, consolidation of stakeholder reports, individual final report generation to participants, incorporation of AWA results into PoR initiatives (.1 feedback loop to .2), cross directorate analysis and reporting, Alternate Venue planning, TSARC outcomes analysis, Implementation Memoranda, and Strategic Planning Review event planning and execution, Bull Pen event planning and execution.</p> <p>- MCN2020 Focused End State Alignment: These funds provide SMEs to analyze and coordinate identified PoRs on the NIE roadmap to achieve Mission Command Network 2020 End States and Objectives. It provides the Army's leadership and materiel developers with the necessary Capability Set (CS) modernization planning, critical path analysis, risk analysis and mitigation planning, system of systems engineering (SOSE), technical analysis and architectural products to inform the Army's materiel portfolio (5 to 10 year plans). Lead and facilitate planning of long term Engineering & Architecture objectives across multiple PORs for support of MCN 2020 Objectives and Focused End States.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>- System of Systems (SoS) Network Performance Analysis: These funds provide the Subject Matter Expertise to execute diverse and independent portfolio of Network System of Systems performance analyses involving multiple-PEO systems and their cross-PEO integration which enables key acquisition-level decisions, Mission Command network (MCN) Capability portfolio reviews (CPRs), it also enables capability set (CS) architecture product Courses of Action COAs development and validation and provides Army Acquisition Executives (AAEs) and OSD with independent evaluations of PEO/PM solutions and services. It also funds conducting: cross-PEO Network System of System (SoS) performance analysis which includes the following key tasks and activities, CS20-22 reference architecture (IBCT, ABCT) performance validation/prediction analysis, to include operational impact assessment of the proposed architectural COAs, and sustainment improvement analysis, assessments of Position, Navigation and Timing (PNT) solution performance.</p> <p>- Network Integration Evaluation Long-range Investment Requirements Analysis (LIRA): These funds provide SMEs to develop LIRA for NIEs and evolution to Capability Integration Evaluations after FY 2020. It provides the Army's leadership and materiel developers with the necessary Capability Set (CS) modernization planning, critical path analysis, risk analysis and mitigation planning, system of systems engineering (SOSE), technical analysis and architectural products to inform the Army's materiel portfolio (5 and 30 year plans). Short and long term planning for evaluation and evolution of Network and Capability Integration evaluations after FY 2020.</p> <p>- Cyber support to Integrated Evaluations: The funds are provided to manage the NIE cyber security project including the NIE Authority to Connect (ATC) process and risk analysis for the Operational Test Network (OTN). Establish and maintain cybersecurity policies for NIE including a complete refresh of the cybersecurity Smartbook. It also includes: continually tracking accreditations for Capability Sets, champion certification and accreditation (C&A) impacts to scheduling and coordinating all cybersecurity activities for NIE/AWA including red, blue, and green team activities; ensure activities are funded through NIE Gatekeepers, coordinate threat briefing to the AO and all assessment out-briefs.</p> <p>- Strategic support to Platform in Integration Evaluation (SsP-IE): These funds provide for the advance collaboration and coordination with platform and network system Product/Project/Program Managers (PMs) to ensure Capability Set (CS) fielding platform integration design decisions are based on CS Reference Architecture products for CS16-22 to be evaluated in Network Integration Evaluation (NIE) events. Develop the Unit-specific architecture.</p> <p>- SsP-IE: CS16 Products and Services: Close out of CS16 platform integration activities for the design of current and future Army network technologies in Army vehicle systems for evaluations at NIE 14.1 and 14.2 and finalize leveraging NIE technical data packages, network trend analysis,</p>				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017
<p>architecture, vehicle designs, platform integration challenges, strategic planning, Validation Exercise (VALEX) and SharePoint data sharing.</p> <p>- SsP-IE: CS17 Products and Services: Direct the design and integration of current and future Army network technologies in Army vehicle systems for evaluations at NIE 15.1 and 15.2. Define platform integration requirements for CS17 baseline NIE 15.1 and 15.2 evaluations, leveraging NIE technical data packages, network trend analysis, architecture, vehicle designs, platform integration challenges, strategic planning, Validation Exercise (VALEX), and SharePoint data sharing. Evaluate, synchronize and monitor platform and network system integration risks and mitigation plans for CS17 Unit specific Architectures in collaboration and coordination with platform and network system PMs. Evaluate, synchronize and monitor platform and network system program acquisition schedules, integration costs, and system requirements across organizations for the development of production ready A&B-kit Interface Control Documents (ICDs) and Level II Technical Data Packages (TDPs) supporting CS17 Unit specific baseline evaluations in collaboration and coordination with platform and network system PMs. Evaluate, synchronize and monitor PM implementation of Vehicle Integration for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR)/ Electronic Warfare (EW) Interoperability (VICTORY) standards in Unit specific Architecture products.</p> <p>- SsP-IE: CS18 Products and Services: Define platform integration requirements for CS18 baseline NIE evaluation; leveraging NIE technical data packages, network trend analysis, architecture, vehicle designs, platform integration challenges, strategic planning, VALEX, and SharePoint data sharing. Evaluate, synchronize and monitor platform and network system Size, Weight and Power (SWaP) assessment of CS18 Unit specific Architectures in collaboration and coordination with platform and network system PMs. Support platform Original Equipment Manufacturer (OEM) design and integration activities for NIE and CS baseline events. Evaluate, synchronize, and monitor PM implementation of VICTORY standards in Initial and CS18 Unit specific Architecture products.</p> <p>-SsP-IE: Products and Services: Direct the design and integration of current and future Army network technologies in Army vehicle systems for evaluations at NIE 16.2 and 17.1. Define platform integration requirements for CS19-22 baseline NIE evaluation; leveraging NIE technical data packages, network trend analysis, architecture, vehicle designs, platform integration challenges, strategic planning, VALEX, and SharePoint data sharing. Evaluate, synchronize and monitor the development of the final CS19-22 Reference Architectures products defined by NIE evaluation results in collaboration and coordination with SoSE&I Engineering and Integration (E&I) and the Synch Fielding (SF)-Engineering Division. Evaluate, synchronize and ensure platform integration requirements are embedded in the performance scope for SoSE&I managed SUE production RFPs In collaboration and coordination with platform PMs, network system PMs and the SoSE&I Integration Planning Division. Support platform OEM design and integration activities for NIE and CS baseline events.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
- These funds also provide Subject Matter Expertise for contract and budget management support to NIE17.2 and NIE/Army Warfighter Assessment (AWA) 18.1.			
Title: Infrastructure and other support Description: Provides for setup, utilities, furniture, equipment and maintenance (of all equipment and facilities) used by SoSE&I in support of Integrated Evaluation. Includes lease and support maintenance contracts for Government Service Administration (GSA) vehicles that support the NIE/AWA mission at FBTX/WSMR. FY 2017 Plans: Provides for setup, utilities, furniture, equipment and maintenance (of all equipment and facilities) used by SoSE&I in support of Integrated Evaluation. Includes lease and support maintenance contracts for Government Service Administration (GSA) vehicles, IT equipment and support and facilities support closing-out NIE/AWA 16.1, planning, conducting and closing-out NIE17.2, planning and conducting NIE/AWA 18.1 and planning for NIE18.2 at FBTX/WSMR.	-	-	0.885
Accomplishments/Planned Programs Subtotals	4.440	12.215	65.844

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	
• DY4: <i>DY4 Network Integration Support</i>	16.382	14.131	-	-	-	-	-	-	-	-	Continuing	Continuing
• DY5: <i>DY5 Production/Fielding Coordination for Capability Sets</i>	2.802	4.601	3.960	-	3.960	4.099	4.194	4.286	4.374	-	Continuing	Continuing
• DY6: <i>DY6 Brigade and Platform Integration Support</i>	33.629	45.504	-	-	-	-	-	-	-	-	Continuing	Continuing
• DY7: <i>DY7 Army Systems Engineering, Architecture and Analysis</i>	16.988	16.416	14.166	-	14.166	24.176	24.651	25.123	25.505	-	Continuing	Continuing
• DZ6: <i>DZ6 Army Integration & Coordination Management</i>	8.716	6.375	5.746	-	5.746	5.952	6.087	6.218	6.352	-	Continuing	Continuing

Remarks

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

This project includes Army Test Evaluation Center competitive contracts for test support services. Additional competitive contracts are awarded by Defense Information Systems Agency (DISA) for satellite support.

E. Performance Metrics

N/A

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

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Evaluation	TBD	Various See Note #1 : Various	0.000	-		-		64.959	Nov 2016	-		64.959	0	64.959	0
Subtotal			0.000	-		-		64.959		-		64.959	0.000	64.959	0.000

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed, Aberdeen Proving Grounds (MD), FT Bliss (TX), White Sands Missile Range (NM).
 - Includes support services from DISA (for satellite time) and other governments agencies

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Other Support Costs	TBD	Various Note:1 : TBD	5.653	1.732	Nov 2014	4.764		-		-		-	0	12.149	0
Infrastructure and other support	TBD	Various see note #1 : Various	0.000	-		-		0.885	Nov 2016	-		0.885	0	0.885	0
Subtotal			5.653	1.732		4.764		0.885		-		0.885	0.000	13.034	0.000

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed, Aberdeen Proving Grounds (MD), FT Bliss (TX), White Sands Missile Range (NM).
 - Includes support services from DISA (for satellite time) and other governments agencies

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			
NIE ATEC Test and Evaluation Costs	TBD	Various Note:1 : TBD	8.841	2.708	Nov 2014	7.451		-		-		-	0	19.000	0
Subtotal			8.841	2.708		7.451		-		-		-	0.000	19.000	0.000

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

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

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at Aberdeen Proving Ground (MD), Electronic Proving Grounds (AZ), FT Bliss (TX), White Sands Missile Range (NM).
 - Program Test support through ATEC

	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	14.494	4.440	12.215	65.844	-	65.844	0.000	96.993	0.000

Remarks

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIE 15.2 Planning - Execution																												
NIE 15.2 Lab Integration/Testing																												
NIE 15.2 Candidate Solution Integration																												
NIE 15.2 LoadEx																												
NIE 15.2 CommEx																												
NIE 15.2 Pilot																												
NIE 15.2 Event																												
NIE 15.2 Event Analysis & Summary																												
NIE 16.1 Planning - Execution																												
(1) NIE 16.1 Industry Day	▲ 1																											
(2) NIE 16.1 DP 1		▲ 2																										
(3) NIE 16.1 DP 2			▲ 3																									
NIE 16.1 Lab Integration/Testing																												

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIE 16.1 Candidate Solution Integration																												
NIE 16.1 LoadEx																												
NIE 16.1 CommEx																												
NIE 16.1 Pilot																												
NIE 16.1 Event																												
NIE 16.1 Event Analysis & Summary																												
NIE 16.2 Planning - Execution																												
(1) NIE 16.2 Industry Day																												
(2) NIE 16.2 DP 1																												
(3) NIE 16.2 DP 2																												
NIE 16.2 Lab Integration/Testing																												
NIE 16.2 Candidate Solution Integration																												
NIE 16.2 ValEx																												

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIE 16.2 CommEx																												
NIE 16.2 Pilot																												
NIE 16.2 Event																												
NIE 16.2 Event Analysis & Summary																												
NIE 17.1 Planning - Execution																												
(1) NIE 17.1 Industry Day					▲ 1																							
(2) NIE 17.1 DP 1						▲ 2																						
(3) NIE 17.1 DP 2							▲ 3																					
NIE 17.1 Lab Integration/Testing																												
NIE 17.1 Candidate Solution Integration																												
NIE 17.1 ValEx																												
NIE 17.1 CommEx																												
NIE 17.1 Pilot																												

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4												
NIE 17.1 Event									■																															
NIE 17.1 Event Analysis & Summary									■																															
NIE 17.2 Planning - Execution									■																															
(1) NIE 17.2 DP 1													▲																											
(2) NIE 17.2 DP 2													▲																											
NIE 17.2 Lab Integration/Testing																	■																							
NIE 17.2 Candidate Solution Integration																					■																			
NIE 17.2 ValEx																					■																			
NIE 17.2 CommEx																					■																			
NIE 17.2 Pilot																					■																			
NIE 17.2 Event																					■																			
NIE 17.2 Event Analysis & Summary																					■																			
NIE (AWA) 18.1 Planning - Execution																									■															
																													■											

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) NIE 18.1 DP 1									▲ 1																			
(2) NIE 18.1 DP 2									▲ 2																			
NIE 18.1 Lab Integration/Testing																												
NIE 18.1 Candidate Solution Integration																												
NIE 18.1 ValEx																												
NIE 18.1 CommEx																												
NIE 18.1 Pilot																												
NIE 18.1 Event																												
NIE 18.1 Event Analysis & Summary																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY3 / <i>NIE Test & Evaluation</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 15.2 Planning - Execution	2	2014	3	2015
NIE 15.2 Lab Integration/Testing	1	2015	3	2015
NIE 15.2 Candidate Solution Integration	2	2015	2	2015
NIE 15.2 LoadEx	2	2015	3	2015
NIE 15.2 CommEx	3	2015	3	2015
NIE 15.2 Pilot	3	2015	3	2015
NIE 15.2 Event	3	2015	3	2015
NIE 15.2 Event Analysis & Summary	3	2015	3	2015
NIE 16.1 Planning - Execution	3	2014	1	2016
NIE 16.1 Industry Day	1	2015	1	2015
NIE 16.1 DP 1	2	2015	2	2015
NIE 16.1 DP 2	2	2015	2	2015
NIE 16.1 Lab Integration/Testing	3	2015	1	2016
NIE 16.1 Candidate Solution Integration	4	2015	4	2015
NIE 16.1 LoadEx	4	2015	4	2015
NIE 16.1 CommEx	4	2015	1	2016
NIE 16.1 Pilot	1	2016	1	2016
NIE 16.1 Event	1	2016	1	2016
NIE 16.1 Event Analysis & Summary	1	2016	1	2016
NIE 16.2 Planning - Execution	4	2015	3	2016
NIE 16.2 Industry Day	4	2015	4	2015
NIE 16.2 DP 1	4	2015	4	2015

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY3 / <i>NIE Test & Evaluation</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 16.2 DP 2	4	2015	4	2015
NIE 16.2 Lab Integration/Testing	1	2016	3	2016
NIE 16.2 Candidate Solution Integration	2	2016	2	2016
NIE 16.2 ValEx	2	2016	3	2016
NIE 16.2 CommEx	3	2016	3	2016
NIE 16.2 Pilot	3	2016	3	2016
NIE 16.2 Event	3	2016	3	2016
NIE 16.2 Event Analysis & Summary	3	2016	3	2016
NIE 17.1 Planning - Execution	1	2016	1	2017
NIE 17.1 Industry Day	1	2016	1	2016
NIE 17.1 DP 1	2	2016	2	2016
NIE 17.1 DP 2	2	2016	2	2016
NIE 17.1 Lab Integration/Testing	3	2016	1	2017
NIE 17.1 Candidate Solution Integration	4	2016	4	2016
NIE 17.1 ValEx	4	2016	4	2016
NIE 17.1 CommEx	1	2017	1	2017
NIE 17.1 Pilot	1	2017	1	2017
NIE 17.1 Event	1	2017	1	2017
NIE 17.1 Event Analysis & Summary	1	2017	1	2017
NIE 17.2 Planning - Execution	4	2016	3	2017
NIE 17.2 DP 1	4	2016	4	2016
NIE 17.2 DP 2	4	2016	4	2016
NIE 17.2 Lab Integration/Testing	1	2017	3	2017
NIE 17.2 Candidate Solution Integration	2	2017	2	2017
NIE 17.2 ValEx	2	2017	2	2017

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY3 / <i>NIE Test & Evaluation</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 17.2 CommEx	3	2017	3	2017
NIE 17.2 Pilot	3	2017	3	2017
NIE 17.2 Event	3	2017	3	2017
NIE 17.2 Event Analysis & Summary	3	2017	3	2017
NIE (AWA) 18.1 Planning - Execution	2	2017	1	2018
NIE 18.1 DP 1	2	2017	2	2017
NIE 18.1 DP 2	2	2017	2	2017
NIE 18.1 Lab Integration/Testing	3	2017	1	2018
NIE 18.1 Candidate Solution Integration	4	2017	4	2017
NIE 18.1 ValEx	4	2017	4	2017
NIE 18.1 CommEx	1	2018	1	2018
NIE 18.1 Pilot	1	2018	1	2018
NIE 18.1 Event	1	2018	1	2018
NIE 18.1 Event Analysis & Summary	1	2018	1	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>					Project (Number/Name) DY4 / <i>Network Integration 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
DY4: <i>Network Integration Support</i>	-	16.382	14.131	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.513
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in FY 2017 the mission requirements and the funding to support them have been moved to DY3; NIE Test & Evaluation to increase transparency.

A. Mission Description and Budget Item Justification

This project supports Phases I through IV of the Army's Agile process. Phase I solicits potential solutions from existing Army programs, tech base programs, and industry to deliver capabilities that achieve the Army's Network 2020 Endstates and Objectives and Forces 2025 beyond. It establishes initial objectives, solidifies the architecture baseline and will establish a viable candidate list for Network Integration Evaluation (NIE). During Phase II, the project supports the compilations of potential solutions that could meet the Army's Mission Command gaps and the US Army Training and Doctrine Command (TRADOC) identified gaps which supports the development of integration and testing concepts for the NIE. Phase III includes the coordinated efforts between System of Systems Integration (SOSE&I), Brigade Modernization Command (BMC) at Ft Bliss and the Army Test and Evaluation Command (ATEC) to finalize the brigade architecture "horseblanket", integration and test planning, training requirements and combat mission evaluations. Phase III also includes the initial integration phase where Systems Under Test (SUT) and government/industry System Under Evaluation (SUE) hardware and software are integrated and initially evaluated for follow-on consideration at Aberdeen Proving Ground's (APG) Communications Electronics Research, Development and Engineering Center (CERDEC) labs through the Lab Based Risk Reduction (LBRR) process. This project provides for Network Integration of all SUTs and SUEs (industry and/or government) Hardware/Software into existing CERDEC System Integration Laboratories at APG to risk reduce evaluation architectures, network configurations and identify integration issues prior to NIE. This effort continues into Phase IV as the network matures and becomes functional in the Lab. The results of this detailed lab based testing/evaluations will determine which SUTs and industry/government SUEs will continue in the NIE (Phases IV/V of the Army's Agile Network Integration process) and establishes the initial Network configuration that will be used in NIE. LBRR also reduces risk to NIE execution by testing the Network in the lab, resolving issues found in the Network lab test and optimizing the Networks performance. This is done in a lab environment that facilitates very efficient, cost effective determination of problems, and their subsequent corrections.

Additionally this project will integrate the Network at the CERDEC labs facilitate participation by small businesses and interfaces and integrate with Government Programs of Record with unique military secure interfaces and protocols. Purchase of any additional hardware and support above and beyond the proposed or available support if required for Lab Based Risk Reduction is also funded within this project. For Government SUEs, this project funds integration support at the CERDEC Labs. If the NIE program requires additional prototypes above and beyond the Program of Record for the Lab based Risk Reduction, it will also purchase this equipment. This project also funds keeping the Network baseline up to date so that integration is always into the current baseline network.

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

	FY 2015	FY 2016	FY 2017
Title: NIE Network Integration and Lab Based Risk Reduction	9.662	8.335	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY4 / <i>Network Integration Support</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: These funds provide for the following: Network Integration of all industry and government SUEs, SUTs, and baseline Hardware/Software into existing CERDEC System Integration Laboratories at Aberdeen Proving Grounds (APG) to simulate the Brigade Network for NIE and determine if SUE's capabilities successfully resolve known gaps.</p> <p>FY 2015 Accomplishments: The funding provided for the Lab Based Network Analysis and evaluations for NIE 15.2 and NIE 16.1 Brigade Network. In the CERDEC labs, engineers created a representative NIE network architecture incorporating radios, satellite-based systems, handheld devices, mission command applications, routers, software, cables and other network components. Through a combination of actual and emulated hardware and software they modeled the end-to-end NIE network, allowing industry and government organizations the ability to "plug" their systems into the NIE architecture for early assessment and integration risk mitigation. This effort planned and conducted detailed Network experiments. The lab activity validated the NIE network as well as the BoldQuest risk reduction objectives as an integrated architecture product and network configuration using a joint/multinational scale network consisting of a mixture of live and virtualized hardware and software. Products included; plans/execution/reports of the following: system level specification verification, instrumentation verification, pre-event analysis, Network Integration Requirements Levels, Measures of Performance, communication load plan, automated performance assessment of technical, configuration control, transport and software basis of issue, instrumentation plan, field troubleshooting and reach back support during event execution, routing design for NIE, and technical input to the reports to industry of system performance and issues.</p> <p>FY 2016 Plans: The funding provides for the Lab Based Network Analysis and evaluations for NIE 16.2 and 17.1 Brigade Network. In the CERDEC labs, engineers create a representative NIE network architecture incorporating radios, satellite-based systems, handheld devices, mission command applications, routers, software, cables and other network components. Through a combination of actual and emulated hardware and software they model the end-to-end NIE network, allowing industry and government organizations the ability to "plug" their systems into the NIE architecture for early assessment and integration risk mitigation. This effort plans and conducts detailed Network assessments in support of the Army's 2020 and Force 2025 Network goals. The lab activity validates the NIE network architecture products and network configurations using a Brigade-scale network consisting of a mixture of live and virtualized hardware and software. Products include; plans/execution/reports of the following: system level specification verification, instrumentation verification, pre-event analysis, Network Integration Requirements Levels, Measures of Performance, communication load plan, automated performance assessment of technical, configuration control, transport and software basis of issue, instrumentation plan, field troubleshooting and reach back support during event execution, routing design for NIE, and technical input to the reports to industry of system performance and issues.</p>				
Title: NIE and LBRR Requirements Definition Support		4.605	3.973	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY4 / <i>Network Integration Support</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: These funds provide for all government and contract personnel and equipment which work with TRADOC and Army G-3/5/7 to finalize the architecture, requirements, and horseblanket for each NIE.</p> <p>FY 2015 Accomplishments: Completed initial scope objectives to develop an ASA(ALT) Integrated Master Schedule to capture Tier 1 schedule milestones from key Programs of Record required to support network modernization objectives through evaluation (NIE, AWA or alternate venue) and fielding. Worked with G-3/5/7, TRADOC and ASA(ALT) PEOs to finalize Mission Command Network 2020 Focused Endstates (FES) objectives and tasks through participation in FES Working Groups. This led to the planning and execution of the first three Strategic Planning Reviews to synchronize ASA(ALT) Programs of Record required to support modernization objectives and capture risks, issues and mitigation options. This led to the development of strategic planning products in support of Network Modernization objectives: Network Assessment Storyboard, Capability and VICTORY Roadmaps, Capability Readiness Log, Network Strategic Roadmap. Developed a NIE15.2 and NIE/AWA 16.1 Sources Sought to industry and the NIE 15.2, NIE/AWA 16.1 and NIE 16.2 Government Technology Call for Mature Solutions to solicit specific capabilities for participation in those evaluation events. This also includes the development of evaluation and down-selection criteria and evaluation of proposals against that criteria that resulting in recommended participants. This effort included management of the system list, development and delivery of the final implementation horseblanket architecture and design for each NIE. It also included all program, information, security, business, schedule, personnel management, network integration, evaluation, and reporting efforts required to support phases 1-3 of the NIE process. This effort also included the management and implementation of phase VI system recommendations across the ASA(ALT) PEO communities.</p> <p>FY 2016 Plans: This effort includes working with TRADOC and G-3/5/7 directorates and ASA(ALT) PEOs to finalize the operational gaps and develop either sources sought, or government technical call to select industry and government SUEs to participate in NIE 16.2 and NIE 17.1. This also includes the development, evaluation and down-select criteria and evaluation of sources sought, government technical calls proposals.. This effort includes management of the down-selections for each event, development and delivery of the final implementation horseblanket architecture and design for each NIE. It also includes all program information, security, business, schedule, personnel management, network integration, evaluation, and reporting efforts required to support phases I-III of the Agile process. This effort also includes the management and implementation of phase VI system recommendations across the ASA(ALT) PEO communities.</p>				
<p>Title: NIE SUE Hardware/Software for Lab & FSR Support for Network Integration</p> <p>Description: The effort includes procurement of Hardware and Software required by the Lab to fully simulate the Brigade Network it includes the FSR Support from Contractors to fully integrate their systems into the Network.</p>		1.430	1.233	-

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

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Provided funding to support NIE at the CERDEC Lab at APG. This supported network integration of industry and government technologies which were selected as Systems Under Evaluation (SUE) for participation into the Army's Network Integration Evaluations (NIE) 15.2 & 16.1. These funds covered the selected SUEs participation in the lab integration event. This included contractor's costs for travel, and shipment of equipment, Contractor Field Service Representatives (CFSRs) required to support Network integration activities, and the purchase of additional prototypes required for the CERDEC Lab when needed to effectively complete detailed evaluations of the complete brigade network architecture.</p> <p><i>FY 2016 Plans:</i> Provides funding to support Network integration and evaluation at the CERDEC Lab at APG. This supports semi-annual Network Integration of industry and/or government technologies which are being selected as Systems Under Evaluation (SUE) for participation into the Army's Network Integration Evaluations (NIE) 16.2 & 17.1. These funds cover the selected SUE's participation in the lab integration event. This includes contractor's costs for travel, and shipment of equipment, Contractor Field Service Representatives (CFSRs) required to support Network integration activities, and the purchase of additional prototypes required for the CERDEC Lab when needed to effectively complete detailed evaluations of the complete brigade network architecture.</p>			
<p><i>Title:</i> Facilities and IT Support <i>Description:</i> Provides funding for infrastructure/facilities and IT support.</p> <p><i>FY 2015 Accomplishments:</i> Provided funding for infrastructure/facilities. In addition it included the cost for IT support from Network connectivity for purchasing/leasing hardware, software, computers, communications equipment and services for the government staff.</p> <p><i>FY 2016 Plans:</i> Provides funding for infrastructure/facilities. In addition it includes the cost for IT support from Network connectivity for purchasing/leasing hardware, software, computers, communications equipment and services for the government staff.</p>	0.685	0.590	-
Accomplishments/Planned Programs Subtotals	16.382	14.131	-

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>
• DY3: <i>DY3 NIE Test & Evaluation</i>	4.440	12.215	65.844	-	65.844	67.311	67.899	68.478	71.719	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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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
• DY5: <i>DY5 Production/Fielding Coordination for Capability Sets</i>	2.802	4.601	3.960	-	3.960	4.099	4.194	4.286	4.374	Continuing	Continuing
• DY6: <i>DY6 Brigade and Platform Integration Support</i>	33.629	45.504	-	-	-	-	-	-	-	Continuing	Continuing
• DY7: <i>DY7 Army Systems Engineering, Architecture and Analysis</i>	16.988	16.416	14.166	-	14.166	24.176	24.651	25.123	25.505	Continuing	Continuing
• DZ6: <i>DZ6 Army Integration & Coordination Management</i>	8.716	6.375	5.746	-	5.746	5.952	6.087	6.218	6.352	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project does not have any requirement for direct procurement of hardware or software.

E. Performance Metrics

N/A

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

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NIE Network Integration and Lab Based Risk Reduction	TBD	Various Note: 1 : TBD	5.596	9.662	Nov 2014	8.335		-		-		-	0	23.593	0
Subtotal			5.596	9.662		8.335		-		-		-	0.000	23.593	0.000

Remarks
 Note:1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at Aberdeen Proving Ground (MD), TACOM (Warren MI), Taylor Bldg, (Crystal City, VA), FT Bliss (TX), .
 - Program Integration support through various PMs, PEOs, RDECOM, and a multitude of small support and industry contractors.

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			
NIE and LBRR Requirements Definition Support	TBD	Various Note: 1 : TBD	1.827	4.605	Nov 2014	3.973		-		-		-	0	10.405	0
NIE SUE Hardware/ Software for Lab & FSR Support for Network Integration	TBD	Various Note: 1 : TBD	2.698	1.430	Nov 2014	1.233		-		-		-	0	5.361	0
Facilities and IT Support	TBD	Various Note: 1 : TBD	0.493	0.685	Nov 2014	0.590		-		-		-	0	1.768	0
Subtotal			5.018	6.720		5.796		-		-		-	0.000	17.534	0.000

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at Aberdeen Proving Ground (MD), TACOM (Warren MI), Taylor Bldg, (Crystal City, VA)

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army									Date: February 2016		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>				Project (Number/Name) DY4 / <i>Network Integration Support</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	10.614	16.382		14.131		-	-	-	0.000	41.127	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY4 / <i>Network Integration Support</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIE 15.1 Lab Integration/Testing	█																											
NIE 15.1 CommEx	█																											
NIE 15.1 Pilot	█																											
NIE 15.1 Event	█																											
NIE 15.1 Event Analysis & Summary	█																											
NIE 15.2 Planning - Execution	████																											
NIE 15.2 Lab Integration/Testing	████																											
NIE 15.2 Candidate Solution Integration	█																											
NIE 15.2 LoadEx	██																											
NIE 15.2 CommEx	█																											
NIE 15.2 Pilot	█																											
NIE 15.2 Event	█																											
NIE 15.2 Event Analysis & Summary	█																											

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
NIE 16.1 Planning - Execution	[Red shaded area covering FY 2015 and FY 2016]																															
(1) NIE 16.1 Industry Day	▲																															
(2) NIE 16.1 DP 1		▲																														
(3) NIE 16.1 DP 2			▲																													
NIE 16.1 Lab Integration/Testing			■																													
NIE 16.1 Candidate Solution Integration				■																												
NIE 16.1 LoadEx				■																												
NIE 16.1 CommEx				■																												
NIE 16.1 Pilot						■																										
NIE 16.1 Event						■																										
NIE 16.1 Event Analysis & Summary						■																										
NIE 16.2 Planning - Execution			■																													
(4) NIE 16.2 DP 2								▲																								

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIE 16.2 Lab Integration/Testing																												
NIE 16.2 Candidate Solution Integration																												
NIE 16.2 ValEx																												
NIE 16.2 CommEx																												
NIE 16.2 Pilot																												
NIE 16.2 Event																												
NIE 16.2 Event Analysis & Summary																												
NIE 17.1 Planning - Execution																												
(1) NIE 17.1 Industry Day					▲ 1																							
(2) NIE 17.1 DP 1									▲ 2																			
(3) NIE 17.1 DP 2									▲ 3																			
NIE 17.1 Lab Integration/Testing																												
NIE 17.1 Candidate Solution Integration																												

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4												
NIE 17.1 ValEx																																								
NIE 17.1 CommEx																																								
NIE 17.1 Pilot																																								
NIE 17.1 Event																																								
NIE 17.1 Event Analysis & Summary																																								

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY4 / <i>Network Integration Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 15.1 Lab Integration/Testing	3	2014	1	2015
NIE 15.1 CommEx	4	2014	1	2015
NIE 15.1 Pilot	1	2015	1	2015
NIE 15.1 Event	1	2015	1	2015
NIE 15.1 Event Analysis & Summary	1	2015	1	2015
NIE 15.2 Planning - Execution	2	2014	3	2015
NIE 15.2 Lab Integration/Testing	1	2015	3	2015
NIE 15.2 Candidate Solution Integration	2	2015	2	2015
NIE 15.2 LoadEx	2	2015	3	2015
NIE 15.2 CommEx	3	2015	3	2015
NIE 15.2 Pilot	3	2015	3	2015
NIE 15.2 Event	3	2015	3	2015
NIE 15.2 Event Analysis & Summary	3	2015	3	2015
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NIE 16.1 Industry Day	1	2015	1	2015
NIE 16.1 DP 1	2	2015	2	2015
NIE 16.1 DP 2	2	2015	2	2015
NIE 16.1 Lab Integration/Testing	3	2015	1	2016
NIE 16.1 Candidate Solution Integration	4	2015	4	2015
NIE 16.1 LoadEx	4	2015	4	2015
NIE 16.1 CommEx	4	2015	1	2016
NIE 16.1 Pilot	1	2016	1	2016

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY4 / <i>Network Integration Support</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 16.1 Event	1	2016	1	2016
NIE 16.1 Event Analysis & Summary	1	2016	1	2016
NIE 16.2 Planning - Execution	4	2015	3	2016
NIE 16.2 DP 2	4	2015	4	2015
NIE 16.2 Lab Integration/Testing	1	2016	3	2016
NIE 16.2 Candidate Solution Integration	2	2016	2	2016
NIE 16.2 ValEx	2	2016	3	2016
NIE 16.2 CommEx	3	2016	3	2016
NIE 16.2 Pilot	3	2016	3	2016
NIE 16.2 Event	3	2016	3	2016
NIE 16.2 Event Analysis & Summary	3	2016	3	2016
NIE 17.1 Planning - Execution	1	2016	1	2017
NIE 17.1 Industry Day	1	2016	1	2016
NIE 17.1 DP 1	2	2016	2	2016
NIE 17.1 DP 2	2	2016	2	2016
NIE 17.1 Lab Integration/Testing	3	2016	1	2017
NIE 17.1 Candidate Solution Integration	4	2016	4	2016
NIE 17.1 ValEx	4	2016	4	2016
NIE 17.1 CommEx	1	2017	1	2017
NIE 17.1 Pilot	1	2017	1	2017
NIE 17.1 Event	1	2017	1	2017
NIE 17.1 Event Analysis & Summary	1	2017	1	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>				Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</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
DY5: <i>Production/Field Coordination for Capability Sets</i>	-	2.802	4.601	3.960	-	3.960	4.099	4.194	4.286	4.374	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for the development of a coordinated plan for the Production (Integrating components onto vehicle systems) and Fielding (logistics and training) of those Brigade components (both hardware/software in A and/or B Kits) and Division/Corps components (used primarily on the Command Post computing environment) that successfully passed the Network Integration Evaluation (NIE) and have been certified as interoperable for fielding through Army Interoperability Certification events and were approved by the Army's Leadership to be incorporated in subsequent Capability Sets (CS). This project request funds for the coordination of the required activity plan with the applicable Program of Records (PEOs/PMs). This project does not fund the actual production, integration, nor fielding costs associated with the Tactical Capability Set. This project includes government and contractor efforts to integrate and validate that the Army is fielding platforms, components and software that are integrated together to provide increased capabilities for the soldier that are supportable and trainable.

This project includes the following efforts: Provides oversight and direct coordination between participating Program Executive Offices (PEOs), Program Managers (PMs), Research, Development and Engineering Commands (RDECOMs) and the Army's Brigade Combat Teams (BCT) receiving the Tactical Capability Set package, throughout all phases of the Vehicle Integration and Synchronized Fielding process. This begins with an assembly of multiple programs of record (PORs) integrated into the Army Network to achieve enhanced network performance IAW the requirements validation, content and execution priorities received from the Army G-3/5/7 Department of the Army, Military Operations, LandWarNet/ Mission Command Directorate (DAMO LM). The Capability Set process development is structured by working with the PORs to define materiel systems Integrated Basis of Issue (IBOI)/ Architecture by type of Brigade Combat Team (BCT). Capability Set products that have been Materiel Released/Type Classified, have production funding and production are aligned by a single Integrated Master Schedule for design integration, testing, production, kitting, platform integration, training and fielding. This project also includes the direct support during each of the unit's "New Equipment Training" and "New Equipment Fielding", along with the preparation for the BCT's rotation through one of the Army's Combat Training Centers, (Joint Readiness Training Center (JRTC) or National Training Center (NTC)). Upon completion of the Combat Training Center (CTC) rotation the support teams provide oversight to ensure that all training assets are reset and moved to the follow-on BCT and that all After Action activities are closed out. This project also includes coordination with Department of the Army (DA) staff for synchronization of Network Integration Evaluation (NIE) with Integration and Interoperability events leading to a coordinated mission command Army Interoperability Certification (AIC) baseline to support fielding.

The FY 2017 funding is supporting the CS fielding in CY 2017 and also conducting the planning for CS 18. During FY 2017, the Army's current plan is to conduct four (4) IBCT Tactical Capability Set-Sync Fielding (CS-SF), one (1) TAA SBCT Tactical Capability Set Fielding and one (1) Division Headquarter utilizing five CS-SF teams.

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

	FY 2015	FY 2016	FY 2017
Title: Production/Fielding Coordination for Capability Sets	2.614	4.292	3.960

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>

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

Description: These funds provide for the following: Development, coordination and execution of the CS Fielding Plan to take the results of previous NIEs and produce, integrate, and field these Brigade improvements to the BCTs. This effort does not fund the production, or integration, or fielding of the capability set, but it does fund the coordination of this activity for the Army through the supporting Program Managers (PMs), Program Executive Officers (PEOs), and Research, Development, Engineering Command (RDECOMs).

FY 2015 Accomplishments:

Synchronized, integrated and coordinated Capability Set Fielding for CS-16 and detailed planning for CS-17 and high level planning for CS18/19.

- Synchronized integration of BCT Reference architectures consisting of multiple network systems, on multiple configurations of STRYKER, MRAPS, HMMWV and Heavy Armor vehicle platforms, at multiple locations;
- Integrated designs by platform, by role, by echelon, and by BCT for CS16 including LTI.
- Began to finalize CS-16 requirements and develop and coordinated the Integrated Master Schedule (IMS) for CS-16;
- Coordinated A-Kit design, development and production and B-Kit's Integration Kit (IK) design, between system and platforms PEOs and PMs for CS16.
- Coordinated and delivered prototype and production builds for CS16
- Exercised Configuration Management (CM) of Platform Architectural implementations, designs, A-Kits, B-Kits, and the IMS for CS16.
- Coordinated fielding integration of Program of Record assets in accordance with the defined BCT Reference architecture consisting of multiple systems, on multiple configurations of STRYKER, MRAPS, HMMWV and Heavy Armor vehicle platforms, at several different locations, integrated into multiple gaining Army Units.
- Coordinated a synchronized New Equipment Training /New Equipment Fielding (NET/NEF) Integrated Master Schedule (IMS) for fielding of CS-16 to all gaining units.
- Completing NET by platforms, by role, by echelon, and by BCT.
- Begin CS-17 NET/NEF requirements definition finalization and development of the NET/NEF integrated master schedule. This includes logically scheduling Program of Record unique NET, System of Systems NET (Capability Set holistic classes), and property accountability handoffs as an integrated process to enhance efficiency of the brigade modernization events.
- Provided integrated system identification documents to the gaining unit for ease of property transfer in PBUSE.
- Provided integrated management of facilities across all fielding activities to efficiently manage facilities requirements linked to the Integrated Master Schedule for all PMs with garrison support activities.
- Coordinated standard transfer processes for all PMs to reduce the complexity and administrative burden on the gaining units.

Synchronize fielding planning to include synchronized production deliveries, NET, fielding and support (with sponsoring PMs) to execute within the specified ARFORGEN windows.

FY 2015	FY 2016	FY 2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> • Synchronized, integrated and coordinated execution of Lower Tactical Internet (LTI) on 700+ platforms for each of four (4) BCTs. Coordinates the set up and execution of the 3ea production lines for each LTI installation including coordination of the unit for platforms to maintain efficient through put of systems. Completed the 1st of 4 LTI Fieldings. • Coordinated funding requirements and delivery/production schedules to ensure production schedules are met to field selected systems. • Completed funding coordination with DA and prioritized requirements at Weapons Systems Reviews (WSR). • Aligned funding requirements for PMs to make updates to their PORs as a result of integrating concepts that affect engineering architecture data products, training packages, logistics packages, etc. <p>FY 2016 Plans: Synchronize, integrate and coordinate Tactical Capability Set Fielding for CS-16 and detailed planning for CS-17 and high level planning for CS18/19.</p> <ul style="list-style-type: none"> • Synchronized integration of BCT Reference architectures consisting of multiple network systems, on multiple configurations of STRYKER, MRAPS, HMMWV and Heavy Armor vehicle platforms, at multiple locations; • Integrate designs by platform, by role, by echelon, and by BCT for CS16 including LTI. • Begin to finalize CS-16 requirements and develop and coordinate the Integrated Master Schedule (IMS) for CS-16; • Coordinate A-Kit design, development and production and B-Kit's Integration Kit (IK) design, between system and platforms PEOs and PMs for CS16. • Coordinate and deliver prototype and production builds for CS16 • Configuration Management (CM) of Platform Architectural implementations, designs, A-Kits, B-Kits, and the IMS for CS16. • Coordinate fielding integration of Program of Record assets in accordance with the defined BCT Reference architecture consisting of multiple systems, on multiple configurations of STRYKER, MRAPS, HMMWV and Heavy Armor vehicle platforms, at several different locations, integrated into multiple gaining Army Units. • Coordinate a synchronized New Equipment Training /New Equipment Fielding (NET/NEF) Integrated Master Schedule (IMS) for fielding of CS-16 to all gaining units. • Complete NET by platforms, by role, by echelon, and by BCT. • Begin CS-17 NET/NEF requirements definition finalization and development of the NET/NEF integrated master schedule. This includes logically scheduling Program of Record unique NET, System of Systems NET (Capability Set holistic classes), and property accountability handoffs as an integrated process to enhance efficiency of the brigade modernization events. • Provides integrated system identification documents to the gaining unit for ease of property transfer in PBUSE. • Provides integrated management of facilities across all fielding activities to efficiently manage facilities requirements linked to the Integrated Master Schedule for all PMs with garrison support activities. • Coordinate standard transfer processes for all PMs to reduce the complexity and administrative burden on the gaining units. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> • Synchronize fielding planning to include synchronized production deliveries, NET, fielding and support (with sponsoring PMs) to execute within the specified ARFORGEN windows. • Synchronizes, integrates and coordinates execution of Lower Tactical Internet (LTI) on 700+ platforms for each of four (4) BCTs. Coordinates the set up and execution of the 3ea production lines for each LTI installation including coordination of the unit for platforms to maintain efficient through put of systems. • Coordinate funding requirements and delivery/production schedules to ensure production schedules are met to field selected systems. • Complete funding coordination with DA and prioritized requirements at Weapons Systems Reviews (WSR). • Align funding requirements for PMs to make updates to their PORs as a result of integrating concepts that affect engineering architecture data products, training packages, logistics packages, etc. <p>FY 2017 Plans: These funds provide for the following:</p> <ul style="list-style-type: none"> - Production/Fielding Coordination for Capability Sets (P/FC-CS): Development, coordination and execution of the CS Fielding plan to take the results of previous NIEs and produce, integrate, and field these Brigade improvements to the BCTs and synchronize, integrate and coordinate Capability Set Fielding for CS16 closeout, CS-17 execution, detailed planning for CS-18 and high level planning for CS19/20. This effort does not fund the production, or integration, or fielding of the capability set, but it does fund the coordination of this activity for the Army through the supporting Program Managers (PMs), Program Executive Officers (PEOs), and Research, Development, Engineering Command (RDECOMs). - P/FC-CS: CS16 Products and Services: Final close out of Materiel Fielding documentation and After Action Reports (AARs) for (1) Total Army Analysis (TAA) Infantry Brigade Combat Team (IBCT) with Lower Tactical Internet (LTI), (3) TAA IBCTs and (1) Division (DIV) Headquarters (HQ). - P/FC-CS: CS17 Products and Services: Synchronize integration of Brigade Combat Team (BCT) consisting of multiple network systems, on multiple configurations of Stryker, Mine Resistant Ambush Protected (MRAPs), High Mobility, Multipurpose Wheeled Vehicle (HMMWV) and Heavy Armor vehicle platforms, at multiple locations; complete synchronization, integration and coordination execution of Capability Set fielding for the following CS17 Units ((45) Total): (2) Total Army Analysis (TAA) 2020 IBCTs with Lower Tactical Internets (LTIs), (1) TAA IBCT, (1) Division Headquarters (HQ) and (1) TAA Stryker Brigade Combat Team (SBCT). Coordinate the integrated designs by platform, by role, by echelon, and by BCT for CS17 including LTI; finalize CS-17 fielding requirements and execute the Integrated Master Schedule (IMS) for CS-17; coordinate A-Kit design, development and production and B-Kit's Integration Kit (IK) design, 				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>

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

	FY 2015	FY 2016	FY 2017
<p>between system and platforms Program Executive Offices (PEOs) and Program Managers (PMs) for CS17; coordinate and deliver prototype and production builds for CS17; support Configuration Management (CM) of platform configuration implementations, designs, A-Kits, B-Kits, and the IMS for CS17; coordinate fielding integration of Program of Record (POR) assets in accordance with the defined BCT Reference architecture consisting of multiple systems, on multiple configurations of Stryker, MRAPS, HMMWV and Heavy Armor vehicle platforms, at several different locations; integrated into multiple gaining Army Units; and coordinate and publish a synchronized New Equipment Training /New Equipment Fielding (NET/NEF) Integrated Master Schedule (IMS) for fielding of CS-17 to all gaining units.</p> <p>- P/FC-CS: Provides integrated system identification documents to the gaining unit for ease of property transfer in Property Book Unit Supply Enhanced (PBUSE): provides integrated coordination of facilities across all fielding activities to efficiently synchronize facility requirements linked to the IMS for all PMs with garrison support activities; coordinate standard transfer processes for all PMs to reduce the complexity and administrative burden on the gaining units; synchronize fielding planning to include synchronized production deliveries, NET, fielding and support (with sponsoring PMs) to execute within the specified Army Force Generation (ARFORGEN) windows. Synchronizes, integrates and coordinates the execution of LTI on 700+ platforms for each of two (2) IBCTs in FY17: coordinates the set up and execution of the 2 each production lines for each LTI installation including coordination of the unit for platforms to maintain efficient throughput of systems; plan synchronization, integration and coordination of Capability Set fielding for the following CS18 Units ((7) Total): (1) IBCT with JBC-P (Army National Guard (ARNG)), (1) ARNG Division HQ, (2) IBCT Division HQ and (3) TAA IBCTs; coordinate and publish a synchronized New Equipment Training /New Equipment Fielding (NET/NEF) Materiel Fielding Plan (MFP) for fielding of CS-18 to all gaining units; plan a synchronized New Equipment Training /New Equipment Fielding (NET/NEF) Integrated Master Schedule (IMS) for fielding of CS-18 to all gaining units.</p> <p>- P/FC-CS: Provides strategic guidance and priorities, establish organizational goals, develop plan to achieve strategic Army BCT network modernization goals and management of Fielding Integration and Engineering Integration Divisions, CS Scheduler, and Trail Boss team; coordinate and synchronize funding between PEOs that affect engineering architecture data products, training packages, and logistics packages to meet System of Systems integration requirements; provide strategic guidance for fielding integration support teams, in coordination with over 35 PMs and various Army stakeholders, to enable a successful network through Capability Set (CS) fielding as well as modernization of the Army BCT formation network systems into a fully-integrated network; synchronization and execution of all new equipment training and fielding integration activities to include Lower Tactical Internet integration, CS Synchronization meetings, New Materiel Introductory Briefings and Rehearsal of Concepts drills; conduct coordination, development, integration, synchronization and execution of the New Equipment Training, New Equipment Fielding (NET/NEF) and LTI comprehensive schedule that puts the unit on a glide path to successfully train and operate a more robust Network Capability; overall Conduct coordination, synchronization and execution of the New Equipment Training comprehensive schedule; and start planning for fielding to (1) Army National Guard IBCT and (1) Army National Guard Division in FY18-19.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>- P/FC-CS: CS18 Products and Services: Conduct synchronization, and coordination of Capability Set fielding for the following CS18 Units ((7) Total): (1) IBCT with LTI (Army National Guard (ARNG)), (1) ARNG Division HQ, (2) IBCT Division HQ and (3) TAA IBCTs; execute a synchronized New Equipment Training /New Equipment Fielding (NET/NEF) Integrated Master Schedule (IMS) for fielding of CS-18 to all gaining units; begin CS-18 NET/NEF requirements definition finalization and development of the NET/NEF integrated master schedule. This includes logically scheduling Program of Record unique NET, System of Systems NET (Capability Set holistic classes), and property accountability handoffs as an integrated process to enhance efficiency of the brigade modernization events.</p> <p>- Integration Engineering Planning and Execution of Capability Sets: (IEP&E-CS) These funds provide for the advance collaboration and coordination with platform and network system Program Managers (PMs) to ensure Capability Set (CS) fielding platform integration design decisions are based on CS Reference Architecture products for CS16-22 to be evaluated in Network Integration Evaluation (NIE) events: develop the Unit-specific architecture (e.g., Integrated Network Basis of Issue (IBOI), Unit Transport Design (TD), etc.) for CS fieldings. Develop, synchronize, integrate and coordinate CS architecture design and test for CS-16 closeout, CS-17, detailed planning for CS-18 and high level planning for CS19-21; engineering coordination with platform and equipment integrators to ensure component through platform level integrated design meets requirements established in the Unit IBOIP; ensure the integrated architecture design is verified and functional. Develop the unit integration design and configuration for CS-16 closeout, CS-17, detailed planning for CS-18 and high level planning for CS19-21. Update and transition architecture products to stakeholders by utilizing Unit specific IBOIPs based on property book/ maintenance analysis and physical inventory comparisons of Forces Command (FORSCOM) assets; assess, synchronize and status production and installation CS Engineering products and processes for platform integration and installation at integration facilities meet delivery schedules; and document and continuously improve engineering activities and process flows for efficiencies.</p> <p>- IEP&E-CS: CS17 Products and Services: Synchronize and monitor platform and network system Size, Weight and Power (SWaP) assessment of Unit specific Architectures in collaboration and coordination with platform and network system PMs; coordinate NRE funding requirements and delivery/ production schedules with the Synch Fielding – Fielding team to ensure production schedules are met to field selected systems; develop, update and finalize the unit specific IBOIP, perform site inventory and analysis, develop CS vehicle/equipment configurations, develop the CS Non-Recurring Engineering (NRE) integration configurations for design (based on NIE Original Equipment Manufacturer involvement). Provide integration status of equipment designs by platform, role, echelon and by BCT for the following CS17 Units ((5) Total): (2) Total Army Analysis (TAA) 2020 IBCTs with Lower Tactical Internets (LTIs), (1) TAA IBCT, (1) Division Headquarters (HQ) and (1) TAA SBCT. Develop, coordinate, document and assess the updated and final LTI integration activities on 700+ platforms and evaluate the integration flow of multiple production lines of numerous platform</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>

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

	FY 2015	FY 2016	FY 2017
<p>types; develop, update and finalize the Unit specific IBOIPs (one for each Unit touched) are vetted with vehicle and equipment PMs, TRADOC Capability Managers (TCMs), Program Executive Offices (PEOs), G3/5/7, FORSCOM, Unit personnel and other stakeholders; perform Property Book Unit Supply Enhanced (PBUSE) and Standard Army Maintenance System (SAMS) unit analyses to determine the serial and bumper numbers that are used to align vehicle roles by echelon (based on the Modified Table of Organization and Equipment (MTOE) and Objective Table of Organization and Equipment (OTOE)); perform Unit Inventories to confirm vehicle and legacy equipment configurations, confirm vehicle roles and identify/coordinate in lieu of vehicles for shortages; develop NRE designs for vehicle and equipment (legacy and CS) configurations that will be required for Safety Release/Confirmation (SR/SC) testing; coordinate with platform PMs the NRE configurations that are combined to develop a CS Golden vehicle design candidate list to minimize SR/SC costs; monitor and assess the development of the A-kit design and ensure technical documents will produce a repeatable and consistent integration process using installation manuals and technical data packages.</p> <p>- IEP&E-CS: Monitor and coordinate the production and delivery of all CS A and B kits at the integration facility to assess production risk (technical, schedule and cost); and assess the ability of supporting PMs to produce (or acquire) and integrate CS equipment onto vehicle platforms. Provide technical direction in the establishment of effective manufacturing/integration processes, procedures and facilities; ensure plans for production resources (manpower, material, tooling & test equipment, etc.) are in-place and capable of supporting mission requirements; conduct reviews and assessments at key program decision points to ascertain the level of manufacturing / production readiness to proceed forward in the integration cycle and to ensure Integrated Master Schedule (IMS) event dates are met; monitor and report the status of integration of CS equipment onto platforms (and completed integrated platforms) and assess schedule slippages.</p> <p>- IEP&E-CS: Develop engineering and integration process flows to implement lean six sigma concepts and techniques for process improvements; coordinate with the Synch Fielding (SF) – Fielding team for planning and execution of unit meetings, site inventories, A/B kit deliveries, chalk vehicle block schedules, assessment of Fully Mission Capable condition and integration of vehicle schedules (both component and complete vehicle installations); provide production design and integration strategic guidance, goals and priorities and develop plans to achieve goals; identify and resolve highly complex network problems that cross organizational boundaries and promulgate solutions; assess political, fiscal, and other factors affecting stakeholder needs; work with stakeholders at management levels to resolve problems such as conflicting requirements, funding and priorities; seek innovative solutions to efficiently accomplish multiple efforts within allocated resources; develop capability set engineering products to include processes, schedule, established technical baselines through Technical Exchange Meetings (TEMs) and synchronization across stakeholder organizations.</p> <p>Prepare, review, and approve major engineering communications for internal and external distribution; to include personnel and programmatic documents are properly prepared, approved, routed and archived; perform Risk Management by working with stakeholders to proactively identify technical risks and develop mitigation plans for project execution; assess impacts of risk to</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>

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

	FY 2015	FY 2016	FY 2017
<p>performance, cost and schedule; plan, coordinate, lead and conduct the CS Architecture TEMs; document TEM action items and track to closure during Capability Set Management Board (CSMB) action officer working group meetings; and plan, coordinate, lead and conduct weekly CSMB WG meetings to level set all stakeholders concerning current issues, discussion topics and schedule changes.</p> <p>- IEP&E-CS: CS18 Products and Services: Evaluate, synchronize and monitor platform and network system program acquisition schedules, integration costs, and system requirements across organizations for the development of production ready A&B-kit Interface Control Documents (ICDs) and Level II Technical Data Packages (TDPs) supporting CS18 Unit specific baseline evaluations in collaboration and coordination with platform and network system PMs; synchronize CS program schedules through coordination and communication with System of Systems Engineering and Integration (SoSE&I) Engineering and Integration (E&I) and other organizations within and outside of SoSE&I; coordinate with associated SoSE&I Directorates for the integration, forecasting, procurement, testing and delivery of platform integrated Network equipment for CS baseline evaluations (e.g. Business Team, Contracting, SoSE&I Integration Planning, PD Capability Package, SF-Engineering, SF-Fielding, SoSE&I E&I, etc); and vet IBOIPs with vehicle and equipment PMs, TCMs, PEOs, G3/5/7, Unit personnel and other stakeholders.</p> <p>- IEP&E-CS: CS19-22 Products and Services: Evaluate, synchronize and monitor platform and network system SWaP assessment of CS17 Unit specific Architectures in collaboration and coordination with platform and network system PMs; evaluate, synchronize and monitor platform and network system integration risks and mitigation plans for IBOIP identified in the Initial and CS19-22 Reference Architectures in collaboration and coordination with platform and network system PMs; evaluate, synchronize and monitor platform and network system program acquisition schedules, integration costs, and system requirements across organizations for the development of production ready A&B-kit ICDs and Level II TDPs supporting CS19-22 baseline evaluations in collaboration and coordination with platform and network system PMs; adjudicate and resolve operational, technical and programmatic issues for Initial and Reference Architecture Products in collaboration and coordination with SoSE&I-E&I, platform PMs, network system PMs and TCMs; synchronize CS program schedules through coordination and communication with SoSE&I-E&I and other organizations within and outside of SoSE&I; coordinate with associated SoSE&I Directorates for the management, integration, forecasting, procurement, testing and delivery of platform integrated Network equipment for CS baseline evaluations (e.g. Business Team, Contracting, SoSE&I Integration Planning, PD Capability Package, Synch Fielding (SF)-Engineering, SF-Fielding, SoSE&I E&I, etc); support PMs and PEOs in resolution of tasks associated with Network integration; evaluate, synchronize and monitor PM implementation of Vehicular Integration for (C4ISR) Command, Control, Communication, Computers, Intelligence, Surveillance, Reconnaissance / (EW) Electronic Warfare (EW) Interoperability (VICTORY) standards in Initial and CS19-22 Reference</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Architecture products; and begin the planning for CS-19-22 Unit specific IBOIP requirements and develop and coordinate the IMS with all stakeholders.			
Title: Facilities and IT Support Description: Provides funding for infrastructure/facilities and IT support.	0.188	0.309	-
FY 2015 Accomplishments: Provided funding for infrastructure/facilities. In addition it included the cost for IT support from Network connectivity for purchasing/leasing hardware, software, computers, communications equipment and services for the government staff.			
FY 2016 Plans: Provides funding for infrastructure/facilities. In addition it includes the cost for IT support from Network connectivity for purchasing/leasing hardware, software, computers, communications equipment and services for the government staff.			
Accomplishments/Planned Programs Subtotals	2.802	4.601	3.960

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
• DY3: <i>DY3 NIE Test & Evaluation</i>	4.440	12.215	65.844	-	65.844	67.311	67.899	68.478	71.719	Continuing	Continuing
• DY4: <i>DY4 Network Integration Support</i>	16.382	14.131	-	-	-	-	-	-	-	Continuing	Continuing
• DY6: <i>DY6 Brigade and Platform Integration Support</i>	33.629	45.504	-	-	-	-	-	-	-	Continuing	Continuing
• DY7: <i>DY7 Army Systems Engineering, Architecture and Analysis</i>	16.988	16.416	14.166	-	14.166	24.176	24.651	25.123	25.505	Continuing	Continuing
• DZ6: <i>DZ6 Army Integration & Coordination Management</i>	8.716	6.375	5.746	-	5.746	5.952	6.087	6.218	6.352	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project does not have any requirement for direct procurement of hardware or software.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Production/Fielding Coordination for Capability Sets	TBD	Various Note: 1 : TBD	3.787	2.614	Nov 2014	4.292		3.960	Nov 2016	-		3.960	0	14.653	0
Subtotal			3.787	2.614		4.292		3.960		-		3.960	0.000	14.653	0.000

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at, TACOM (Warren MI).
 - Program Integration support through various PMs, PEOs, RDECOM.

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			
Facilities and IT Support	TBD	Various Note:1 : TBD	0.272	0.188	Nov 2014	0.309		-		-		-	0	0.769	0
Subtotal			0.272	0.188		0.309		-		-		-	0.000	0.769	0.000

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at, TACOM (Warren MI).

	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	4.059	2.802	4.601	3.960	-	3.960	0.000	15.422	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CS15 Capability Set	CS15 Tactical Capability Set																											
CS15 Build & Integration																												
CS15 NEW Equipment Training (NET)																												
CS15 NEW Equipment Fielding (NEF)																												
CS16 Capability Set																												
CS16 Architecture Design																												
CS16 Build & Integration																												
CS16 NEW Equipment Training (NET)																												
CS16 NEW Equipment Fielding (NEF)																												
CS17 Capability Set																												
CS17 Architecture Design																												
CS17 Build & Integration																												
CS18 Capability Set																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY5 / <i>Production/Field Coordination for Capability Sets</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CS18 Architecture Design																												
CS18 Build & Integration																												
CS18 NEW Equipment Training (NET)																												
CS18 NEW Equipment Fielding (NEF)																												
CS19 Capability Set																												
CS19 Architecture Design																												
CS19 Build & Integration																												
CS19 NEW Equipment Training (NET)																												
CS19 NEW Equipment Fielding (NEF)																												

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

Events	Start		End	
	Quarter	Year	Quarter	Year
CS15 Capability Set	3	2013	2	2016
CS15 Build & Integration	4	2013	4	2015
CS15 NEW Equipment Training (NET)	2	2015	2	2016
CS15 NEW Equipment Fielding (NEF)	2	2015	2	2016
CS16 Capability Set	4	2014	2	2017
CS16 Architecture Design	4	2014	2	2015
CS16 Build & Integration	1	2015	4	2016
CS16 NEW Equipment Training (NET)	2	2016	1	2017
CS16 NEW Equipment Fielding (NEF)	3	2016	2	2017
CS17 Capability Set	2	2015	2	2018
CS17 Architecture Design	2	2015	3	2016
CS17 Build & Integration	3	2015	4	2017
CS18 Capability Set	2	2016	1	2019
CS18 Architecture Design	2	2016	2	2017
CS18 Build & Integration	4	2016	4	2018
CS18 NEW Equipment Training (NET)	2	2018	1	2019
CS18 NEW Equipment Fielding (NEF)	2	2018	1	2019
CS19 Capability Set	1	2017	2	2020
CS19 Architecture Design	1	2017	2	2018
CS19 Build & Integration	3	2017	4	2019
CS19 NEW Equipment Training (NET)	1	2019	1	2020
CS19 NEW Equipment Fielding (NEF)	1	2019	2	2020

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Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>				Project (Number/Name) DY6 / <i>Brigade and Platform Integration 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
DY6: <i>Brigade and Platform Integration Support</i>	-	33.629	45.504	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	79.133
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in FY 2017 the funding and mission requirements for this project have been moved to DY3; NIE Test & Evaluation (under this Program Element) to increase transparency.

A. Mission Description and Budget Item Justification

This project supports Phase IV through Phase VI of the Army's Agile Acquisition Process and provides management and oversight for the coordinated Army effort to deliver and maintain Mission Command Baselines as interoperable System of Systems (SoS) capabilities through the synchronization, coordination and facilitation of system deliveries to interoperability certification events.

Based on developed baseline Brigade level architectures, SoS Engineering & Integration (SoSE&I) will assess against approved Department of the Army (DA) objectives and baseline Brigade Combat Team (BCT) architectures to plan for and integrate approved network hardware and software systems onto the Soldier and vehicle systems that comprise the integrated BCT network. Work encompasses design and engineering of hardware and cable interfaces (e.g., A-kits) that enable integration of network hardware onto vehicle platforms; development of network data products required to support evaluations of the network; verification of integrated BCT network performance in garrison and field environments; field support to network hardware and software systems that deploy to the field and participate in operational evaluations conducted throughout the BCT battlespace; and, following the operational evaluation, restoration of selected platforms to their baseline configurations. This project includes government and contractor efforts to validate that the Army is properly integrating and fielding trainable, maintainable, interoperable, and sustainable network systems and components that will provide increased warfighting capabilities for the Soldier. This project includes:

- Integration of lab-developed network solutions onto Soldier and vehicle systems;
- Design, and fabrication of mounting brackets, cables, and kits required to enable vehicle platforms to employ new network hardware and software systems;
- Installation and checkout of network hardware and software systems prior to turning the equipment over to the soldiers who will employ these systems during the Network Integration Evaluation (NIE);
- Funding for Field Service Representative (FSR) support for selected Systems Under Evaluation (SUEs) participating in Phase V of the Army's Agile Process;
- Validation of critical operational threads that demonstrate the stability and continuity of the tactical network exercised during the NIE;
- Planning, coordination, and execution of hardware and software system support during the operational phase of the NIE;
- De-modification of vehicles at completion of the event;
- Documentation of interface kits, performance trends, and Integrated Logistics Support (ILS) data to facilitate hand-off of high-payoff systems to designated Programs of Record (POR);
- Feedback to industry on the performance of their technologies, systems, and concept relative to known operational gaps;
- Maintenance of the infrastructure needed by SOSI to support NIE operations at Ft Bliss, TX and White Sands Missile Range, NM.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</i>
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- System of Systems (SoS) and specialty engineering support needed to build upon NIE-provided documentation and execute design integration, production plan and testing of Capability Sets (CSs) which consolidate high-payoff capabilities in integrated fielding packages; and, planning, management, and execution of CS design requirements to synchronize manufacturing development, production, and synchronized fielding to design a BCTs.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Platform Integration Support</p> <p>Description: These funds provide for integration of network solutions onto Soldier and vehicle systems to enable an integrated network across the brigade battlespace.</p> <p>FY 2015 Accomplishments: This effort supported all activities associated with vehicle and platform integration. The work began with the selection of network hardware and software systems at Decision Point (DP) 2 of the Army's Agile Process and included execution of CS-14 synchronized fielding; execution of NIE 15.2 and 16.1 activities that supported future (CS-16 and CS-17) requirements; and detailed planning for CS-16 activities.</p> <ul style="list-style-type: none"> • Coordination and planning of hardware and software system deliveries to SOSI activities at Fort Bliss, TX; • Vehicle Integration (VI) planning and scheduling for 21 Golden Vehicles and integrated and networked platforms during NIE 15.2 and 25 Golden Vehicles and 267 fleet vehicles for AWA 16.1; • VI execution; • Network validation; • Field support; • Recovery from NIE field operations; • Developed and delivered CS-15 Implementation Architecture; • Documentation and handoff of critical information to support implementation of CS-15 efforts; • CS-16 planning and design analysis; • Synchronized fielding of CS-15 systems. <p>Vehicle integration: Leveraging the work performed during FY2014 and using brigade architectures that represent an evolving network modernization strategy:</p> <ul style="list-style-type: none"> • Developed Basis of Issue Plans (BOIPs) for each participating network hardware and software system; • Identified the type (or types) of vehicle platforms that will host each network system; • Identified and documented vehicle size, weight, power, and electromagnetic constraints • Given vehicle size, weight, power, and electromagnetic constraints, developed engineering designs for the complete hardware kits (e.g., the brackets, mounting trays, cables, and other components that comprise an "A-Kit") needed to integrate each unique network hardware system onto each type of host platform that will participate in the NIE; • Fabricated unique hardware components needed to support vehicle integration efforts; 	12.512	16.929	-

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> • Integrated and verified the performance of each unique network system (e.g., B-kit) on its host vehicle - as specified by the BOIP; Support installation and integration of instrumentation kits needed to collect data from designated network systems and verify that the instrumentation does not impact the performance of the network system; • Supported the conduct of safety certification and release efforts for each unique vehicle configuration; • Performed SoS checkouts to ensure all SOSI-installed network hardware and software systems operate with each other, legacy systems, and other POR systems participating in the NIE; • Provided troubleshooting support for network validation exercises and selected network systems during the operational phase of the NIE; • De-installed selected systems following each NIE; • Documentation and transfer of interface designs, training support requirements, performance trends, ILS requirements, and lessons learned to CS systems engineering teams; • Systems Engineering (SE) to mature the network interface designs developed during the NIE and enable expedited CS fielding; • Synchronized integration of a BCT Reference architecture consisting of multiple network systems, on multiple configurations of STRYKER, MRAPS, HMMWV and Heavy Armor vehicle platforms, at multiple locations; • Coordinated a synchronized Integrated Master Schedule (IMS) for fielding of CS-14 to all gaining units. • Integrated designs by platform, by role, by echelon, and by BCT. • Began to finalize CS-16 requirements and develop and IMS for CS-16; • Coordinated A-Kit design, development and production and B-Kit's Integration Kit (IK) design, between system and platforms PEOs and PMs. • Coordinated and delivered prototype and production builds • Configuration Management (CM) of Platform Architectural implementations, designs, A-Kits, B-Kits, and the IMS. • Systems Engineering (SE) to include: design maturation, decomposition of reference architecture into platform specific implementations network architecture, prototype/production build, integrated testing, configuration of integrated baseline and an integrated schedule for component management • Synchronize acquisition strategy and planning to include: synchronized production deliveries, fielding and support (with sponsoring PMs) to maintain the ARFORGEN Cycle. <p>FY 2016 Plans: This effort supports all activities associated with vehicle and platform integration. The work begins with the selection of network hardware and software systems at Decision Point (DP) 2 of the Army's Agile Process and includes execution of CS-14 synchronized fielding; execution of NIE 15.2 and 16.1 activities that support future (CS-16 and CS-17) requirements; and implementation architecture for CS-16 activities.</p> <ul style="list-style-type: none"> • Coordination and planning of hardware and software system deliveries to SoSE&I activities at Fort Bliss, TX; • Vehicle Integration (VI) planning and scheduling; 			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> • VI execution; • Network validation; • Field support; • Recovery from NIE field operations; • Develop and deliver CS-15 Implementation Architecture; • Documentation and handoff of critical information to support implementation of CS-15 efforts; • CS-16 planning and design analysis; • Synchronized fielding of CS-15 systems. <p>Vehicle integration: Leveraging the work performed during FY2014 and using brigade architectures that represent an evolving network modernization strategy:</p> <ul style="list-style-type: none"> • Develop Basis of Issue Plans (BOIPs) for each participating network hardware and software system; • Identify the type (or types) of vehicle platforms that will host each network system; • Identify and document vehicle size, weight, power, and electromagnetic constraints • Given vehicle size, weight, power, and electromagnetic constraints, develop engineering designs for the complete hardware kits (e.g., the brackets, mounting trays, cables, and other components that comprise an "A-Kit") needed to integrate each unique network hardware system onto each type of host platform that will participate in the NIE; • Fabricate unique hardware components needed to support vehicle integration efforts; • Integrate and verify the performance of each unique network system (e.g., B-kit) on its host vehicle - as specified by the BOIP; • Support installation and integration of instrumentation kits needed to collect data from designated network systems and verify that the instrumentation does not impact the performance of the network system; • Support the conduct of safety certification and release efforts for each unique vehicle configuration; • Perform SoS checkouts to ensure all SoSE&I-installed network hardware and software systems operate with each other, legacy systems, and other POR systems participating in the NIE; • Provide troubleshooting support for network validation exercises and selected network systems during the operational phase of the NIE; • De-installation of selected systems following each NIE; • Documentation and transfer of interface designs, training support requirements, performance trends, ILS requirements, and lessons learned to CS systems engineering teams; • Systems Engineering (SE) to mature the network interface designs developed during the NIE and enable expedited CS fielding; • Synchronized integration of a BCT Reference architecture consisting of multiple network systems, on multiple configurations of STRYKER, MRAPS, HMMWV and Heavy Armor vehicle platforms, at multiple locations; • Coordinate a synchronized Integrated Master Schedule (IMS) for fielding of CS-14 to all gaining units. • Integrate designs by platform, by role, by echelon, and by BCT. • Begin to finalize CS-16 requirements and develop and IMS for CS-16; 			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> • Coordinate A-Kit design, development and production and B-Kit's Integration Kit (IK) design, between system and platforms PEOs and PMs. • Coordinate and deliver prototype and production builds • Configuration Management (CM) of Platform Architectural implementations, designs, A-Kits, B-Kits, and the IMS. • Systems Engineering (SE) to include: design maturation, decomposition of reference architecture into platform specific implementations network architecture, prototype/production build, integrated testing, configuration of integrated baseline and an integrated schedule for component management • Synchronize acquisition strategy and planning to include: synchronized production deliveries, fielding and support (with sponsoring PMs) to maintain the ARFORGEN Cycle. 				
<p>Title: Brigade Integration Support</p> <p>Description: These funds provide for the testing and verification of network components integrated with the BCT's vehicle and soldier systems that participate in NIEs.</p> <p>FY 2015 Accomplishments: Integration: Once VI for NIE 15.2 and 16.1 was completed, SoSE&I conducted a Network Validation Exercise (VALEX) to demonstrate network stability, connectivity, and performance in controlled conditions. VALEX consisted of four phases: Load, Established, Integrate and Validate Threads.</p> <ul style="list-style-type: none"> • During the Load phase, network systems and SoSE&I engineers installed network software, firmware, and Operating Systems (OSs), set Internal Protocol (IP) addresses and configured all network systems on all NIE-unique platforms (Note: Program of Record (POR) and Legacy engineers and FSRs performed the same tasks on any of their platforms that participated in the NIE; PORs were NOT funded by SoSE&I to perform these functions). Once all software and data products were loaded, SoSE&I and supporting network engineers and FSRs performed test/fix/test processes at the network system and component level. • During the Establish phase, this effort resourced SoSE&I engineers and FSRs to work with Legacy and POR network support personnel to verify network hardware and software performance at the platform level. This effort worked through all issues associated with network system configurations and ensured that each NIE platform had the ability to perform its role within the tactical network. • In the Integrate phase, this project enabled SoSE&I engineers and FSRs to work with Legacy and POR network personnel to verify network hardware and software performance at the SoS platform level – from the small unit (e.g., company, troop, or battery) up to the brigade. This effort worked through all issues associated with network SoS configurations and ensured that each networked tactical units interact with each other as expected. Activities during the Integrate Phase included training the Soldiers who will be using the new BCT network during the NIE. The Validate phase executed operational threads designed to demonstrate the BCT network's ability to provide specific capabilities to the BCT commander. Throughout VALEX planning and execution, SoSE&I coordinated with the Army Test and Evaluation Command (ATEC) and Brigade Modernization Command 		9.123	12.345	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>(BMC) to ensure network instrumentation, training, and operational requirements were Synchronized and executed according to plan</p> <p>FY 2016 Plans:</p> <p>Brigade Integration: Once Vehicle Integration (VI) for NIE 16.2 and 17.1 is complete; SOSE&I will conduct a Network Validation Exercise (VALEX) to demonstrate network stability, connectivity, and performance in controlled conditions. VALEX consists of four phases: Load, Established, Integrate and Validate Threads.</p> <ul style="list-style-type: none"> • During the Load phase, network systems and SoS engineers install network software, firmware, and Operating Systems (OSs), set Internal Protocol (IP) addresses and configure all network systems on all NIE-unique platforms (Note: Program of Record (POR) and Legacy engineers and FSRs perform the same tasks on any of their platforms that will participate in an NIE; PORs are NOT funded by SOSE&I to perform these functions). Once all software and data products are loaded, SOSE&I and supporting network engineers and FSRs perform test/fix/test processes at the network system and component level. • During the Establish phase, this effort resources SOSE&I engineers and FSRs to work with Legacy and POR network support personnel to verify network hardware and software performance at the platform level. This work troubleshoots any issues associated with network system configurations and ensures that each NIE platform has the ability to perform its role within the tactical network. • In the Integrate phase, this project enables SOSE&I engineers and FSRs to work with Legacy and POR network personnel to verify network hardware and software performance at the SoS platform level – from the small unit (e.g., company, troop, or battery) up to the brigade. This work troubleshoots any issues associated with network SoS configurations and ensures that each networked tactical units interact with each other as expected. Activities during the Integrate Phase include training of the Soldiers who will be using the new BCT network during the NIE • The Validate phase executes operational threads designed to demonstrate the BCT network’s ability to provide specific capabilities to the BCT commander. <p>Throughout VALEX planning and execution, SOSE&I coordinates with the Army Test and Evaluation Command (ATEC) and Brigade Modernization Command (BMC) to ensure network instrumentation, training, and operational requirements are coordinated.</p>				
<p>Title: Network Integration Support</p> <p>Description: These funds provide for the field setup, validation, verification and correction of the network for the NIE.</p> <p>FY 2015 Accomplishments:</p> <p>Network Integration funds Data Product builds for all transport layer communication devices. This effort included:</p> <ul style="list-style-type: none"> • Development of the NIE network’s Lightweight Data Interchange Format (LDIF) file; All NETOPS synchronization and coordination activities; 		4.403	5.957	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> • Government Subject Matter Experts (SME) who assisted in the integration of specialized communication hardware in BCT Command and Control (C2) centers; • Contractor FSRs and network Subject Matter Experts (SMEs) who helped SoSE&I ensure the network is operational during VALEX, BCT Communications Exercises (COMMEXs), NIE Pilot Testing, and NIE execution. <p>FY 2016 Plans: Network Integration funds Data Product builds for all transport layer communication devices. This effort includes:</p> <ul style="list-style-type: none"> • Development of the NIE network's Lightweight Data Interchange Format (LDIF) file; • All NETOPS synchronization and coordination activities; • Government Subject Matter Experts (SME) who assist in the integration of specialized communication hardware in BCT Command and Control (C2) centers; • Contractor FSRs and network Subject Matter Experts (SMEs) who help SOSI ensure the network is operational during VALEX, BCT Communications Exercises (COMMEXs), NIE Pilot Testing, and NIE execution. 				
<p>Title: NIE Infrastructure</p> <p>Description: Provides for Infrastructure (facilities) at FT Bliss TX and WSMR.</p> <p>FY 2015 Accomplishments: Provided for setup, utilities, furniture, equipment and maintenance (of all equipment and facilities) used by SoSE&I at Fort Bliss TX, (FBTX) during the planning and execution of NIE 15.2 and 16.1. Included lease and support maintenance contracts for Government Service Administration (GSA) vehicles that supported the NIE mission at FBTX/WSMR; it did not include funding of any facilities at WSMR.</p> <p>FY 2016 Plans: Provides for setup, utilities, furniture, equipment and maintenance (of all equipment and facilities) used by SoSE&I at Fort Bliss TX, (FBTX) during the planning and execution of NIE 16.2 and 17.1. Includes lease and support maintenance contracts for Government Service Administration (GSA) vehicles that support the NIE mission at FBTX/WSMR; it does not include funding of any facilities at WSMR.</p>		0.864	1.169	-
<p>Title: Network Integration Evaluation SUE support (NIE)</p> <p>Description: These funds provide for selected SUEs participation in NIE during Phase V of the Army's Agile process.</p> <p>FY 2015 Accomplishments: Provided funding to support integration and evaluation of industry and government technologies which are being selected as SUEs for participation in NIE 15.2 & 16.1 which supported two semi-annual events. These funds covered the NIE participant's (Existing technologies, and contractors) costs for travel, and shipment of equipment, Contractor Field Service Representatives</p>		0.774	1.048	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>(CFSRs) integration A-kit development, and the purchase of additional prototypes which were needed to effectively accomplish the detailed evaluations of the complete network architecture. Included costs for development of integration hardware and software (A-KIT design support). In preparation for the NIE, the selected units that participated in the NIE VALEX at FBTX. After hand-off of vehicles, the participating test units deployed to the tactical training/evaluation areas on FBTX and WSMR and completed the NIE event (4 weeks). This effort also met all of the unique SUE support requirements (such as escort and transport personnel and provided facility work areas during the events).</p> <p>FY 2016 Plans: Provides funding to support integration and evaluation, to support semi-annual events of industry and/or government technologies which are being selected as SUEs for participation in NIE 16.2 & 17.1 to achieve Army's Network 2020 and Force 2025 goals. These funds cover the NIE participant's (Emerging and existing technologies, and contractors) costs for travel, and shipment of equipment, Contractor Field Service Representatives (CFSRs) integration A-kit development, and the purchase of additional prototypes when needed to effectively complete detailed evaluations of the complete network architecture. Includes costs for development of integration hardware and software (A-KIT design support). In preparation for the NIE, the selected units participate in the NIE VALEX at FBTX. After hand-off of vehicles, the participating test units deploy to the tactical training/evaluation areas on FBTX and WSMR to complete the NIE event (4 weeks). This effort also supports any unique SUE support requirements (such as escort personnel, transportation, or facilities).</p>				
<p>Title: Platform/BDE Integration Management Support</p> <p>Description: These funds provide for all SoSE&I government and contractor personnel providing direct management, systems engineering, and specialty engineering support to the Platform and Brigade Integration efforts at Ft Bliss in support of the NIE.</p> <p>FY 2015 Accomplishments: This effort included all program, information, security, business, and personnel management efforts required to support the Network Integration teams. It includes:</p> <ul style="list-style-type: none"> • Program management • Schedule development and management; • Contracting and financial management; • Cost analysis; • Personnel management; • Operations; • Security management; • NIE event management; • Information Assurance; • Information management; 		5.953	8.056	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> • Database and IT support; • Facilities and infrastructure management; and, • Knowledge management. <p>In addition to people, costs included all IT support for Network connectivity i.e., purchasing/leasing hardware, software, computers, communications equipment and services.</p> <p>FY 2016 Plans: This effort includes all program, information, security, business, and personnel management efforts required to support the Network Integration teams. It includes:</p> <ul style="list-style-type: none"> • Program management • Schedule development and management; • Contracting and financial management; • Cost analysis; • Personnel management; • Operations; • Security management; • NIE event management; • Information Assurance; • Information management; • Database and IT support; • Facilities and infrastructure management; and, • Knowledge management. <p>In addition to people, costs include all IT support for Network connectivity i.e., purchasing/leasing hardware, software, computers, communications equipment and services.</p>			
Accomplishments/Planned Programs Subtotals	33.629	45.504	-

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
• DY3: <i>DY3 NIE Test & Evaluation</i>	4.440	12.215	65.844	-	65.844	67.311	67.899	68.478	71.119	Continuing	Continuing
• DY4: <i>DY4 Network Integration Support</i>	16.382	14.131	-	-	-	-	-	-	-	Continuing	Continuing
• DY5: <i>DY5 Production/Fielding Coordination for Capability Sets</i>	2.802	4.601	3.960	-	3.960	4.099	4.194	4.286	4.374	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• DY7: <i>DY7 Army Systems Engineering, Architecture and Analysis</i>	16.988	16.416	14.166	-	14.166	24.176	24.651	25.123	25.505	Continuing	Continuing
• DZ6: <i>DZ6 Army Integration & Coordination Management</i>	8.716	6.375	5.746	-	5.746	5.952	6.087	6.218	6.352	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project does not have any requirement for direct procurement of hardware or software.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Platform Integration Support	TBD	Various Note: 1 : TBD	8.990	12.512	Nov 2014	16.929		-		-		-	0	38.431	0
Brigade Integration Support	TBD	Various Note: 1 : TBD	8.349	9.123	Nov 2014	12.345		-		-		-	0	29.817	0
Network Integration Support	TBD	Various Note: 1 : TBD	8.185	4.403	Nov 2014	5.958		-		-		-	0	18.546	0
Network Integration Evaluation SUE support (NIE)	TBD	Various Note: 1 : TBD	11.531	0.774	Nov 2014	1.882		-		-		-	0	14.187	0
Platform/BDE Integration Management Support	TBD	Various Note: 1 : TBD	1.658	5.953	Nov 2014	5.134		-		-		-	0	12.745	0
Subtotal			38.713	32.765		42.248		-		-		-	0.000	113.726	0.000

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at TACOM (Warren MI), FT Bliss (TX), White Sands Missile Range (NM).
 - Program Integration support through various PMs, PEOs, RDECOM, and a multitude of small support and industry contractors.

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			
Infrastructure Support	TBD	Various Note: 1 : TBD	2.335	0.864	Nov 2014	3.256		-		-		-	0	6.455	0
Subtotal			2.335	0.864		3.256		-		-		-	0.000	6.455	0.000

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at FT Bliss (TX), White Sands Missile Range (NM).
 - Program Integration support through various PMs, PEOs, RDECOM, and a multitude of small support and industry contractors.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army								Date: February 2016			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>				Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</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	41.048	33.629		45.504		-	-	-	0.000	120.181	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIE 15.1 Planning - Execution	█																											
NIE 15.1 Lab Integration/Testing	█																											
NIE 15.1 Pilot	█																											
NIE 15.1 Event	█																											
NIE 15.1 Event Analysis & Summary	█																											
NIE 15.2 Planning - Execution	█																											
NIE 15.2 Lab Integration/Testing	█																											
NIE 15.2 Candidate Solution Integration	█																											
NIE 15.2 LoadEx	█																											
NIE 15.2 CommEx	█																											
NIE 15.2 Pilot	█																											
NIE 15.2 Event	█																											
NIE 15.2 Event Analysis & Summary	█																											

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIE 16.1 Planning - Execution																												
(1) NIE 16.1 Industry Day	▲																											
(2) NIE 16.1 DP 1		▲																										
(3) NIE 16.1 DP 2			▲																									
NIE 16.1 Lab Integration/Testing																												
NIE 16.1 Candidate Solution Integration																												
NIE 16.1 LoadEx																												
NIE 16.1 CommEx																												
NIE 16.1 Pilot																												
NIE 16.1 Event																												
NIE 16.1 Event Analysis & Summary																												
NIE 16.2 Planning - Execution																												
(4) NIE 16.2 Industry Day							▲																					

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) NIE 16.2 DP 1					▲ 1																							
(2) NIE 16.2 DP 2					▲ 2																							
NIE 16.2 Lab Integration/Testing																												
NIE 16.2 Candidate Solution Integration																												
NIE 16.2 ValEx																												
NIE 16.2 CommEx																												
NIE 16.2 Pilot																												
NIE 16.2 Event																												
NIE 16.2 Event Analysis & Summary																												
NIE 17.1 Planning - Execution																												
(3) NIE 17.1 Industry Day					▲ 3																							
(4) NIE 17.1 DP 1					▲ 4																							
(5) NIE 17.1 DP 2					▲ 5																							

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
NIE 17.1 Lab Integration/Testing																																
NIE 17.1 Candidate Solution Integration																																
NIE 17.1 ValEx																																
NIE 17.1 CommEx																																
NIE 17.1 Pilot																																
NIE 17.1 Event																																
NIE 17.1 Event Analysis & Summary																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 15.1 Planning - Execution	3	2013	1	2015
NIE 15.1 Lab Integration/Testing	3	2014	1	2015
NIE 15.1 Pilot	1	2015	1	2015
NIE 15.1 Event	1	2015	1	2015
NIE 15.1 Event Analysis & Summary	1	2015	1	2015
NIE 15.2 Planning - Execution	2	2014	3	2015
NIE 15.2 Lab Integration/Testing	1	2015	3	2015
NIE 15.2 Candidate Solution Integration	2	2015	2	2015
NIE 15.2 LoadEx	2	2015	3	2015
NIE 15.2 CommEx	3	2015	3	2015
NIE 15.2 Pilot	3	2015	3	2015
NIE 15.2 Event	3	2015	3	2015
NIE 15.2 Event Analysis & Summary	3	2015	3	2015
NIE 16.1 Planning - Execution	3	2014	1	2016
NIE 16.1 Industry Day	1	2015	1	2015
NIE 16.1 DP 1	2	2015	2	2015
NIE 16.1 DP 2	2	2015	2	2015
NIE 16.1 Lab Integration/Testing	3	2015	1	2016
NIE 16.1 Candidate Solution Integration	4	2015	4	2015
NIE 16.1 LoadEx	4	2015	4	2015
NIE 16.1 CommEx	4	2015	1	2016
NIE 16.1 Pilot	1	2016	1	2016

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY6 / <i>Brigade and Platform Integration Support</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 16.1 Event	1	2016	1	2016
NIE 16.1 Event Analysis & Summary	1	2016	1	2016
NIE 16.2 Planning - Execution	4	2015	3	2016
NIE 16.2 Industry Day	4	2015	4	2015
NIE 16.2 DP 1	4	2015	4	2015
NIE 16.2 DP 2	4	2015	4	2015
NIE 16.2 Lab Integration/Testing	1	2016	3	2016
NIE 16.2 Candidate Solution Integration	2	2016	2	2016
NIE 16.2 ValEx	2	2016	3	2016
NIE 16.2 CommEx	3	2016	3	2016
NIE 16.2 Pilot	3	2016	3	2016
NIE 16.2 Event	3	2016	3	2016
NIE 16.2 Event Analysis & Summary	3	2016	3	2016
NIE 17.1 Planning - Execution	1	2016	1	2017
NIE 17.1 Industry Day	1	2016	1	2016
NIE 17.1 DP 1	2	2016	2	2016
NIE 17.1 DP 2	2	2016	2	2016
NIE 17.1 Lab Integration/Testing	3	2016	1	2017
NIE 17.1 Candidate Solution Integration	4	2016	4	2016
NIE 17.1 ValEx	4	2016	4	2016
NIE 17.1 CommEx	1	2017	1	2017
NIE 17.1 Pilot	1	2017	1	2017
NIE 17.1 Event	1	2017	1	2017
NIE 17.1 Event Analysis & Summary	1	2017	1	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>				Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</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
DY7: <i>Army Systems Engineering, Architecture & Analysis</i>	-	16.988	16.416	14.166	-	14.166	24.176	24.651	25.123	25.505	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides the Army's leadership and materiel developers with the necessary Capability Set (CS) modernization planning, critical path analysis, risk analysis and mitigation planning, system of systems engineering (SOSE), technical analysis and architectural products to inform the Army's materiel portfolio (5 and 30 year plans). This project explicitly includes critical Common Operating Environment (COE) and Cyber Security engineering, architecture and governance development tasks necessary to develop effective, affordable and secure network capabilities to meet Network 2020 and Force 2025 initiatives. This project captures and manages at the CS level, senior stakeholder guidance (i.e. Training and Doctrine Command (TRADOC), G3/5/7, G2, and Chief Information Officer (CIO)/G6) to shape future Network Capability Sets (i.e. enterprise scope), Operational Capability Sets (OCS) and Institutional Capability Sets (ICS) (per the approved CIO/G6 LandWarNet (LWN) 2020 and beyond strategy) and corresponding post/camp/station modernization and integrated base defense (IBD) requirements. This project defines and executes its mission in the context of a SoS Engineering Management Plan (SoSEMP), that provides comprehensive engineering, analysis and architecture processes across early CS requirements and roadmap development; engineering and analysis tasks; lab and field risk reduction efforts; Network Integration Evaluation (NIE) system of systems (SoS) scope CS evaluation; and unit-specific architectural planning support to boots-on-the-ground synchronized fielding execution. These SoSEMP processes deliver authoritative products at a CS/SoS and platform level that informs and captures senior leadership decisions, supporting critical path execution of CS modernization efforts, including Force 2025 initiatives. This project includes support to other Department of Defense (DOD) and international agencies for joint programs and collaboration efforts with NIE and Force Basing/Tactical Capability Set portfolio integration. The Government effort includes costs for salaries, travel, overtime, training, supplies, facilities, and Information Technology (IT) support.

This project establishes the capability to develop and deliver authoritative system of system engineering, analysis and architecture products, through focused analysis & trades, against defined and managed CS goals and roadmap. These products provide timely and relevant information to inform decision makers in the Army's modernization prioritization challenges. These products are unique in that they encompass a cross-Program Executive Office (PEO), cross-portfolio perspective of modernization initiatives, affording analysis activities at senior leadership levels for informing Weapon System Review (WSR)/POM priorities, as well as more strategic challenges such as Force 2025 objectives. The products focus on critical path SoS dependencies necessary to define, evaluate and field CS capabilities, per ARFORGEN. These products are developed in tight coordination with a wide spectrum of stakeholder organizations, from G3 and TRADOC, to PEO/Program Management Office (PMO) leadership, to gaining units during synchronized fielding. The primary level of effort in this project is in the validation of its products with stakeholder SME, to assure they are relevant, validated and authoritative for supporting CS design and decision challenges. To aid senior leadership and engineering activities in comprehending the complexities of the cross-PEO/cross-portfolio/POM scope modernization planning challenges, this project provides for Formation-level Reference Architectures (Operational Views ((OV)-1's), with included NCS SoS Specification and all Army formations, that form the basis for representing and communicating the Army's programmed plan to Headquarters, Department of the Army (HQDA) customers and Program Executive Officers/Program Managers (PEOs/ PMs). The LWN NCS SoS Reference Architecture is composed of the NCS Institutional Capability Set SoS Reference Architecture and the NCS Operational Capability

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>
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Set SoS Reference Architecture. The Institutional Capability Set is composed of the Enterprise Component and Installation Component. Communications and computing for Base Camps and Brigade Combat Teams are also included in the NCS Operational Capability Set. It enables analyses and trades that use the reference architecture design data to inform implementation architectures and support informed systems acquisition decisions across the life cycle. These products are derived directly from an Integrated Basis of Issue Feeder Data (IBOIFD) product that aggregates Program of Record (POR) Basis of Issue (BOI) feeder data, and becomes the managed fielding baseline plan for network procurement decisions, directly feeding unit-specific Table of Organization and Equipment (TOE)/Modified TOE (MTOE) fielding baselines. This data provides for single authority within Assistant Secretary of the Army (Acquisition, Logistics and Technology (ASA(ALT))) for System of Systems Implementation Architecture oversight to inform and manage governance and approvals of emerging SoS designs, defining necessary compliance guidance for SoS scope initiatives and concerns (i.e. Common Operating Environment (COE) and Cyber).

This project explicitly addresses the orchestration, management, and oversight Common Operation Environment (COE), an Army Priority 1 initiative. It includes development of vision, strategy, and plans for migrating solutions to a common infrastructure; increase the Army's cyber security posture; decrease life cycle costs; improve and simplify interoperability and integration; and leverage industry and government developed solutions.

This project provides ASA(ALT) Cyber Focal for all Cyber requirements. Synchronization and analysis of integrated capabilities, resources and requirements to enhance cyber security and resiliency across the materiel development and cyber operational communities. Lead ASA(ALT) implementation of Cyber requirements through analysis and decomposition of requirements, alignment with the appropriate programs, and synchronization of an integrated execution/acquisition approach. Provides governance and standards to enable the advancement of decisive cyber operations. Leads cross-portfolio resource planning and facilitates the materiel development and cyber operational communities through agile acquisition strategies. Manages ASA(ALT) mission assurance and compliance; Governance; Cyber Security; Cyber Architecture; and Defense Industrial Base (DIB) Cyber Security Office.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Army System of System Engineering and Analysis</p> <p>Description: Provide coordinated system of systems engineering, architectures, and analysis products of required and current capabilities for various generating force units (e.g. materiel developers, TCM, ARCIC, etc.) to deliver integrated solutions to objective, base, and modified military formations (MTOE & TDA units).</p> <p>FY 2015 Accomplishments: These funds provided the following: The synchronization of ongoing System of System (SoS) engineering, analysis, and architecture which developed and distributed the following products to PEOs, PORs, PMs, and Science & Technology (S&T) organizations in order for them to design, develop, evaluate and field integrated and interoperable Tactical Capability Sets (TCS), including support products for developing WSR packages for WSR 18-22: - CS23: Refined requirements. Identified gaps and PORs. - CS22: Refined gaps and identified objectives. Supported the development of the Sources Sought (SS) and Tech Call (TC) memo; BOI, Platform Interconnect Diagrams (PIDs), and Transport View (TV) for NIE 19.1 (Experimental Event)</p>	12.010	9.553	8.393

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>- CS21: Based upon NIE18.1 Horse Blanket, refined gaps and created specifications, which will support the development of the tech evaluation criteria, and Scope of Work (SoW) for competitive Request for Proposal (RFP) and TC memo for NIE 19.2</p> <p>- CS20: Refined BOI and associated architecture products (i.e. PIDs and TD) for the development of NIE 18.2. (Baseline Event)</p> <p>- CS19: Finalized BOI and associated architecture products (i.e. PIDs and TD) for production funding for the TCS 19,</p> <p>Synchronizing ongoing SoS engineering, analysis, and architecture to develop and distribute the following products to HQDA customers, PEOs, PORs, PMs, and S&T organizations:</p> <ul style="list-style-type: none"> - LWN Network Capability Set (NCS) SoS Reference Architecture (RA) (with included NCS SoS Specification) - LWN NCS ICS SoS RA - LWN NCS OCS SoS RA. - Enterprise Component of the LWN NCS ICS SoS RA - Installation Component of the LWN NCS ICS SoS RA <p>Synchronizing ongoing SoS engineering, analysis, and architecture to develop and distribute the following products to HQDA customers, PEOs, PORs, PMs, and S&T organizations in order for them to develop their program plans, including support products for Integrated Weapon Systems Review (I-WSR) FY18-22:</p> <p>SoS engineering, analysis, and architecture to develop and distribute the following products to ASA(ALT) System of System Integration (SoSI) for the execution of NIEs and the fielding of TCSs to the Warfighter:</p> <ul style="list-style-type: none"> - SV-1 SoS Overviews for CS15-21 - SV-1 Transport Overlay for CS15-21 - Integrated stakeholder strategies and roadmaps. Identified acquisition modernization priorities that support engineering design of RA for each POM year CS. - Supported of the Army Campaign Plan material solutions strategy. - Analyses that shaped evolving Army portfolio priorities. <p>Synchronized, developed and published across Army's PEOs analytical community FY15 integrated network analysis plan, concentrating on cross-PEO network integration and performance issues analysis. Executed this plan to deliver several strategic ASA(ALT) whitepapers on key Army's future technologies affecting network 2020 and Network 2025 acquisition-level decisions. These included topics of Aerial Tier extension. Transport convergence, future Narrow Band communications. Developed key Analyses in the areas of technical requirements and performance related to Army's transport convergence initiative for INTEL operations, Army spectral assignment risk mitigation strategy.</p>				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>

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

	FY 2015	FY 2016	FY 2017
<p>In response to GAO guidance, baselined Integrated Network capability set CS15/16 performance in NIE 15.1 event using Army DAE-approved Key technical indicators (KTIs). Using ATEC instrumented NIE 15.1, analyzed and evaluated 5 KTIs from key SoS performance metrics and another 10 key survey-driven SoS technical factors. Taking together, these 15 top measurements have produced Army's first integrated SoS technical performance baseline. When measurements are repeated in future NIEs, important trends associated with network SoS objective performance will be developed and reported to AEE and DAE.</p> <p>Developed Army's first real-time analytical capability of Network SoS performance data against DAE-approved Key technical indicators (KTIs) and metrics. Capability has been deployed on Army's High Performance Computing (HPC) facility and integrated into army's Communications Systems Integration Laboratory (CSIL). Capability allows for the first time real-time feedback on vital network performance characteristics from live test ranges, to include NIEs, lab-based experiments, risk -reduction and integration events. Capability has been successfully validated and utilized to produce Integrated Network Performance Analysis (INPA) reports and deliverables.</p> <p>FY 2016 Plans: These funds provide the following: - Develop the acquisition Capability Set Modernization Matrix (CMM) for capturing, validating and managing CS2020 and CS2025 acquisition and stakeholder modernization objectives and goals, as an authoritative CS acquisition baseline document for informing CS prioritization, evaluation and fielding decisions. Integrate CMM data in the ASA(ALT) IMS. - Develop CS roadmaps, integral to ASA(ALT) IMS data, capturing critical path analysis to identify analysis/design, decision and POR delivery and fielding requirements for risk reduction, evaluation and fielding CS baselines per ARFORGEN. Provide specific and integrated roadmap products to manage co-evolution, programmatic coordination, integration and evaluation (i.e. NIE) of critical Network, COE, Cyber and evolving F2025 requirements supporting CS modernization. Develop and manage risk mitigation plans as identified as necessary to assure critical path execution. -Coordinate with PEO/POR, ARSTAFF, TRADOC stakeholders to capture and maintain an Integrated CS BOI Feeder Data (IBOIFD) baseline for all xBCT CS baselines in ARFORGEN, to define and analyze CS configuration baselines for planning and executing analysis tasks, decision challenges, evaluation (i.e. LBRR/NIE) and synchronized fielding requirements, and for informing WSR decisions. - Identify and perform necessary analysis and design tasks (e.g. NCR, AMF studies) to inform CS design, decisions and evaluation guidance. Publish analysis in CS design guidance books as authoritative guidance to POR's for achieving CS SoS cross-PEO modernization objectives (e.g. Assured Position-Navigation-Timing, Tactical PKI). - Deliver senior leader level reference CS architecture products for communicating SoS acquisition objectives (i.e. Network, COE, Cyber, F2025), and informing decision activities driving CS modernization activities, for all relevant BCT types per ARFORGEN and evolving F2025 objectives, including dependencies on S&T, JIIM, generating force and enterprise scope IT/IS network assets.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>- Develop engineering-level formation/SoS, platform, COE and Cyber architectures to support analysis, T&E and Synchronized Fielding planning and execution activities, derived from and informing authoritative IBOIFD. Integrate architecture and IBOIFD data within authoritative TRADOC ARCADIE environment for assuring baseline product releases are managed in support of stakeholder needs.</p> <p>FY 2017 Plans: Army Formation Reference Architecture products: These funds provide for Subject Matter Expertise to develop and maintain System of Systems (SoS) architecture and integration products for all Army Combat Formations (Corps & below). These products are used to design Objective, Base, & Modified Table of Organization & Equipment (TOE), capabilities sets (CS), and demonstration/test environments (e.g. NIE, Operational Test, and Army Interoperability Certification). This effort also supports working groups such as the Network Synchronization Working Group (NSWG), and formal Army decision forums such as the SoS General Officer Steering Committee (SoS GOSC) and the Army's Land War Net GOSC (LWN GOSC). The four core reoccurring products are:</p> <ul style="list-style-type: none"> - Integrated Basis of Issue Plan (IBOIP): detailed database and spreadsheets describing the objective, basic, and modified TOE, TRADOC required BOI system placements, etc. - System of Systems View (SoS) Diagram: Visual reference document diagramming all Soldier and platform roles, and their network connectivity and waveform assignments to each other as dictated by the IBOIP. - Vehicle Interconnectivity Diagram (VID): Visual reference document diagramming software (operating systems, applications, etc), hardware (radios, computers, antennae's, routers/switches, etc.), internal/external networks (protocols, ports, gateways, etc.), and waveforms (frequency bands) are connected for individual platforms. - System of System (SoS) Thread: Visual reference diagram documenting technical use cases of the SoS architecture and the data/message flows throughout Brigade and below based on Army universal task lists, Army Interoperability Certification, and Joint Common System Function List. - Head Quarters Department of the Army (HQDA) Architecture inquiries: These funds provide for SMEs which respond to HQDA inquiries and it provides for developing and/or updating Army documents (e.g. regulations, exercise orders, directives, policies, etc.). Coordination with PEOs, ARSTAFF, FORSCOM units, and TRADOC stakeholders to synchronize the development, maintenance and configuration management of capability sets for all Army formation types. This includes design information for COE, Cyber, and PNT. 				

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>- Data/Configuration Management: These funds provide for maintaining consistency of architecture products that are leveraged by the Army community to develop capability gaps, operational exercises, and PoR development and integration activities. This includes the resourcing, planning, and IT systems to facilitate configuration management activities.</p> <p>- CS17 Products and Services: Engineering design and analysis of Infantry formations networks to verify operational capabilities, cost, and schedule can be met. Delivery of modified TOE architecture products to all units fielded during FY-17 to facilitate new equipment fielding of current formations CS17 Units 6 total: 2xInfantry Brigade Combat Teams (IBCTs) with lower tactical internet, 1xDIV HQ, 1xIBCT only dismounted radios, and 2xIBCT without lower tactical internet.</p> <p>- CS18 Products and Services: Engineering design and analysis of Infantry formations networks to verify operational capabilities, cost, and schedule can be met. Delivery of modified TOE architecture products to all units fielded during FY-17 to facilitate new equipment fielding of current formations CS18 Units 6 total: 1xIBCT with lower tactical internet, 1xANG Division HQ, 1xIBCT Division HQ, 1xIBCT only dismounted radios, and 2xIBCT without lower tactical internet.</p> <p>- Architecture Planning Analysis, Integration and Coordination: These funds provides the Army's leadership and materiel developers with the necessary Capability Set (CS) modernization planning, technical and risk analysis, mitigation planning, and system of systems engineering (SoSE). This project explicitly includes critical Common Operating Environment COE, Cyber, PNT as well as Division & Corps echelons as it pertains to architecture development to meet network 2020 and 2025 initiatives.</p> <p>- Engineering Support & Design: These funds provide SME support to the Army's Network Modernization Strategy (NMS) at both the tactical and enterprise levels. FY17 Network Modernization engineering will include support for Position Navigation & Timing (PNT) integration into the overall Capability Set design, Multinational/Mission Partner Environments architecture development, Army defensive and offensive cyber capabilities integrated at both the tactical and enterprise levels, network modernization risks and gaps for Corps level units and below, Army spectrum strategy, and COEv3+ modernization risks and gaps.</p> <p>- Portfolio Analysis: These funds provide the Subject Matter Expertise to conduct Portfolio analysis across the entire Army portfolio of programs of record (PORs) and systems with an intent of maximizing Warfighter utility and effectiveness under cost, schedule and technology readiness constraints. Analysis in this area provides Army leadership with options to make sound analyses-driven investment</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>decisions that optimize the overall acquisition portfolio warfighting function. Activity also standardizes the programs' data sets elements based on which program-level decisions can be made, as well as improves the overall methodology of the Army's portfolio analysis.</p> <p>- ASA(ALT) Integrated Master Schedule (IMS): These funds provide SME to maintain a reliable IMS that synchronizes Engineering, Architecture, Programs of Record (POR), Network Evaluation, and Capability Set (CS) fielding scheduled aligned to the POM and the Army's ARFORGEN cycles. Efforts to include implementation of networked IMS tools for POR input. Efforts to analyze Platform and MCN 2020 network components schedules to identify issues and opportunities.</p> <p>- SoSE&I Integrated Master Schedule: These funds provide SMEs to develop and maintain an Integrated Master Schedule (IMS) for internal deliverables supporting Capability Set Fielding, COE, Cyber, Architecture, Engineering Analysis and Risk Reduction, aligned to CS schedules and evaluation event activities.</p> <p>- Integration Risk Identification, Mitigation, Plans and Reports: These funds provide SME to conduct Integrated Risk Management enabled by ASA(ALT) IMS and MCN 2020 Focused End State objectives and tasks. It provides analysis of MCN 2020 FES objectives and tasks against ASA(ALT) IMS to identify risks to the delivery of Mission Command Network. Develop mitigation plans and coordinate and synchronize with PoRs to reduce risk. Identify opportunities to bring in capabilities early to formal Capability Set configurations through analysis of PEO portfolios and IMS, to include: Capability Risk Matrix, Mitigation Plans for MCN 2020 delivery, and tracking and statusing FES changes.</p> <p>- Strategic Process and Planning: These funds provide SME to incorporate ASA(ALT) network objectives into strategic planning for achievement of MCN 2020 focused end states and Force 2025B emerging solutions, to include: Strategic Planning Review events, Road map to MCN 2020 validation, Agile Process Standard Operating Procedure rewrite, Network Synchronization Working Group outcomes analysis, Proponent IPT, and Database development and improvements to track and report progress.</p> <p>- Future Capability Sets Planning Integration and Engineering: These funds provide for the advancement of collaboration and coordination between platforms, network systems, and enterprise services as part of the planning efforts required to complete a CS fielding. CS reference architecture products are the result of this collaboration. CS reference architecture products enable CS fielding platform integration design decisions. They provide a synchronized and holistic description of how the Army network integrates into and functions for the FORSCOM units designated to receive a CS fielding.</p>				

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>- CS16 Products and Services: Final close out of unit specific IBOIP, SoS View diagrams, VIDs, SoS Threads, Network Verification (NETVer), Non-Recurring Engineering (NRE), and configuration management for 1xIBCT with Lower Tactical Internet, 1xDIV HQ, and 3xIBCT without lower tactical internet.</p> <p>- CS17 Products and Services: Coordinate and communicate with PMs, TCMs, PEOs, ASA(ALT), G3/5/7, SoSE&I E&I, and other organizations within and outside of SoSE&I to ensure synchronization of CS baseline evaluation product program schedules. In collaboration with platform and network system PMs, document network system design, identify integration risks, and assist in the development of mitigation plans to help ensure schedule of CS fielding is executable.</p> <p>These funds also support the effort to:</p> <p>Evaluate, synchronize and ensure platform integration requirements are embedded in the performance scope for SoSE&I managed System Under Evaluation (SUE) production RFPs in collaboration and coordination with platform PMs, network system PMs, and the SoSE&I Engineering Planning and System Integration (EPSI) Division. Adjudicate and resolve operational, technical, and programmatic issues for initial and RA products in collaboration and coordination with SoSE&I E&I, platform PMs, network system PMs, and TRADOC Capability Managers (TCMs). Evaluate, synchronize, and monitor the development of the CS 17 unit specific architecture products, as defined by NIE evaluation results, in collaboration and coordination with SoSE&I E&I and the SoSE&I Capability Package (CP) Synchronized Fielding (SF) - Engineering Division (ED). Evaluate the development of RA products required for SF tasks/mission accomplishments utilizing architecture inputs (e.g., TVs, Mission Threads, Validation Exercise, etc.) from NIEs.</p> <p>Develop, update, and finalize the CS 17 unit specific SoS view architecture, from Brigade Headquarters to dismounted soldier, and the detailed engineering VIDs, details how CS and legacy equipment will be connected within the vehicle from the CS aggregated network vehicle (golden vehicle) list produced by the Production Design and Integration team. Plan, coordinate, and assess Safety Release/Safety Confirmation (SR/SC) testing for CS Golden Vehicle designs. Coordinate with SF fielding team for planning and execution of SR/SC and materiel release planning to support CS unit fielding.</p> <p>Coordinate with associated SoSE&I Directorates for the management, engineering, integration, testing, and delivery of platforms with integrated network equipment for CS evaluation, testing, and fielding. Incorporate the CS 17 unit specific architecture product schedules into the IMS. Develop the CS NRE configurations for reference and unit specific IBOIP architectures consisting of multiple network systems on multiple configurations of Mine Resistant Ambush Protected (MRAP) vehicles, the family of High</p>			

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<p>Mobility, Multipurpose Wheeled Vehicles (HMMWVs), as well as other ground combat, combat support, and combat service support platforms for multiple roles in across an IBCT.</p> <p>Perform and document Configuration Management (CM) of unit specific vehicle network architecture designs, (e.g. IBOIPs, SoS views, VIDs, Threads, etc). Develop, coordinate, and assess test mission threads from NIE and CS to exercise data flows within the network and vehicles to verify network requirements and message functionality. Plan, coordinate, and participate in CS NETVer events to verify CS designs and ensure the functionality of CS production equipment.</p> <p>- CS18-22 Products and Services: Coordinate and communicate with PMs, TCMs, PEOs, ASA(ALT), G3/5/7, SoSE&I E&I, and other organizations within and outside of SoSE&I to ensure synchronization of CS baseline evaluation product program schedules. In collaboration with platform and network system PMs, document network system design, identify integration risks, and assist in the development of mitigation plans to help ensure schedule of CS fielding is executable.</p> <p>Coordinate with associated SoSE&I Directorates for the management, engineering, integration, testing, and delivery of platforms with integrated network equipment for CS evaluation, testing, and fielding. Analyze Objective Table of Organization and Equipment (OTOE), network system PMs' equipment fielding plans, and platform PMs' engineering and modernization schedules in order to develop, update, and finalize a CS reference INBOIP, SoS view architecture, and VIDs and incorporate these architecture products into the IMS. Develop the CS NRE configurations for reference IBOIP architectures consisting of multiple network systems on multiple configurations of Mine Resistant Abrams, Bradley, Stryker, Armored Multi-Purpose Vehicle (AMPV), Ambush Protected (MRAP) vehicles, the family of High Mobility, Multipurpose Wheeled Vehicles (HMMWVs), as well as other ground combat, combat support, and combat service support platforms for multiple roles in across an IBCT, Stryker Brigade Combat Team (SBCT), and Armored Brigade Combat Team (ABCT).</p> <p>Effort to develop and maintain Capability Set and Sync Fielding specific IMS: These funds provide SME to develop and maintain an Integrated Master Schedule for the Army's Capability Set – Synchronized Fielding efforts. Close out the IMS for FY16, maintain the IMS for FY17 and develop initial IMSs for FYs, 18, 19 and 20. Collect and analyze sub-schedule performance against the baseline IMS to identify schedule risks for the Army's Capability Set – Synchronized Fielding (CS-SF) efforts. Validate that established integration points are achievable and, if not, identify the schedule risk. Analyze schedule performance against schedule baseline, identify variances and their causes, and identify risks and/or impacts to critical path. Perform "what if" schedule analysis of alternative program courses of action to determine impact on schedule critical path. Update and post Schedules on SharePoint for visibility and increased collaboration across ASA(ALT). Participate in After Action Reviews, Lessons Learned, Synchronized Fielding Technical Exchange Meetings (TEMs). Provide</p>				

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>scheduling reports and briefings to meet the needs of the CS-SF community. It also includes: Capability Sync Fielding IMS and briefings and reports from IMS analysis.</p> <p>To synchronize, develop and publish across Army's PEOs analytical community FY17 integrated network analysis plan, concentrating on cross-PEO network integration and performance issues analysis. Execute this plan to deliver several strategic ASA(ALT) whitepapers on key Army's future technologies affecting network 2020 and Network 2025 acquisition-level decisions. Develop and execute key Analyses in the areas of technical requirements and performance related to Army's transport convergence initiative for Logistical and medical data and Intel-related operations, Army spectral assignment risk mitigation strategy.</p> <p>In response to GAO guidance, to further baseline and trend Integrated Network capability set CS18/19 performance in NIE 17.1/17.2 events using Army DAE-approved Key technical indicators (KTIs). Using ATEC instrumented NIE 17.1/17.2 analyzed and evaluated KTIs from key SoS performance metrics and another key survey-driven SoS technical factors. Taking together, these multiple key indicator measurements will show integrated network SoS technical performance trends against the baseline. When these standardized measurements are repeated at NIEs, important trends associated with network SoS objective performance and operational capability are observed and reported to AEE and DAE.</p>				
<p>Title: Common Operating Environment (COE)</p> <p>Description: Provide Engineering Synchronization Oversight and Governance for the Army SoS Common Operating Environment (COE); provide integrated, cross-portfolio system engineering, architecture products and cost benefit analysis and synchronized acquisition planning for COE crossing multiple PEOs and Computing Environments (CEs); provide SoS requirements decomposition; conduct COE related Verification & Validation (V&V) planning and assessment; and serve as the DA Staff advocate for COE and Cross Cutting Capabilities (CCCs). Serve as the Trail Boss for ASA (ALT) I2E.</p> <p>FY 2015 Accomplishments: The funds provided: Technical support to oversee the execution of the COE Implementation plan, COE Synchronization, Governance, Cross-Cutting Capabilities Definition, Implementation Plan Updates, Software Build (SWB)/COE Configuration Control Board (CCB) and assessment Support transition, including the COE Integration and Certification Strategy with CIO/G-6 and ATEC, Integrated Master Schedule, Government oversight of the Army's Strategic Software Improvement Program (ASSIP), Coordination with Army Staff, Technical Reference Model, Metrics for assessing compliance, Technical Advisory Board (TAB), Chief Engineer compliance, COE assessment criteria, Assessed systems during the System Under Evaluation (SUE) Technical Interface Meeting (TIM), System software configuration baseline data collection, System software configuration baseline updates, Control Point/Interface Definition and Agreements, Afghan Mission Network, Ops/</p>		3.680	3.072	3.154

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

	FY 2015	FY 2016	FY 2017
<p>Intel Convergence, Transport Convergence, Network Synchronization Working Group , Joint Interoperability & Mission Thread Architecture Office of Secretary Defense (OSD) Director Defense Research and Engineering (DDR&E), Integrated Base Defense, Basing and Basing Computing/Communications Analysis, Host Based Security System (HBSS), Global Network Enterprise Construct (GNEC) Implementation Plan, Radio Procurement Requests, SoS Engineering Construct for the Network, Organizing the SoS Engineering trade space for Platforms, Standards for the Platforms (VICTORY & FACE), Size Weight and Power (SWAP) working group, Software Blocking (SW), NIE Gaps, Candidate Assessment for NIEs 15.2 and 16.1, and Technologies assessment, Systems Engineering Plan (SEP) policy, Program Protection Plan (PPP) reviews, Reliability policy technical support, Standards & Speciation adoption across ASA(ALT), (OSD/Joint), Development Planning model, IBD, Basing Pilot). It also provides for the development and execution of COE integration policies and procedures. It also funded the development and implementation of backwards compatibility assessment, integration checklists and their verification, test hardware development and implementation support, the development and effective utilization of emulator and integration tools. Provided for COE/CE architecture validation, design baseline validation, and the verification of COE reference architecture compliance. The verification of COE critical enabler implementation, conducting risk assessments and analysis, accreditation and certification process refinement, and verification of technical test harness and tool development.</p> <p>FY 2016 Plans: The funds provide the following: --Orchestration and COE Governance Execution: The funds provide Implementation Management, development and maintenance of the COE Integrated Master Schedule, oversight of Computing Environment (CE) Working Groups conducting cross-Computing Environment coordination and conflict resolution efforts, and ASA (ALT) support for the Army Staff Network Synchronization efforts. The funds support COE STRATCOM development and industry engagement, including business case development and COE Contracting strategies. The funds support authoring the annual AAE Systems of Systems directive which guides the evolution the Army SW Baseline, reliability policy technical support, and Standards & Specification adoption across ASA(ALT), (OSD/Joint), Development Planning model. The funds guide COE/CE architecture validation management, engineering plan review, design baseline validation, and the verification of COE reference architecture compliance. --Requirements and Engineering: The funds provide COE Technical Baseline Development that provides a Technical Roadmap to the Programs of Record (POR) for future capability development and software integration within the COE. Funds provide development of COE Engineering Change Proposals and vetting. Funds provide Systems of Systems engineering and analysis to synchronize POR migration to COE, oversee COE Common Software Foundation Development, Cross-Cutting Capabilities engineering and prioritization, Implementation Plan Updates, building and publishing the COE Technical Reference Model, compliance assessment metrics development, Technical Advisory Board (TAB) management, Resource Working Group (RWG) management and cross-CE and PEO Systems of Systems engineering support, Transport Convergence, and SoS COE Architecture and Data Models.</p>			

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

	FY 2015	FY 2016	FY 2017
<p>-- Technical Management: The funds provide technical support to oversee the execution of the COE Implementation Plan and DA COE EXORD compliance and execution, including cost analysis, tasking management, Modular Open System Architecture Guidance development and implementation, verification of COE critical enabler implementation, and risk assessments and analysis. Funds provide COE CBA to support the JCIDS process.</p> <p>--Testing, Certification and Fielding Preparation: The funds support for integration, validation, and verification of PORs in preparation for certification testing. Funds provide support to multi-level COE Baseline testing, System software configuration baseline data collection, System software configuration baseline updates, Control Point/Interface Definition and Agreements, and COE assessment criteria development and implementation. Funds provide SoS COE Standards for the Platforms (VICTORY & FACE), support for the Size Weight and Power (SWAP) working group, Software Blocking (SW), Software Version COE Configuration Control Board (CCB), Test Support transition and NIE Gaps and Technologies assessment. The funds provide accreditation and certification process refinement, verification of technical test harness and tool development, and accreditation, certification, and refinement of test plans and events. It also provides for the development and execution of COE integration policies and procedures, infrastructure qualification, the development and implementation of backwards capability testing, integration checklists and their verification, test hardware development and control point testing implementation support, and the development and effective utilization of emulator and integration tools.</p> <p>FY 2017 Plans: Common Operating Environment Synchronization, Governance, Resource Planning and Implementation Oversight: These funds provide Engineering, Orchestration, Oversight and Governance for the Army COE on behalf of the Army Acquisition Executive under the direction of the Executive Director System of Systems Engineering and Integration COE Synchronization, Governance, Resource Planning and Implementation functions: Synchronize the activities of 6 Computing Environment (CE) Working Groups, 11 Program Executive Offices, and 163 Programs of Record (PORs) to deliver the COE materiel solution necessary for the Army to field the Tactical Network envisioned in Mission Command 2020 and Mission Command 2025 guidance documents. Lead Policy Planning and Coordination with the Land/War/Net Mission Command Directorate of the G3/5/7 regarding the COE Execution Order (EXORD) and the Army Focused End-States initiative. Advise the Executive Director System of Systems Engineering and Integration and the Army Acquisition Executive on COE matters, provide assessments and reports, and prepares information to support Decision-making. Coordinates with Research Development and Engineering Centers by providing planning input for technical enabler development by COE version (v3, v4, and v5). Lead the System of Systems Engineering product development—the standards, architecture, specifications, certification guidance, and priorities guidance necessary to build the COE. Provide analysis and planning information to inform the Long Range Analysis. Process, including schedules, funding assessments, and decision support analysis. Manage COE participation in Weapons System Reviews (WSR) by developing yearly ‘business process guidance’ that structures how Program Managers allocate resources to inform WSR decisions and leads the COE Resource Management Working Group. Develop strategic communications to inform the Army Staff, the Acquisition. Develop Community, Industry and Government regarding the COE long term strategy.</p>			

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<p>- Common Operating Environment System of Systems Engineering: These funds provides integrated, cross-portfolio system engineering, architecture products and cost benefit analysis and synchronized Acquisition planning for COE crossing multiple Program Executive Offices and Computing Environments (CEs).</p> <p>- The funds support COE System of System Engineering activities such as: Oversee and guide Computing Environment activities on behalf of the AAE by chairing the COE Technical Advisory Board (TAB) which is composed of the 6 CE Working Groups and 8 Program Executive Office Senior Engineers. Serve as the COE Technical Advisory Board Secretariat. Develop and schedule issues for decision. Authors and clears authoritative decision records. Develop the Annual System of Systems Directive for signature by the Army Acquisition Executive that provides program guidance to PORs. Develop Systems Engineering technical baseline guidance, standards, control point specifications, and templates for multiple COE versions in simultaneous development: COE v3, v4, and COE v5. All are currently in progress and at various stages of maturity. Manage COE Systems Migration Binning List which aligns systems against COE objectives. Identify, manage and vet engineering assessments and Engineering Change Proposals for Cross-Cutting Capabilities. Establishes CCC development priorities, monitors and reports on progress for 19 CCCs. Develop and update the COE Technical Reference Model—the basic logical system design for COE versions. Develop and update the COE Technical Roadmap, which provides guidance for the migration of Program of Record Systems to the COE. Coordinate systems engineering and architecture support to the development of the Integrated Systems-Capabilities Development Document and follow-ons. Develop and maintain, Control Point Specifications, the primary standard by which interoperability and backward compatibility will be maintained and assessed among COE versions. Conduct COE v3 Integration of the CEs to develop the COE v3 baseline. Lead COE Systems Management Planning: the identification of systems that will migrate to the COE infrastructure, by fielded in COE compatible versions, or divested. Monitors and reports on planning. Assesses support Systems Engineering Plans for systems that will migrate to COE. Lead Integrated Architecture Team by providing COE architecture development guidance to supporting architects in other organizations, integrating architecture contributions, and assessing products. Monitors and assesses Computing Environment Architectures developed by Program Executive Offices. Provides system of systems analysis and advice to TRADOC operational architects and CIO/G-6 technical standards developers. Develop and coordinate the COE Integrated Master Schedule that integrates 2680 lines of activities. Integrates CE WG schedules. Develop, coordinate, and published annual updates to the COE Integrated Systems, Engineering Plan and 14 annexes. Develop, codify, monitor and report COE Performance, Schedule, and Cost Metrics. Leads the COE Standards Working Group.</p> <p>- Common Operating Environment (COE) Technical Data Management: The funds provide cost benefit analysis, planning coordination with G3/5/7 and Training and Doctrine Command Battle-labs, Capability Development Document Coordination, Data Management, Operations and Tasking; Focused End-State 2 lead.</p>				

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	FY 2015	FY 2016	FY 2017
<p>- The funding provides the following COE Technical Data Management functions: Lead the Focused Endstate 2 Working Group—the Army Staff planning and policy group for the Common Operating Environment. Provides analysis to support weekly Councils of Colonels meetings to regarding Focus Endstate objectives, measures of performance, and execution monitoring.</p> <p>Provide Data Management of COE policy, guidance, specifications, Engineering Change Proposals, architecture that together provide 6 Computing Environment stakeholder communities, 185 Program Managers, TRADOC Centers of Excellence, and Army Staff element the technical, resource, and guidance information needed to build COE compliant products. Provides configuration management documents including version control, discovery of current data, data archiving, and Meta data policy. Develops SharePoint pages and applications to provide collaboration services, library storage, database services, and community tailored access. Manages information access and oversees 6 Computing Environment sub-sites.</p> <p>Conduct COE cost analysis to support COE related decision bodies (SoS GOSC, LWN GOSC). Manage COE tasking affecting 8 PEOs, 6 Computing environments to allow COE to gather information and convey Army Acquisition Executive direction to the COE materiel development community. Manage the Better Buying Power 3.0 Modular Open System Architecture initiative, including contract support coordination, data management, data collection, analysis, weekly meetings, monthly meetings at the Service and Department Acquisition Executive level, and four major deliverables. Requires multi-Service coordination and Industry Outreach. Ensure coordination of Geospatial products: Requirements, Architecture, Engineering, Implementation, Integration, Assessment, and Certification activities associated with the Common Overlay Cross-Cutting Capability and Command Post Computing Environment application development. Provide analysis and information to the Mission Command Requirement Governance Team regarding COE level Capabilities Development Documents. Coordinate with and provides Systems of Systems Engineering Analysis products and recommendations to the TRADOC Battle Labs, especially COE materials to support Modeling and Simulation.</p> <p>- Common Operating Environment Certification: The funds provide for conducting COE certification planning and execution with 8 Program Executive Offices, 30 Program Manager (PM) /Product offices, Training and Doctrine Command (TRADOC), G-3/57, and Chief Information Officer (CIO)/G-6). Integration and Interoperability Event (I2E) lead for the Assistant Secretary of the Army for Acquisition, Logistics and Technology. To include: Monitor COE Integrated System Engineering Plan (ISEP)-required Phase 2 (Computing Environment) and Phase 3 (System of System COE) Software integration activities for COE versions 3 and 4; and provide COE Integration status to Land/War/Net Mission Command (LM) General Officer Steering Council (GOSC) and System of Systems GOSC with metrics and reports. Coordinate Title 10 software integration activities across eight Program Executive Officer (PEOs) and over 30 Program Manager (PM) /Product offices at CIO)/G-6 interoperability test control hub site (per DA PAM 25-1-1) for regulation-mandated Army Interoperability Certification (AIC) preparation, including managing synchronization of PEOs/PMs/CEs delivery of Hardware,</p>			

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

	FY 2015	FY 2016	FY 2017
<p>Software and engineering support for System of Systems Integration. Co-chair Configuration Control board with G-3/5/7 to determine which systems, by software versions, are coming to biannual AIC events (through evaluation of operational and technical risk reduction impact) across multiple developmental and fielded tactical network baselines.</p> <p>Co-chair Executive Scoring Committee (with TRADOC and CIO/G-6) to adjudicate AIC test incident reports and monitor resolution to closure. Coordinate with CIO/G-6 for conduct of Certification Readiness Reviews for each AIC test event. Mediate between PEOs/PMs for adjudication of requirements Engineering Change Proposals (through a Program Change Request process) with TRADOC. Conduct daily hot-wash detailed engineering coordination sessions with integration engineers distributed across the Federation of Net-Centric sites an accredited network at six locations. Monitor and report IAVA and Configuration Management scan processes status at multiple integration sites for Cyber defense certification preparation.</p> <p>Validate test floor architecture and test case development for integration and testing at CIO/G-6-designated sites. Make recommendation through Executive Director SoSE&I to HQDA CIO/G-6 and G-3/5/7 when progress at I2E is sufficient to state that the baseline is ready to enter formal AIC test. Provide System of System engineering analysis to the Focused End-State 4 working group regarding Mission Command Network Interoperability with Joint, NATO and Coalition Networks.</p> <p>- Common Operating Environment Systems Engineering and Integration Support: The funds support system of systems engineering planning associated with the Operational Assessment and Test venues: Coordinates with 6 Common Environment (CE) Working Groups (WG)s and over 30 Programs of Record to align materiel development schedules, risk mitigation events, against operational assessment venues. Assesses Performance, Schedule, and Cost risks to support decisions associated with COE version baseline fielding and test planning by the G3/5/7 and CIO/G6.</p> <p>- Effort to develop and maintain COE specific IMS: These funds provide SMEs to develop and maintain an Integrated Master Schedules for SoSE&I's Common Operating Environment (COE) efforts. Close out the IMS for FY16, maintain the IMSs for FY17 and develop initial IMSs for FY18 and FY19. In support of COE efforts collect and analyze sub-schedule performance against the baseline Integrated Master Schedule to identify schedule risks. Validate that established integration points are achievable and, if not, identify the schedule risk. Analyze schedule performance against schedule baseline, identify variances and their causes, and identify risks and/or impacts to critical path. Perform "what if" schedule analysis of alternative program courses of action to determine impact on schedule critical path. Update and post Schedules on SharePoint for visibility and increased collaboration across ASA(ALT). Participate in COE working groups. Provide scheduling reports and briefings to meet the needs of the COE communities. It also includes: COE IMS and briefing and reports from IMS analysis.</p> <p>- Mission Command COE Architecture: These funds provides the Army's leadership and materiel developers with the necessary modernization planning, critical path analysis, risk analysis and mitigation planning, system of systems engineering (SOSE), technical analysis and architectural</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017
<p>products to support Common Operating Environment (COE) development. This project explicitly includes critical COE architecture and governance development tasks. Conduct Verification & Validation (V&V) of Common Element Integrated System Capability Development Document (CDD) Standard Views (SV) and Service View (SvcV) architecture products. It is ASA(ALT)'s responsibility to V&V the Joint Capabilities Integration Development System (JCIDS) Standard View (SV) and SvcV Department of Defense Architecture Framework (DoDAF) products for submission as a Capability Development Document (CDD).</p> <p>Perform; V&V on the COE v1.0/v1.10 Integrated Architecture/Basis of Issue/Capability Set level SVs and SvcVs architectures in preparation for AIC and operational testing, and V&V on the v3.0 COE Integrated Architecture. Positioning Navigation Timing (PNT) Command Control Communication (CCC) System of System architecture will be included. Align the CE-Level DoDAF Architecture Design in MagicDraw according to the guidance strategized out in the MC to avoid duplication in document development across ASA(ALT). This includes supporting the TRADOC Sun Setting Process for current requirements documents and the ASA (ALT) COE requirements convergence strategy, with a feed into COE and Capability Set Architecture.</p> <p>Detailed Tasks include: Build Trace for the COE requirements and their relations to other source and authoritative documents using the Army IRF. This includes the requirements for Position, Navigation, and Timing (PNT) CCC, Standard and Sharable Geospatial Foundation CCC, Common Overlay CCC, and Chat CCC. Develop and manage COE SoS Technical Requirements (Functional and Non Functional Requirements) including Requirements for Position, Navigation, and Timing (PNT) CCC, Standard and Sharable Geospatial Foundation CCC, Common Overlay CCC, and Chat CCC. Define and Build Trace between COE Technical Requirements and required COE/CE Architecture products.</p> <p>Provide guidance document, SOPs, training, IT support to the COE/CE users to develop the COE/CE requirements including Position, Navigation, and Timing (PNT) IPT. Conduct COE requirements convergence analysis using Army IRF to identify requirements duplications, commonalities, gaps, and define how current COE system requirements will be re-architected in terms of apps, widgets, and services to support the COE v3.0 and beyond-Provide and maintain the Army IRF Environment for the COE/CE community to develop COE/CEs/CCCs requirements. The environment currently has over 160 documents (35 Army Concepts Documents, 88 JCIDS Operational Requirements Documents, 35 Documents that identifies Army Gaps, 10 Authoritative and references documents needed for developing requirements and architecture products). Provide guidance and support to the current Army IRF Users in developing and managing SoS requirements for COE /CE/ CCCs requirements (PEO C3T, PM MC, PM APNT, SoSE&I, MC RGT, MC CoE) and new users. Use Case to generate the Unified System/Service DoDAF Product Design for COE Integrated Architecture v3.0. Assess the readiness of the Integrated Architecture against the Control Point Specifications for COE v3.0. Continue architecture product evolution in Magic Draw of the Unified System/Service DoDAF Product Design for COE Integrated Architecture for v4.0 and v5.0. Changes and updates will be vetted with the COE Architecture IPT at the appropriate time. Support Risk Assessment of emerging COE architectures for Cyber impacts.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>- System of System Common Operating Environment Requirements Engineering: These funds provides SoSE&I, Program Managers and TRADOC with the necessary Subject Matter Expertise (SME) to develop, analyze, and manage the complexity of the Common Operating Environment (COE) Requirements, existing Program of Record (POR)/systems requirements, Cross-Cutting Capabilities (CCCs), the new Computing Environment (CE)-level documents and governance and coordination of the Federated Integration Environment (FIE). The FIE reduces risk by supporting integration and interim operability assessments throughout the product lifecycle using a Phases Integration approach.</p> <p>Title: ASA(ALT) Cyber Focal</p> <p>Description: These funds support critical ASA(ALT) Cyber Focal staff synchronization, analysis and integration of Cyber functions and products.</p> <p>FY 2016 Plans: These funds provide for the following:</p> <ul style="list-style-type: none"> - Cyber Programs: Support Cyber materiel development processes by continually researching innovative acquisition process as well as utilizing science and technology resources to take advantage of the available technology. Streamlined and rapid Cyber materiel development processes support the Army Cyber mission forces as well as Army life-cycled managed systems and networks against emerging/evolving Cyber threats. - Mission Assurance and Compliance: Continue to improve the vulnerability management system, ensuring standardized compliance processes that provide flexibility to Program Managers and Commanders, allowing them to make decisions based on the vulnerability, risk and operational importance of the system or network; this provides Army Mission Assurance and Compliance processes and methodologies that are tailored to the system, network, and operations. - CIO Governance: Continue to manage the acquisition domain portfolio and business systems for ASA(ALT). Provide acquisition domain strategy, system binning requests, system assertions, system compliance reviews, problem statement review, CIO policy, system architecture, E2E process, policy and governance, data center consolidation, data management, CIO operations management, policy and governance and integration of Cyber and CIO resources. - Cyber security: Assist in the improvement of the system and network accreditation processes for life-cycle managed systems, that streamline the processes for quicker accreditation; this allows systems and networks to move through the development, testing and fielding processes, supporting rapid fielding of cyber capabilities and resilient systems to Warfighters. 		-	2.782	2.086

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>- Cyber Architecture: Provide cyber architecture subject matter expertise and cross PEO architecture integration, including systems engineering analysis and requirements decomposition of cyber requirements, and product support for Capability Set Fielding and Engineering and Integration architecture efforts.</p> <p>FY 2017 Plans: These funds support critical ASA(ALT) Cyber Focal SMEs for synchronization, analysis and integration of Cyber functions and products.</p> <p>- Cyber Programs: Provide oversight, synchronize and coordinate requirement development, decomposition and validation efforts for Requirements Definition Packages and Capability Drops based on validated Information Systems (IS) capability documents in support of efforts to provide cutting edge cyber capability to the warfighter. Oversee, synchronize and coordinate fielding of cyber capabilities utilizing the Cyber Acquisition Task Force. These capabilities include defensive cyberspace operation, situational awareness and department of defensive information network Socialize efforts with the Cyber stakeholders and key leadership. Manage the synchronization between program offices, HQDA, and the Army Cyber Command regarding efforts for the drafting, validation and execution of operational needs statements, office of primary responsibility, materiel development decisions. Co-chair the Cyber Acquisition, Requirements, and Resourcing Operational Planning Team. The CARR is responsible for recommending prioritization of validated Cyberspace requirements in view of operational imperatives, estimated costs, and available resources; approving an annual plan for cyberspace capability development that assists materiel and capability developers in forecasting resourcing requirements; measuring progress from the prior year's annual plan, in order to align future requirements and inform stakeholders of the accomplishments in attaining Cyberspace capabilities in meeting the above objectives; evaluating and providing recommendations on priorities for cyber-related special program requirements to ensure deconfliction, cross-functional review, and integration of special program issues, with sufficient participation of stakeholders. Develop integrated cyber acquisition strategies across multiple PoRs and Program Executive Offices. Participates in the Army Cyberspace Council; maintain the Army's Cyber Acquisition strategy/plan to reflect changes in technology and policy/regulation and to address emerging cyber requirements. Continue to execute cyber innovation challenges by hosting meetings, conferences, conducting market research, working with the Army Contracting Command, Program Executive Office and the Army Cyber Command. Expand market research to include academia, Industry, International organizations, and specified cooperative security efforts in order to identify and utilize common cyber efforts.</p> <p>- Mission Assurance and Compliance: Conduct initial full baseline scoring of ASAALT systems using the existing criteria in the Operational Risk Decision Framework. Further refine the criteria for future scoring based on Army Cyber Command criteria weighting and available system documentation. Participated in the existing Insider Threat IPT Lines of Effort (LOE) to mitigate the risk of insider threat, ensure</p>				

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>cross PEO equities and resourcing requirements were identified to implement the findings in the IPT. Continue to improve the vulnerability management system by participating in the PEO C3T and NETCOM vulnerability management pilot and develop the plan for follow on activities to implement the lessons learned and Tactics, Techniques and Procedures across the ASAALT portfolio.</p> <p>Conduct cyber assessments using the Mission Assurance and Compliance processes and methodologies tailored to the system, network, and operations to ensure cyber is a part of the overall systems engineering assessments of Programs of Record. Continue to provide HQ staff support to the PEO Information Assurance Program Managers in the area of Command Cyber Readiness Inspections, Tactical Public Key Infrastructure, and Cyber Tool Implementation. Support to Other SoSE&I Directorates: Conduct requirements identification, decomposition, and engineering support to integrate cyber into the Common Operating Environment, including the development of the Tactical PKI Cross Cutting Capability, input to Implementation plans, integrated systems engineering plans, and integrated architecture.</p> <p>Conduct requirements identification, decomposition, and engineering support to develop a holistic approach to identity and access management and Public Key Infrastructure. Efforts include a Tactical PKI Exception Memorandum, Assessment of Tactical and Strategic PKI and IdAM based authentication, Enterprise Directory Services (EDS), and Enterprise Tactical Identity and Email Service (ETIES). Continue to develop the software vulnerability architecture to provide a system of system analysis tool to determine high risk systems to cyber vulnerabilities based on access to enterprise capabilities and location on the actual tactical network. Effort also includes the development of the FY 16 assessment plan for mission assurance analysis to be conducted through SOSEI Engineering and Analysis Risk Reduction yearly analysis plan.</p> <p>- Cyber Security: Lead ASA(ALT) Cybersecurity Program; accredit, validate, and oversee ASA(ALT) systems cybersecurity activities and manage cybersecurity workforce. Continue providing support to PEO Information Assurance Program Managers regarding cybersecurity including risk management framework, eMASS, MS4X and ISSP, FISMA compliance, and ACAS. Provide cybersecurity oversight for PM PNT, USAASC, and DASA-P information systems through consultation, policies, and Authorizing Official (AO) authority. Conduct Risk Management Framework (RMF) assess only activities for SoSE&I owned and sponsored systems, lead RMF tactical overlay development. Coordinate and assist with red and blue team efforts for ASA(ALT) portfolio, providing support to Mission Assurance/Resilience in their assessment activities, identifying vulnerabilities in ASA(ALT) information systems throughout the acquisition lifecycle. Perform cybersecurity engineering analysis support for SoSE&I owned and sponsored information systems, including architecture reviews to identify potential vulnerabilities and risk mitigation techniques. Support Cyber Collective Training initiative led by PEO STRI.</p> <p>- Support Engineering and Integration:</p>				

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Lead the Lab Based Risk Reduction cybersecurity effort, coordinating blue team activities for LBRR, transitioning lessons learned from the lab into the field environment. Conduct compliance scans in preparation for the blue team assessment, identifying potential vulnerabilities and ensuring information system owners remediate or mitigate issues. Continue supporting NIE/AWA Strategic Planning Reviews (SPRs) and Bullpens as the TRIAD lead for cybersecurity for both efforts. Conduct architecture reviews and golden vehicle checkout, identifying potential vulnerabilities and risk mitigation techniques. Interface with appropriate agencies for certification issues and cross domain solutions support.</p> <p>- Engineering Support to the Cyber Focal teams and related Cyber engineering tasks where a Cyber Subject Matter Expert (SME) is required or valuable: These funds provide for Cyber SME support to Cyber Programs to decompose in coming requirements documents for the purpose of gap identification, redundant capability definition or requirement between multiple requirements documents, requirement definition in support of resourcing said requirement(s). Cyber SME assistance to Cybersecurity/Cyber Focal with red and blue team efforts for ASA(ALT) portfolio. Cyber SME support to Mission Assurance/Resilience with software vulnerability/protection architecture support and coordination between Cyber Mission Assurance / Resilience and E&I Architecture team. Support with the way forward for Public Key Infrastructure (PKI) and Identity and Access Management (IdAM). Provides support to other Directorates: Support to CIO Governance to integrate Army Acquisition Business Enterprise Architectures (ABBEA) and the Army-Business Enterprise Architecture (A-BEA), Engineering and Integration Team: support to E&I to include Focused End State mission essential and mission enhancing capabilities requirements language (along with G-3/5/7) and support to NIE 17.2 and red/blue teaming and Strategic Planning Reviews (SPRs).</p> <p>- Resourcing and Budget: Coordinate resourcing requirements for emerging threats, defensive/offensive cyberspace operation requirements, and mission assurance and compliance requirements with program offices, develop consolidated Army Cyber picture for iWSR/LIRS/POM, present resourcing requirements at WSR reviews. Develop responses to congressional inquiries. Manage and coordinate Cyber BRP efforts. These resourcing activities are imperative to ensure cyber capabilities are provided to the war fighter and Army systems are defendable against cyber threats.</p> <p>- Effort to develop and maintain Cyber specific IMS These funds provide for SMEs to develop and maintain an Integrated Master Schedules for SoSE&I's Cyber efforts. Close out the IMS for FY16, maintain the IMSs for FY17 and develop initial IMSs for FY18 and FY19. In support of Cyber efforts collect and analyze sub-schedule performance against the baseline Integrated Master Schedule to identify schedule risks. Validate that established integration points are achievable and, if not, identify the schedule risk. Analyze schedule performance against schedule baseline, identify variances and their causes, and identify risks and/or impacts to critical path. Perform "what if" schedule</p>				

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

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
analysis of alternative program courses of action to determine impact on schedule critical path. Update and post Schedules on SharePoint for visibility and increased collaboration across ASA(ALT). Participate in Cyber working groups. Provide scheduling reports and briefings to meet the needs of the Cyber communities. This includes: Cyber IMS and briefings and reports from IMS analysis.			
Title: Facilities and IT Support Description: Provides funding for infrastructure/facilities and IT support.	1.298	1.009	0.533
FY 2015 Accomplishments: Provided funding for infrastructure/facilities. It included the cost for government IT support from Network connectivity to purchasing/leasing hardware, software, computers, communications equipment and services.			
FY 2016 Plans: Provides funding for infrastructure/facilities. It includes the cost for government IT support from Network connectivity to purchasing/leasing hardware, software, computers, communications equipment and services.			
FY 2017 Plans: Provides funding for infrastructure/facilities. It includes the cost for government IT support from Network connectivity to purchasing/leasing hardware, software, computers, communications equipment and services.			
Accomplishments/Planned Programs Subtotals	16.988	16.416	14.166

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>
• DY3: <i>DY3 NIE Test & Evaluation</i>	4.440	12.215	65.844	-	65.844	67.311	67.899	68.478	71.719	Continuing	Continuing
• DY4: <i>DY4 Network Integration Support</i>	16.382	14.131	-	-	-	-	-	-	-	Continuing	Continuing
• DY5: <i>DY5 Production/Fielding Coordination for Capability Sets</i>	2.802	4.601	3.960	-	3.960	4.099	4.192	4.286	4.374	Continuing	Continuing
• DY6: <i>DY6 Brigade and Platform Integration Support</i>	33.629	45.504	-	-	-	-	-	-	-	Continuing	Continuing
• DZ6: <i>DZ6 Army Integration & Coordination Management</i>	8.716	6.375	5.746	-	5.746	5.952	6.087	6.218	6.352	Continuing	Continuing

Remarks

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

This project does not have any requirement for direct procurement of hardware or software.

E. Performance Metrics

N/A

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

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Army System of System Engineering and Analysis	TBD	Various Note: 1 : TBD	10.368	12.010	Nov 2014	9.553		8.393	Nov 2016	-		8.393	0	40.324	0
Common Operating Environment (COE)	TBD	Various Note: 1 : TBD	3.177	3.681	Nov 2014	3.072		3.154	Nov 2016	-		3.154	0	13.084	0
ASA(ALT) Cyber	TBD	TBD : Various: Note 1	0.000	-		2.782		2.086	Nov 2016	-		2.086	0	4.868	0
Subtotal			13.545	15.691		15.407		13.633		-		13.633	0.000	58.276	0.000

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at Aberdeen Proving Ground (MD), Taylor Bldg, (Crystal City, VA), Pentagon, (Washington DC), TACOM (Warren, MI)

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			
Facility and IT Support	TBD	Various: Note: 1 : TBD	1.119	1.297	Nov 2014	1.009		0.533	Dec 2016	-		0.533	0	3.958	0
Subtotal			1.119	1.297		1.009		0.533		-		0.533	0.000	3.958	0.000

Remarks
 Note:1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at Aberdeen Proving Ground (MD), Taylor Bldg, (Crystal City, VA), Pentagon, (Washington DC), TACOM (Warren, MI)

	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		14.664	16.988	16.416	14.166	-	14.166	0.000	62.234	0.000

Remarks

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Final CS Modernization Matrix (Consolidated Roadmap)-CS19	█				█																							
CS16 - Develop and Deliver CS16 IBCT Reference Architecture	█				█																							
CS16 - Develop and Deliver CS16 ABCT Reference Architecture	█				█																							
CS16 - Develop and Deliver CS16 SBCT Reference Architecture	█				█																							
Develop and deliver Finalized BOI, PID, and TD for NIE 15.2 Horse Blanket	█				█																							
Develop and deliver Tech Eval Criteria, Refined GAPs and Scope of Work for CS16	█				█																							
Develop and deliver WSR package to PORs & PMs for WSR 18-22 for CS16	█				█																							
Develop and deliver Final BOI, PID, TD, DFD and NDB for CS17 Fielding	█				█																							
Develop and deliver BOI, PID & TD for NIE16.2 Horse Blanket	█				█																							
Develop and deliver Refined GAPs and Objectives for NIE16.1's Sources	█				█																							
Develop and deliver engineering-level formation/SoS, platform, COE and CS2020	█				█																							
Review, update and deliver the Common Operating Environment (COE) Architecture	█				█																							
Develop and deliver Capability Set Modernization Matrix for CS2020 & CS2021	█				█																							

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

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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Develop and deliver effective emulator and integration tools																												
Develop and deliver CS roadmaps, integral to ASA(ALT) IMS data																												
Develop and deliver Capabilities Definition, Implementation Plan Updates																												
Preliminary Reference IBCI																												
Preliminary Reference Transport Overlay																												
Preliminary Reference Transport Design																												
Interim CS Modernization Matrix (Consolidated Roadmap)																												
Preliminary CS Core Threads																												

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

Events	Start		End	
	Quarter	Year	Quarter	Year
Final CS Modernization Matrix (Consolidated Roadmap)-CS19	1	2013	1	2015
CS16 - Develop and Deliver CS16 IBCT Reference Architecture	3	2014	3	2015
CS16 - Develop and Deliver CS16 ABCT Reference Architecture	4	2014	3	2015
CS16 - Develop and Deliver CS16 SBCT Reference Architecture	4	2014	3	2015
Develop and deliver Finalized BOI, PID, and TD for NIE 15.2 Horse Blanket	4	2014	1	2015
Develop and deliver Tech Eval Criteria, Refined GAPS and Scope of Work for NIE16	4	2014	1	2016
Develop and deliver WSR package to PORs & PMs for WSR 18-22 for CS19-CS23	3	2015	4	2015
Develop and deliver Final BOI, PID, TD, DFD and NDB for CS17 Fielding	4	2015	1	2016
Develop and deliver BOI, PID & TD for NIE16.2 Horse Blanket	4	2015	1	2016
Develop and deliver Refined GAPS and Objectives for NIE16.1's Sources Sought	1	2016	1	2016
Develop and deliver engineering-level formation/SoS, platform, COE and Cyber arc	1	2016	4	2016
Review, update and deliver the Common Operating Environment (COE) Assessment Cri	1	2016	2	2016
Develop and deliver Capability Set Modernization Matrix for CS2020 & CS2025	4	2015	3	2016
Develop and deliver effective emulator and integration tools	4	2015	4	2016
Develop and deliver CS roadmaps, integral to ASA(ALT) IMS data	2	2016	3	2016
Develop and deliver Capabilities Definition, Implementation Plan Updates,	3	2016	4	2016
Preliminary Reference IBOI	4	2016	2	2017
Preliminary Reference Transport Overlay	2	2017	2	2017
Preliminary Reference Transport Design	2	2017	2	2017
Interim CS Modernization Matrix (Consolidated Roadmap)	2	2017	2	2017
Preliminary CS Core Threads	2	2017	2	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
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Note
KEY:
Integrated Base Defense (IBD) / Communication & Computing Infrastructure (CCI) / Infantry Brigade Combat Team (IBCT)
Stryker Brigade Combat Team (SBCT) / Basis of Issue (BOI) / Platform Interconnect Diagram (PID) / Transport Design (TD) / Data Flow Diagram (DFD)/ Network Design Book (NDB)

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>				Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</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
DZ6: <i>Army Integration Management & Coordination</i>	-	8.716	6.375	5.746	-	5.746	5.952	6.087	6.218	6.352	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the management and coordination of Army System of System engineering and analysis architecture development for the Army. The project funds the "shared" resources that support the technical and management (i.e. headquarters, resource management, acquisition, affordability, human resources, operations, etc.) aspects of the Army's Network Integration process and coordination of Production Integration and Fielding of the Capability Sets (CS). Effectively utilizing "shared" resources reduces overall cost to the program. The personnel funded by this project provides direct support to four directorates under ASA(ALT) SoSE&I; Engineering and Integration (E&I), Common Operating Environment (COE), Cyber Focal, and Capability Package and one Project Office; Positioning Navigation and Timing (PNT).

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

	FY 2015	FY 2016	FY 2017
Title: SoSE&I Program Management and Integration	7.610	5.566	5.138
Description: This effort funds for all "shared" resources that supports the Brigade Analysis, Integration and Evaluation program.			
FY 2015 Accomplishments: This effort included program, information, security, business, and personnel management efforts required to support the ASA(ALT) System of System Engineering and Integration Directorate (SoSE&I). This included; support of the system of system engineering process, the ASSALT integrated master schedule development and implementation, support of the Lab Based Risk Reduction and network integration effort, support of the NIE, and support of synchronized fielding, Cyber Focal operations, and Common Operating Environment oversight. It included the following types of activities: Program Management, contracting, financial management, cost analysis, personnel management, operations, security management, information management, facilities and infrastructure management, Pentagon liaison, and knowledge management.			
FY 2016 Plans: This effort includes program, information, security, business, and personnel management efforts required to support the ASA(ALT) System of System Engineering and Integration Directorate. This includes; support of the system of system engineering process, the ASSALT integrated master schedule development and implementation, support of the Lab Based Risk Reduction and network integration effort, support of the NIE, and support of synchronized fielding. It includes the following types of activities: Program management, contracting, financial management, cost analysis, personnel management, operations, security management, information management, facilities and infrastructure management, Pentagon liaison, knowledge management.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>This effort includes program, information, security, business, and personnel management efforts required to support the ASA(ALT) System of System Engineering and Integration (SoSE&I) Directorate. This includes; support of the system of system engineering process, the ASSALT integrated master schedule development and implementation, support of the Lab Based Risk Reduction and network integration effort, in support of closing-out AWA 17.1, planning, conducting/executing and closing-out NIE17.2, planning and conducting/executing AWA18.1 and planning for NIE18.2, along with closing out Capability Set Synchronized Fielding (CS) CS16, conducting CS17 and planning for CS18, it also includes support to Common Operating Environment (COE), Cyber Focal along with Positioning Navigation and Timing (PNT). It includes the following types of activities: Program management, contracting, financial management, cost analysis, personnel management, operations, security management, information management, facilities and infrastructure management, Pentagon liaison, knowledge management.</p> <p>Title: Facilities and IT Support</p> <p>Description: Provides funding for infrastructure/facilities and IT support.</p> <p>FY 2015 Accomplishments: Provided funding for infrastructure / facilities, and government personnel IT support from Network connectivity and the purchasing and/or leasing of hardware, software, computers, communications equipment and services.</p> <p>FY 2016 Plans: Provides funding for infrastructure / facilities, and government personnel IT support from Network connectivity to purchasing/leasing hardware, software, computers, communications equipment and services.</p> <p>FY 2017 Plans: Provides funding for infrastructure / facilities, and government personnel IT support from Network connectivity to purchasing/leasing hardware, software, computers, communications equipment and services.</p>			
Accomplishments/Planned Programs Subtotals	1.106	0.809	0.608
	8.716	6.375	5.746

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>
• DY3: <i>DY3 NIE Test & Evaluation</i>	4.440	12.215	65.844	-	65.844	67.311	67.899	68.478	71.719	Continuing	Continuing
• DY4: <i>DY4 Network Integration Support</i>	16.382	14.131	-	-	-	-	-	-	-	Continuing	Continuing
• DY5: <i>DY5 Production/Fielding Coordination for Capability Sets</i>	2.802	4.601	3.960	-	3.960	4.099	4.194	4.286	4.374	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</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>
• DY6: <i>DY6 Brigade and Platform Integration Support</i>	33.629	45.504	-	-	-	-	-	-	-	Continuing	Continuing
• DY7: <i>DY7 Army Systems Engineering, Architecture and Analysis</i>	16.988	16.416	14.166	-	14.166	24.176	24.651	25.123	25.505	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project includes the purchase of IT hardware, software and service support; general office and operational supplies.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SoSE&I Program Management and Integration	TBD	Various Note: 1 : TBD	5.717	7.610	Nov 2014	5.566		5.138	Nov 2016	-		5.138	0	24.031	0
Subtotal			5.717	7.610		5.566		5.138		-		5.138	0.000	24.031	0.000

Remarks
 Note: 1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at Aberdeen Proving Ground (MD), TACOM (Warren MI), Taylor Bldg, (Crystal City, VA), Pentagon, (Washington DC).

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			
Facilities and IT Support	TBD	Various Note: 1 : TBD	0.831	1.106	Nov 2014	0.809		0.608	Nov 2016	-		0.608	0	3.354	0
Subtotal			0.831	1.106		0.809		0.608		-		0.608	0.000	3.354	0.000

Remarks
 Note:1
 - All funding executed from SoSE&I (Warren MI)
 - Program Activities performed at Aberdeen Proving Ground (MD), TACOM (Warren MI), Taylor Bldg, (Crystal City, VA), Pentagon, (Washington DC), FT Bliss (TX), White Sands Missile Range (NM).

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
	6.548	8.716	6.375	5.746	-	5.746	0.000	27.385	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NIE 15.1 Planning - Execution																												
NIE 15.1 ValEx/CommEX/Pilot																												
NIE 15.1 Event																												
NIE 15.1 Event Analysis & Summary																												
NIE 15.2 Planning - Execution																												
NIE 15.2 Planning and Prep																												
NIE 15.2 ValEx/CommEX/Pilot																												
NIE 15.2 Event																												
NIE 15.2 Event Analysis & Summary																												
Capability Set 15 Fieldings																												
CS15 Platform Integration & NET/NEF 2/2 INF DIV																												
CS15 Platform Integration & NET/NEF 3/10 MTN DIV																												
CS15 Platform Integration & NET/NEF 2/101 ABN DIV																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CS15 Platform Integration & NET/NEF 3/101 ABN DIV																												
CS15 Platform Integration & NET/NEF 2/82 ABN DIV																												
CS15 Platform Integration & NET/NEF 1 CAV DIV (HQ)																												
CS15 Platform Integration & NET/NEF 25 INF DIV (HQ)																												
NIE 16.1 Planning - Execution																												
NIE 16.1 Planning/Prep - ValEx/CommEX/Pilot																												
NIE 16.1 Event																												
NIE 16.1 Event Analysis & Summary																												
NIE 16.2 Planning - Execution																												
NIE 16.2 Planning/Prep - ValEx/CommEX/Pilot																												
NIE 16.2 Event																												
NIE 16.2 Event Analysis & Summary																												
Capability Set 16 Fieldings																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CS16 Platform Integration & NET/NEF 3 INF DIV (HQ)																												
CS16 Platform Integration & NET/NEF 1/101 ABN DIV																												
CS16 Platform Integration & NET/NEF 3/82 ABN DIV																												
CS16 Platform Integration & NET/NEF 1/10 MTN DIV																												
CS16 Platform Integration & NET/NEF 2/10 MTN DIV																												
CS16 Platform Integration & NET/NEF 3/10 MTN DIV																												
NIE (AWA) 17.1 Planning - Execution																												
NIE 17.1 Planning/Prep - ValEx/CommEX/Pilot																												
NIE 17.1 Event																												
NIE 17.1 Event Analysis & Summary																												
NIE 17.2 Planning - Execution																												
NIE 17.2 Planning/Prep - ValEx/CommEX/Pilot																												
NIE 17.2 Event																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4												
NIE 17.2 Event Analysis & Summary																																								
Capability Set 17 Fieldings																																								
CS17 Platform Integration & NET/NEF 1/82 ABN DIV																																								
CS17 Platform Integration & NET/NEF 3/2 INF DIV																																								
CS17 Platform Integration & NET/NEF 4 INF DIV (HQ)																																								
CS17 Platform Integration & NET/NEF (3rd BCT - TBD)																																								
CS17 Platform Integration & NET/NEF (4th BCT - TBD)																																								
CS17 Platform Integration & NET/NEF (2nd DIV HQ - TBD)																																								
NIE (AWA) 18.1 Planning - Execution																																								
NIE 18.1 Planning/Prep - ValEx/CommEX/Pilot																																								
NIE 18.1 Event																																								
NIE 18.1 Event Analysis & Summary																																								

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 15.1 Planning - Execution	1	2014	1	2015
NIE 15.1 ValEx/CommEX/Pilot	4	2014	1	2015
NIE 15.1 Event	1	2015	1	2015
NIE 15.1 Event Analysis & Summary	1	2015	1	2015
NIE 15.2 Planning - Execution	2	2014	3	2015
NIE 15.2 Planning and Prep	2	2014	2	2015
NIE 15.2 ValEx/CommEX/Pilot	2	2015	3	2015
NIE 15.2 Event	3	2015	3	2015
NIE 15.2 Event Analysis & Summary	3	2015	3	2015
Capability Set 15 Fieldings	1	2015	2	2016
CS15 Platform Integration & NET/NEF 2/2 INF DIV	1	2015	4	2015
CS15 Platform Integration & NET/NEF 3/10 MTN DIV	1	2015	4	2015
CS15 Platform Integration & NET/NEF 2/101 ABN DIV	2	2015	1	2016
CS15 Platform Integration & NET/NEF 3/101 ABN DIV	2	2015	1	2016
CS15 Platform Integration & NET/NEF 2/82 ABN DIV	2	2015	1	2016
CS15 Platform Integration & NET/NEF 1 CAV DIV (HQ)	3	2015	4	2015
CS15 Platform Integration & NET/NEF 25 INF DIV (HQ)	3	2015	2	2016
NIE 16.1 Planning - Execution	2	2015	1	2016
NIE 16.1 Planning/Prep - ValEx/CommEX/Pilot	2	2015	4	2015
NIE 16.1 Event	4	2015	1	2016
NIE 16.1 Event Analysis & Summary	1	2016	1	2016
NIE 16.2 Planning - Execution	3	2015	3	2016

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
NIE 16.2 Planning/Prep - ValEx/CommEX/Pilot	3	2015	3	2016
NIE 16.2 Event	3	2016	3	2016
NIE 16.2 Event Analysis & Summary	3	2016	3	2016
Capability Set 16 Fieldings	1	2016	1	2017
CS16 Platform Integration & NET/NEF 3 INF DIV (HQ)	1	2016	4	2016
CS16 Platform Integration & NET/NEF 1/101 ABN DIV	1	2016	4	2016
CS16 Platform Integration & NET/NEF 3/82 ABN DIV	2	2016	4	2016
CS16 Platform Integration & NET/NEF 1/10 MTN DIV	2	2016	1	2017
CS16 Platform Integration & NET/NEF 2/10 MTN DIV	2	2016	1	2017
CS16 Platform Integration & NET/NEF 3/10 MTN DIV	2	2016	1	2017
NIE (AWA) 17.1 Planning - Execution	4	2016	1	2017
NIE 17.1 Planning/Prep - ValEx/CommEX/Pilot	4	2016	1	2017
NIE 17.1 Event	1	2017	1	2017
NIE 17.1 Event Analysis & Summary	1	2017	1	2017
NIE 17.2 Planning - Execution	4	2016	3	2017
NIE 17.2 Planning/Prep - ValEx/CommEX/Pilot	4	2016	3	2017
NIE 17.2 Event	3	2017	3	2017
NIE 17.2 Event Analysis & Summary	3	2017	3	2017
Capability Set 17 Fieldings	1	2017	1	2018
CS17 Platform Integration & NET/NEF 1/82 ABN DIV	1	2017	3	2017
CS17 Platform Integration & NET/NEF 3/2 INF DIV	1	2017	3	2017
CS17 Platform Integration & NET/NEF 4 INF DIV (HQ)	1	2017	3	2017
CS17 Platform Integration & NET/NEF (3rd BCT - TBD)	3	2017	1	2018
CS17 Platform Integration & NET/NEF (4th BCT - TBD)	3	2017	1	2018
CS17 Platform Integration & NET/NEF (2nd DIV HQ - TBD)	3	2017	1	2018

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DZ6 / <i>Army Integration Management & Coordination</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
NIE (AWA) 18.1 Planning - Execution	2	2017	1	2018
NIE 18.1 Planning/Prep - ValEx/CommEX/Pilot	2	2017	1	2018
NIE 18.1 Event	1	2018	1	2018
NIE 18.1 Event Analysis & Summary	1	2018	1	2018

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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 5: System Development & Demonstration (SDD)					PE 0604802A / Weapons and Munitions - Eng 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	-	17.312	21.379	80.365	-	80.365	130.596	131.880	109.712	80.952	Continuing	Continuing
613: MORTAR SYSTEMS	-	0.000	0.000	18.348	-	18.348	36.200	32.730	9.600	0.000	0.000	96.878
EC1: 40mm Hi Vel and Low Vel Thermal Training Cartridge	-	9.580	7.257	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.837
EC4: Non-Standard Simulator Munitions	-	0.851	0.993	1.092	-	1.092	2.676	3.035	2.529	1.993	0.000	13.169
ED7: 120mm Advanced Multipurpose (AMP) Cartridge	-	0.000	0.000	31.215	-	31.215	31.655	28.018	0.000	0.000	0.000	90.888
EL9: Ammunitions Logistics Prototyping	-	0.000	2.599	0.106	-	0.106	0.459	0.645	0.754	0.550	0.000	5.113
EP2: Individual Assault Munition (IAM)	-	0.000	0.000	0.000	-	0.000	0.000	0.000	4.140	10.430	0.000	14.570
EP3: Reduced Range Small Caliber Training Ammunition	-	0.000	0.000	0.000	-	0.000	6.000	5.000	20.900	10.500	0.000	42.400
EP4: One-Way Lumiscence (OWL) for Small Caliber Ammo	-	0.000	0.000	0.000	-	0.000	3.200	2.900	8.600	11.500	0.000	26.200
EP5: Adv Armor-Piercing (ADVAP) for Small Caliber Ammo	-	0.000	0.000	10.270	-	10.270	11.309	7.820	8.428	5.826	Continuing	Continuing
EP6: Lightweight Cartridge Case for Small Caliber Ammo	-	0.000	0.000	1.290	-	1.290	3.808	3.820	7.829	4.826	Continuing	Continuing
EP7: Tunable Pyrotechnic Aircraft Countermeasure Flares	-	0.000	1.000	1.431	-	1.431	4.400	2.500	0.000	0.000	0.000	9.331
EU4: 40mm High Velocity High Explosive Airburst (HEDP)	-	0.000	0.000	0.303	-	0.303	2.809	6.820	6.828	6.825	0.000	23.585
EU5: .50 Caliber All-Purpose Tactical cartridge (APTC)	-	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	2.000	0.000	2.000
EU6: 155mm High Explosive Extended Range Artillery	-	0.000	0.000	0.000	-	0.000	0.000	7.000	5.000	3.000	0.000	15.000

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

Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>											
EU7: <i>Enhanced Lethality Cannon Munitions</i>	-	0.000	0.000	0.000	-	0.000	0.000	8.000	8.000	8.000	0.000	24.000
EU8: <i>Improved Multi-Option Fuze</i>	-	0.000	0.000	0.000	-	0.000	8.000	8.000	10.000	0.000	0.000	26.000
EW1: <i>40mm Inc Range Anti-Pers Ammo(IRAP)HEAB f/M203</i>	-	0.000	0.000	0.353	-	0.353	5.308	9.732	9.023	7.205	0.000	31.621
S36: <i>Precision Guidance Kit</i>	-	6.881	9.530	15.957	-	15.957	14.772	5.860	8.081	8.297	0.000	69.378

Note
 In FY 2017, PE 0604802A Projects 613, EP5, EP6, EU4 and EW1 are new start programs.

A. Mission Description and Budget Item Justification

This program element funds multiple efforts for engineering development of weapons and munitions systems.

Project 613: The High Explosive Guided Mortar (HEGM) program funds engineering development of precision guidance systems applicable to Indirect Fire mortar weapon systems. HEGM provides a precision capability to support the close fight in urban and complex terrain, while at the same time, reducing collateral damage. HEGM provides precision accuracy and effectiveness for 120mm mortar systems using precision guidance systems that will effectively reduce target delivery error and reducing the number of rounds required to conduct a fire mission. The HEGM capability will be developed through the use of improved guidance and control components and advanced airframe design that allow sufficient maneuver of the cartridge in flight to correct for induced error providing the ability to engage targets without the need to adjust fire. The Weaponized Universal Lightweight Fire-control (WULF) program funds engineering development of fire-control systems applicable to Indirect Fire mortar weapon systems. WULF is a digital sight integrated with digital fire-control that is designed for aiming of the M252 81mm mortar system and other man portable mortar systems (60mm and 120mm). The digital sight unit and Fire Control will allow the Soldier to emplace the mortar systems faster and fire more accurately. WULF will replace the current M67 optical sight unit that currently cannot meet the threshold accuracy requirement in the M252 mortar Capability Production Document.

Project EC1: The Target Practice Day Night Thermal (TP-DNT) cartridges are 40mm grenade training cartridges. The Low Velocity (LV) variant is for training with the M203/M320 grenade launchers; the High Velocity (HV) variant is for training with the Mk19 grenade machine gun. Both cartridges will provide the Warfighter with a non-dud producing, environmentally friendly training cartridge that provides a visual impact signature seen day or night, by the naked eye, through night vision devices, and thermal weapon sights. These cartridges will replace the 40mm LV Target Practice, M781 cartridges and the 40mm HV Target Practice, M918/M385A1 (Mixed Belt) cartridges. It is expected that the unit price for high velocity cartridges will be lower than the Mixed Belt cartridges.

Project EC4: This project will standardize various pyrotechnic that simulate battlefield effects. The Army's Combat Training Centers (CTCs) are currently using non-standard munitions to replicate both conventional and asymmetric warfare battlefield effects. These modified commercial-off-the-shelf products have not been type classified, material released, and are not safe or sustainable for use by Soldiers. This effort will develop and demonstrate various pyrotechnics/simulators to replicate both conventional and asymmetric warfare battlefield affects such as: Black smoke signature (burning vehicles, buildings, and equipment); Yellow smoke signature (chemical, biological or nuclear effects); Macro pyrotechnics to simulate hostile fire and small Improvised Explosive Devices (IEDs) during mounted operations in urban

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	
<p>terrain; Micro pyrotechnics to simulate indoor hostile fire and IED effects that are capable of being integrated into existing facilities; Rocket Propelled Grenade (RPG) on a wire to replicate the flight of a Rocket Propelled Grenade; High Order Blast Effect (HOBE) used to replicate a Vehicle Borne Improvised Explosive Device (VBIED), building explosions, and other significant explosive events; Artillery airburst (LA45) simulator to replicate indirect fire; simulator to replicate a STINGER (LA47) firing; Tracer Fire-back simulator to replicate enemy small arms fire and anti-aircraft fire. Standardization will reduce training costs, eliminate redundancies between systems, and mitigate safety risks associated with realistic scenario based training.</p> <p>Project ED7: 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 breech 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). FY 2017 supports completion of Engineering and Manufacturing Development (EMD) Phase 1 and Engineering and Manufacturing Development (EMD) Phase 2 commences.</p> <p>Project EL9: The Ammunitions 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.</p> <p>Project EP5: 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 cartridges will be optimized for use in the M240 Machine Gun. FY 2017 funding will support EMD efforts to include maturing manufacturing as well as optimization of the XM1158 and XM1159 cartridge designs.</p> <p>Project EP6: The Lightweight Small Caliber Ammunition (LSCA) program is a critical technology development in response to the 7.62mm and .50 Caliber Family of Ammunition 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</p>		

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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	
<p>a .50 Caliber variant will be developed. FY 2017 funding will support the source selection evaluation process and the development of entrance and exit criteria for the Engineering and Manufacturing Development (EMD) Phase I efforts.</p> <p>Project EP7: This project will support Integrated System Design (ISD), System Capability (SC) and Manufacturing Process Demonstrations (MPD) on current pyrotechnic munitions and tunable pyrotechnic aircraft counter measures and decoys. The project will also support ISD, SC and MPD on new expendable countermeasure munitions that will protect Army aircraft from advanced and current guided missile threats. Activities include modeling and simulation, flight testing, qualification testing, engineering to reduce size and weight, environmental considerations, safety enhancements, manufacturing enhancements, qualification of other service and foreign munitions that could meet current requirements, product improvements, insertion of new technologies to increase performance, and enhancement of current flare solutions for new and existing aircraft. Systems include impulse cartridges, pen flares, hand held signals, trip flares, simulators, marine markers, smoke pots, smoke grenades, rail road flares and other type of emergency/distress devices, aircraft expendables (to include Radio Frequency (RF) expendables), and primers used in munitions systems.</p> <p>Project EU4: The Army has identified a capability gap to defeat enemy personnel in defilade using the MK19 weapons system. The draft Capability Development Document (CDD) has been prepared and is expected to be approved in FY 2017. The improved 40mm High Velocity HEAB cartridge, with airburst fuze, allows the warfighter to effectively engage multiple targets and provide the grenadier with a higher probability of defeating personnel targets in defilade positions, increasing Soldier Survivability. FY 2017 dollars support the development of the Acquisition Strategy, Milestone B, and procurement support documents.</p> <p>Project EW1: 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.</p> <p>Project S36: This program funds engineering development of precision guidance systems applicable to Indirect Fire artillery weapon systems. The Precision Guidance Kit (PGK) is a Global Positioning System guidance kit with fuzing functions. PGK provides near precision accuracy and effectiveness for 155mm High Explosive artillery projectiles. PGK improves the accuracy of existing artillery ammunition by correcting the trajectory of projectiles to their designated target location. Precision guidance systems effectively reduce target delivery error reducing the number of rounds required to conduct a fire mission. On-going development addresses performance in jammed environments as well as the implementation of an M-Code capable GPS receiver.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	14.998	21.379	27.816	-	27.816
Current President's Budget	17.312	21.379	80.365	-	80.365
Total Adjustments	2.314	0.000	52.549	-	52.549
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	2.314	-	52.549	-	52.549

Change Summary Explanation

In FY 2017, PE 0604802A Projects 613, ED7, EP5, EP6, EU4, and EW1 are new start programs.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) 613 / MORTAR SYSTEMS			
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
613: MORTAR SYSTEMS	-	0.000	0.000	18.348	-	18.348	36.200	32.730	9.600	0.000	0.000	96.878
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

High Explosive Guided Mortar (HEGM) and Weaponized Universal Lightweight Fire-Control (WULF) are new start programs in FY 2017.

A. Mission Description and Budget Item Justification

The High Explosive Guided Mortar (HEGM) program funds engineering development of precision guidance systems applicable to Indirect Fire mortar weapon systems. HEGM provides a precision capability to support the close fight in urban and complex terrain, while at the same time, reducing collateral damage. HEGM provides precision accuracy and effectiveness for 120mm mortar systems using precision guidance systems that will effectively reduce target delivery error and reducing the number of rounds required to conduct a fire mission. The HEGM capability will be developed through the use of improved guidance and control components and advanced airframe design that allow sufficient maneuver of the cartridge in flight to correct for induced error providing the ability to engage targets without the need to adjust fire.

The Weaponized Universal Lightweight Fire-control (WULF) program funds engineering development of fire-control systems applicable to Indirect Fire mortar weapon systems. WULF is a digital sight integrated with digital fire-control that is designed for aiming of the M252 81mm mortar system and other man portable mortar systems (60mm and 120mm). The digital sight unit and Fire Control will allow the Soldier to emplace the mortar systems faster and fire more accurately. WULF will replace the current M67 optical sight unit that currently cannot meet the threshold accuracy requirement in the M252 mortar Capability Production Document.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: HEGM	-	-	16.348	-	16.348
Description: Engineering and Manufacturing Development Phase					
FY 2017 Base Plans:					
Program initiation to enter into the Engineering and Manufacturing Development phase. Activities include Materiel Development Decision approval, milestone B Approval, award of development efforts, and initiation of preliminary design.					
Title: WULF	-	-	2.000	-	2.000
Description: Engineering development and software integration.					
FY 2017 Base Plans:					

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) 613 / MORTAR SYSTEMS
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Engineering development and software refinement of matured prototype to support the of Line-Replaceable-Unit Environmental test.					
Accomplishments/Planned Programs Subtotals	-	-	18.348	-	18.348

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>
• E25511: HEGM	-	-	-	-	-	-	-	8.500	41.800	461.200	511.500
• K99200: WULF	-	-	-	-	-	-	-	5.600	7.500	20.662	33.762

Remarks
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D. Acquisition Strategy
HEGM - The Acquisition strategy is under development and will be approved by the Milestone Decision Authority (MDA) once complete. It is anticipated that it will be full and open competition. The program will be at TRL 6 (prototype demonstrated in a relevant environment) in FY 2017. The Acquisition Strategy is expected to be approved by the Milestone Decision Authority (MDA) in FY 2017. Milestone C approval in FY 2021 and First Unit Equipped in FY 2022.

WULF is being developed under The U.S. Army Armament Research, Development and Engineering Center (ARDEC) Science & Technology initiative and currently assessed at Technology Readiness Level (TRL) 4 maturity. The program will be at TRL 6 (prototype demonstrated in a relevant environment) in FY 2017. The Acquisition Strategy is expected to be approved by the Milestone Decision Authority (MDA) in FY 2017. This program will be developed in-house by ARDEC during the Engineering and Manufacturing Development (EMD) phase. Type Classification and Milestone C approval is anticipated in FY 2021. Full rate production and First Unit Equipped is expected by the end of FY 2022.

E. Performance Metrics
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) 613 / MORTAR SYSTEMS							
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
HEGM System Development	TBD	TBD : TBD	0.000	-		-		10.468	Apr 2017	-		10.468	49.384	59.852	59.852
HEGM - Fire Control	MIPR	ARDEC : Picatinny, NJ	0.000	-		-		0.880	Apr 2017	-		0.880	2.806	3.686	3.686
WULF System Development	MIPR	ARDEC : Picatinny, NJ	0.000	-		-		0.588	Mar 2017	-		0.588	3.832	4.420	4.420
Subtotal			0.000	-		-		11.936		-		11.936	56.022	67.958	67.958
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
HEGM - PM Office	PO	PM CAS : Picatinny, NJ	0.000	-		-		1.300	Dec 2016	-		1.300	5.002	6.302	6.302
HEGM - ARDEC Engineering Support	MIPR	ARDEC : Picatinny, NJ	0.000	-		-		2.200	Dec 2016	-		2.200	6.160	8.360	8.360
WULF - PM Office	PO	PM CAS : Picatinny, NJ	0.000	-		-		0.180	Dec 2016	-		0.180	0.913	1.093	1.093
WULF - ARDEC Engineering Support	MIPR	ARDEC : Picatinny, NJ	0.000	-		-		0.902	Dec 2016	-		0.902	1.844	2.746	2.746
Subtotal			0.000	-		-		4.582		-		4.582	13.919	18.501	18.501
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
HEGM - Developmental Testing	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	-		-		1.500	Jul 2017	-		1.500	7.800	9.300	9.300
WULF - Environmental Testing	MIPR	TBD : TBD	0.000	-		-		0.330	Mar 2017	-		0.330	0	0.330	0.330

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) 613 / MORTAR SYSTEMS								
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	
WULF - System Level Developmental Testing	MIPR	TBD : TBD	0.000	-		-		-		-		-	4.552	4.552	4.552	
Subtotal			0.000	-		-		1.830		-		1.830	12.352	14.182	14.182	
Project Cost Totals			Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			0.000	-		0.000		18.348		-		18.348	82.293	100.641	100.641	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army

Date: February 2016

Appropriation/Budget Activity
2040 / 5

R-1 Program Element (Number/Name)
PE 0604802A / Weapons and Munitions -
Eng Dev

Project (Number/Name)
613 / MORTAR SYSTEMS

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) HEGM - MDD					1 MDD																											
(2) HEGM - Milestone B									2 MS B																							
HEGM - Engineering & Manufacturing Development													EMD																			
(3) HEGM - Milestone C																									3 MS C							
(4) WULF - Milestone B													4 MS B																			
WULF - Engineering & Manufacturing Development													EMD																			
WULF - Limited User Test																									LUT							
(5) WULF - Milestone C																													5 MS C			
WULF - First Article Acceptance Test																													FAAT			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) 613 / <i>MORTAR SYSTEMS</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
HEGM - MDD	3	2016	3	2016
HEGM - Milestone B	3	2017	3	2017
HEGM - Engineering & Manufacturing Development	3	2017	3	2021
HEGM - Milestone C	3	2021	3	2021
WULF - Milestone B	2	2017	2	2017
WULF - Engineering & Manufacturing Development	3	2017	2	2021
WULF - Limited User Test	3	2020	1	2021
WULF - Milestone C	2	2021	2	2021
WULF - First Article Acceptance Test	4	2021	2	2022

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

Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EC1 / 40mm Hi Vel and Low Vel Thermal Training Cartridge			
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
EC1: 40mm Hi Vel and Low Vel Thermal Training Cartridge	-	9.580	7.257	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.837
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015 program activities transitioned from PE 643639 Project 694.

A. Mission Description and Budget Item Justification

The Target Practice Day Night Thermal (TP-DNT) cartridges are 40mm grenade training cartridges. The Low Velocity (LV) variant is for training with the M203/M320 grenade launchers; the High Velocity (HV) variant is for training with the Mk19 grenade machine gun. Both cartridges will provide the Warfighter with a non-dud producing, environmentally friendly training cartridge that provides a visual impact signature seen day or night, by the naked eye, through night vision devices, and thermal weapon sights. These cartridges will replace the 40mm LV Target Practice, M781 cartridges and the 40mm HV Target Practice, M918/M385A1 (Mixed Belt) cartridges. It is expected that the unit price for high velocity cartridges will be lower than the Mixed Belt cartridges.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Target Practice Day Night Thermal Cartridges	9.580	7.257	-	-	-
Description: The Target Practice Day Night Thermal (TP-DNT) Cartridges are 40mm grenade training cartridges					
FY 2015 Accomplishments: FY 2015 activities included EMD contract awards for both the HV and LV variants.					
FY 2016 Plans: FY 2016 developmental engineering test activities for both HV and LV variants..					
Accomplishments/Planned Programs Subtotals	9.580	7.257	-	-	-

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
• 40mm Hi Vel and Low Vel Thermal Trg: 40mm Hi Vel and Low Vel Thermal Trg PE 603639 Project 694	-	-	-	-	-	-	-	-	-	0	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC1 / 40mm Hi Vel and Low Vel Thermal Training Cartridge
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• Target Practice Day Night Thermal: <i>Target Practice Day Night</i> <i>Thermal Cartridges Procurement</i> <i>(SSNs: E05610, E05611)</i>	-	-	118.178	-	118.178	111.276	89.530	100.200	100.860	0	520.044

Remarks

Production dollars will be used to procure 40mm training cartridges. If the TP-DNT production contract is delayed, it will be necessary to exercise an option on the existing 40mm Systems Contract and procure 40mm Mixed Belt Cartridges.

D. Acquisition Strategy

The TP-DNT cartridges are being developed through a competitive Engineering and Manufacturing Development (EMD) program. The EMD phase is developing both Low Velocity (LV) and High Velocity (HV) variants that will utilize the same critical technologies, making concurrent acquisitions a logical approach to reduce overall acquisition costs. As part of the EMD source selection, a Bid Sample shoot-off competition was conducted to evaluate potential designs. Within funding constraints, multiple contractor designs were awarded EMD contracts with intent to down select to one contractor for the HV variant and one contractor for the LV variant. Following the down select, Low Rate Initial Production (LRIP) and two production year options will be considered. Milestone C is scheduled for 3Q FY 2017.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC1 / 40mm Hi Vel and Low Vel Thermal Training Cartridge
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AMTEC - 40mm LV TP-NDT	C/FFP	Janesville : WI	0.000	2.075		-		-		-		-	0	2.075	0
AMTEC - 40mm HV TP-DNT	C/FFP	Janesville : WI	0.000	0.658		-		-		-		-	0	0.658	0
American Ordnance LLC - 40mm HV TP-DNT	C/FFP	Middletown : IA	0.000	3.000		-		-		-		-	0	3.000	0
Program Manager Maneuver Ammunition Systems (PM MAS) labor and travel	MIPR	Picatinny Arsenal : NJ	0.000	-		0.387		-		-		-	0	0.387	0
GD-OTS - 40mm LV TP-DNT	C/FFP	Marion : IL	0.000	2.854		-		-		-		-	0	2.854	0
Subtotal			0.000	8.587		0.387		-		-		-	0.000	8.974	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			
Armament Research, Development, and Engineering Center (ARDEC)	MIPR	PICATINNY ARSENAL : NJ	0.000	0.987		1.789		-		-		-	0	2.776	0
Subtotal			0.000	0.987		1.789		-		-		-	0.000	2.776	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			
Aberdeen Test and Evaluation Center (ATEC)	MIPR	Aberdeen : MD	0.000	-		4.300		-		-		-	0	4.300	0
Dahlgren NSWC	MIPR	Dahlgren : VA	0.000	0.006		0.065		-		-		-	0	0.071	0

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC1 / 40mm Hi Vel and Low Vel Thermal Training Cartridge
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Engineering Manufacturing Development Contract Award	EMD Contract				1																							
Engineering Manufacturing Development					EMD																							
Bid Sample Testing	1																											
(2) Test Readiness Review DET I					TRR DET 1																							
Development Engineering Test Phase I					DET 1																							
(3) Test Readiness Review DET II					TRR DET 2																							
Development Engineering Test Phase II					DET 2																							
(4) Test Readiness Review DT&E					TRR DT&E																							
Development Test & Evaluation									DT&E																			
(5) MS-C													MS-C															
(6) Production Contract Award					Production Contract Award																							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC1 / 40mm Hi Vel and Low Vel Thermal Training Cartridge

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering Manufacturing Development Contract Award	4	2015	4	2015
Engineering Manufacturing Development	4	2015	3	2017
Bid Sample Testing	4	2014	1	2015
Test Readiness Review DET I	1	2016	1	2016
Development Engineering Test Phase I	2	2016	2	2016
Test Readiness Review DET II	3	2016	3	2016
Development Engineering Test Phase II	4	2016	4	2016
Test Readiness Review DT&E	1	2017	1	2017
Development Test & Evaluation	2	2017	2	2017
MS-C	3	2017	3	2017
Production Contract Award	3	2017	3	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev			Project (Number/Name) EC4 / Non-Standard Simulator 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
EC4: Non-Standard Simulator Munitions	-	0.851	0.993	1.092	-	1.092	2.676	3.035	2.529	1.993	0.000	13.169
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project will standardize various pyrotechnic that simulate battlefield effects. The Army's Combat Training Centers (CTCs) are currently using non-standard munitions to replicate both conventional and asymmetric warfare battlefield effects. These modified commercial-off-the-shelf products have not been type classified, material released, and are not safe or sustainable for use by Soldiers. This effort will develop and demonstrate various pyrotechnics/simulators to replicate both conventional and asymmetric warfare battlefield effects such as: Black smoke signature (burning vehicles, buildings, and equipment); Yellow smoke signature (chemical, biological or nuclear effects); Macro pyrotechnics to simulate hostile fire and small Improvised Explosive Devices (IEDs) during mounted operations in urban terrain; Micro pyrotechnics to simulate indoor hostile fire and IED effects that are capable of being integrated into existing facilities; Rocket Propelled Grenade (RPG) on a wire to replicate the flight of a Rocket Propelled Grenade; High Order Blast Effect (HOBE) used to replicate a Vehicle Borne Improvised Explosive Device (VBIED), building explosions, and other significant explosive events; Artillery airburst (LA45) simulator to replicate indirect fire; simulator to replicate a STINGER (LA47) firing; Tracer Fire-back simulator to replicate enemy small arms fire and anti-aircraft fire. Standardization will reduce training costs, eliminate redundancies between systems, and mitigate safety risks associated with realistic scenario based training.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Standardize Special Use Ammunition	0.851	0.993	1.092	-	1.092
Description: Standardize non-standard pyrotechnic battlefield effects currently used by CTCs .					
FY 2015 Accomplishments: This project supported development and preparation of documentation for Materiel Development Decision (MDD) approval briefing to PEO and ASAALT approval for capabilities required to simulate battlefield effects. Researched and reevaluated prior smoke efforts.					
FY 2016 Plans: This project will support the Engineering Manufacturing and Development (EMD) phase for Force on Target Black Smoke signature (burning vehicles, buildings, and equipment), Artillery airburst simulator and Tracer/ STINGER simulators. Review and qualify test data for LA45 and LA47; evaluate Marine Type Classification (TC) and Material Release (MR) data; Conduct test and evaluation; TC and Full Material Release (FMR) for Final Operational Test (FOT) cartridge.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
This project will support the Engineering Manufacturing and Development (EMD) phase for Force on Force Black Smoke signature (burning vehicles, buildings, and equipment), Artillery airburst simulator and Tracer/STINGER simulators. Material Release (MR) the LA45 and LA47; TC and Full Material Release (FMR) for Black Smoke Force on Target (FOT) cartridge. T&E and commence TC activities for FOT yellow smoke and Force on Force (FOF) black smoke, T&E RPG on a wire and VBIED.					
Accomplishments/Planned Programs Subtotals	0.851	0.993	1.092	-	1.092

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>
• Procurement Ammunition, Army: <i>Simulators, Non-Standard, Special Effects for CTCs; SSN E88404</i>	-	-	0.979	-	0.979	1.632	1.663	1.699	1.750	0.000	7.723

Remarks

D. Acquisition Strategy

The Acquisition strategy is for a family of special use ammunition that will be developed in incremental phases as funding and requirements are approved. MDD Approval 3rdQ FY2016. Initial special use ammunition will be black and yellow smoke munitions followed by new increments that will defeat threats outlined in the requirements documents developed by TRADOC.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	MIPR	PM Close Combat Systems : PICATINNY ARSENAL	0.000	0.244		0.100		0.096	Jan 2017	-		0.096	0	0.440	0
Subtotal			0.000	0.244		0.100		0.096		-		0.096	0.000	0.440	0.000

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	MIPR	ARDEC : PICATINNY ARSENAL	0.000	0.607		0.790		0.696	Jan 2017	-		0.696	0	2.093	0
Subtotal			0.000	0.607		0.790		0.696		-		0.696	0.000	2.093	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation	MIPR	ARDEC : Picatinny	0.000	-		0.103		0.300	Jan 2017	-		0.300	0	0.403	0
Subtotal			0.000	-		0.103		0.300		-		0.300	0.000	0.403	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	0.851	0.993	1.092	-	1.092	0.000	2.936	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Material Development Decision Special Use Ammunition Pyrotechnics					MDD																															
Review/qualify Marine Corps test data for LA45/LA47																																				
Evaluate Marine Corps TC/MR																																				
Conduct T&E, TC/MR black smoke cartridge																																				
(1) MS C Black Smoke Simulator																																				
Conduct T&E, TC/MR Force on Force Yellow Smoke																																				
(2) MS C Yellow Smoke Simulator																																				
(3) MS C Force on Force Simulator																																				
(4) MS C RPG																																				
(5) MS C Micro-Macro																																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EC4 / <i>Non-Standard Simulator Munitions</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Materiel Development Decision Special Use Ammunition Pyrotechnics	2	2016	3	2016
Review/qualify Marine Corps test data for LA45/LA47	1	2017	1	2017
Evaluate Marine Corps TC/MR	2	2017	3	2017
Conduct T&E, TC/MR black smoke cartridge	2	2017	3	2017
MS C Black Smoke Simulator	4	2017	4	2017
Conduct T&E, TC/MR Force on Force Yellow Smoke	4	2017	4	2017
MS C Yellow Smoke Simulator	2	2018	2	2018
MS C Force on Force Simulator	3	2019	3	2019
MS C RPG	3	2020	3	2020
MS C Micro-Macro	4	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) ED7 / 120mm Advanced Multipurpose (AMP) Cartridge			
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
ED7: 120mm Advanced Multipurpose (AMP) Cartridge	-	0.000	0.000	31.215	-	31.215	31.655	28.018	0.000	0.000	0.000	90.888
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The 0604802A ED7, 120mm Advanced Multipurpose (AMP) Cartridge, program is not a new start. Funds in this 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). FY 2017 supports completion of Engineering and Manufacturing Development (EMD) Phase 1 and initiation of Engineering and Manufacturing Development (EMD) Phase 2.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Engineering and Manufacturing Development (EMD) Phase 1 Description: Funding is provided for the following effort. FY 2017 Base Plans: Complete Engineering and Manufacturing Development (EMD) Phase 1 including competitive shoot off, data collection/evaluation and downselect to one prime contractor in 2Q FY 2017.	-	-	2.039	-	2.039
Title: Engineering and Manufacturing Development (EMD) Phase 2 Description: Funding is provided for the following effort: FY 2017 Base Plans:	-	-	29.176	-	29.176

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) ED7 I 120mm Advanced Multipurpose (AMP) Cartridge
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
During Phase 2 of EMD, which begins after down select to a single contractor, a single design will be matured, analyzed, tested, and evaluated to ensure all requirements will be met/exceeded. Detailed safety and performance tests will be conducted and the subsystem designs will be optimized for performance. Manufacture and procurement of cartridges for the second Cartridge Integration Test will take place during FY 2017.					
Accomplishments/Planned Programs Subtotals	-	-	31.215	-	31.215

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>
• AMP (PE / Project: 0603639A / 656): 120mm Cartridge (Advanced Multipurpose-AMP)	14.179	27.578	-	-	-	-	-	-	-	0	41.757
• AMP (SSN: E88105): 120mm Advanced Multipurpose (AMP) Cartridge	-	-	-	-	-	-	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

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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 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				ED7 I 120mm Advanced Multipurpose (AMP) Cartridge								
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 and travel	MIPR	Picatinny : NJ	1.747	-		-		1.148		-		1.148	Continuing	Continuing	Continuing	
Contractor 1	C/CPIF	TBD : TBD	32.450	-		-		23.728		-		23.728	Continuing	Continuing	Continuing	
Subtotal			34.197	-		-		24.876		-		24.876	-	-	-	
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 : NJ	4.411	-		-		2.079		-		2.079	Continuing	Continuing	Continuing	
Subtotal			4.411	-		-		2.079		-		2.079	-	-	-	
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	1.500	-		-		2.123		-		2.123	Continuing	Continuing	Continuing	
Aberdeen Test Center	MIPR	Aberdeen Proving Ground : MD	2.219	-		-		2.137		-		2.137	Continuing	Continuing	Continuing	
Subtotal			3.719	-		-		4.260		-		4.260	-	-	-	
Project Cost Totals			42.327	-		0.000		31.215		-		31.215	-	-	-	

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) ED7 I 120mm Advanced Multipurpose (AMP) Cartridge
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Milestone B	▲1																											
(2) EMD Contract Phase I Awards	EMD Contract I																											
Engineering and Manufacturing Development (EMD) Phase I	EMD Phase I																											
(3) Preliminary Design Review (PDR)					▲3 PDR																							
(4) EMD Contract Phase II Award / Down-Select	EMD Contract Phase II Award / Down-Select																											
Engineering and Manufacturing Development (EMD) Phase II	EMD Phase II																											
(5) Critical Design Review													▲5 CDR															
Developmental Test and Evaluation (DT&E)													DT&E															
(6) Milestone C																	▲6 MS C											
Low Rate Initial Production 1																	LRIP 1											
Live Fire Test and Evaluation																	LFT&E											
Initial Operational Test and Evaluation																	IOT&E											
Low Rate Initial Production 2																					LRIP 2							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) ED7 I 120mm Advanced Multipurpose (AMP) Cartridge

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 and 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
Initial Operational Test and Evaluation	2	2020	2	2020
Low Rate Initial Production 2	4	2020	3	2021

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EL9 / Ammunitions Logistics Prototyping
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
EL9: Ammunitions Logistics Prototyping	-	0.000	2.599	0.106	-	0.106	0.459	0.645	0.754	0.550	0.000	5.113
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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 Base	FY 2017 OCO	FY 2017 Total
Title: Munitions Survivability and Logistics Enablers	-	2.599	0.106	-	0.106
Description: This program will develop ammunition logistics systems that improve munitions survivability and logistics					
FY 2016 Plans: Develop ammunition logistics systems that improve munitions survivability and logistics.					
FY 2017 Base Plans: Integrate low cost thermal indicator with developmental ammunition items and conduct qualification testing.					
Accomplishments/Planned Programs Subtotals	-	2.599	0.106	-	0.106

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

N/A

Remarks

D. Acquisition Strategy

Not applicable

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EL9 / <i>Ammunitions Logistics Prototyping</i>

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

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EL9 / Ammunitions Logistics Prototyping
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
System Development - Munitions Health Monitoring System																																				
System Development - Low Cost Thermal Indicator																																				
System Development - Plastic Cylindrical Container																																				
System Development - Plastic Rectangular Container																																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EL9 / Ammunitions Logistics Prototyping

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System Development - Munitions Health Monitoring System	1	2018	4	2021
System Development - Low Cost Thermal Indicator	1	2017	4	2021
System Development - Plastic Cylindrical Container	1	2018	4	2021
System Development - Plastic Rectangular Container	1	2020	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP2 / Individual Assault Munition (IAM)			
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
EP2: Individual Assault Munition (IAM)	-	0.000	0.000	0.000	-	0.000	0.000	0.000	4.140	10.430	0.000	14.570
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

no funding until FY20

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP3 / 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
EP3: <i>Reduced Range Small Caliber Training Ammunition</i>	-	0.000	0.000	0.000	-	0.000	6.000	5.000	20.900	10.500	0.000	42.400
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

no funding until FY18

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP4 / One-Way Lumiscence (OWL) for Small Caliber 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
EP4: <i>One-Way Lumiscence (OWL) for Small Caliber Ammo</i>	-	0.000	0.000	0.000	-	0.000	3.200	2.900	8.600	11.500	0.000	26.200
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

no funding until FY18

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP5 / Adv Armor-Piercing (ADVAP) for Small Caliber 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
EP5: Adv Armor-Piercing (ADVAP) for Small Caliber Ammo	-	0.000	0.000	10.270	-	10.270	11.309	7.820	8.428	5.826	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The 0604802A EP5, Advanced Armor-Piercing (ADVAP) for Small Caliber Ammunition, program is not a new start. Funds in this 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 cartridges will be optimized for use in the M240 Machine Gun. FY 2017 funding will support EMD efforts to include maturing manufacturing as well as optimization of the XM1158 and XM1159 cartridge designs.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: 7.62mm Engineering & Manufacturing Development (EMD)	-	-	10.270	-	10.270
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 2017 Base Plans: FY 2017 efforts will be focused on facilitization work and optimization of the full-up 7.62mm XM1158 cartridge design, as well as an evaluation of a trace cartridge design. Manufacturing process will be matured in order to support qualification test builds in FY 2018.					
Accomplishments/Planned Programs Subtotals	-	-	10.270	-	10.270

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP5 / Adv Armor-Piercing (ADVAP) for Small Caliber Ammo
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PE 0603639A Project EC2: <i>Advanced Armor-Piercing (ADVAP) for Small Cal Ammunition</i>	5.280	-	7.700	-	7.700	3.800	6.900	-	-	0.000	23.680

Remarks

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

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP5 / Adv Armor-Piercing (ADVAP) for Small Caliber Ammo
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Manager Maneuver Ammunition Systems (PM MAS) - Labor & Travel	Various	Picatinny Arsenal : New Jersey	0.000	-		-		0.200		-		0.200	Continuing	Continuing	Continuing
Raw Materials	TBD	TBD : TBD	0.000	-		-		1.200		-		1.200	Continuing	Continuing	Continuing
Facilitization	TBD	Picatinny Arsenal : New Jersey	0.000	-		-		4.400		-		4.400	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		5.800		-		5.800	-	-	-

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	-		-		3.270		-		3.270	Continuing	Continuing	Continuing
Army Research Lab (ARL)	MIPR	Aberdeen Proving Grounds : Maryland	0.000	-		-		1.200		-		1.200	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		4.470		-		4.470	-	-	-

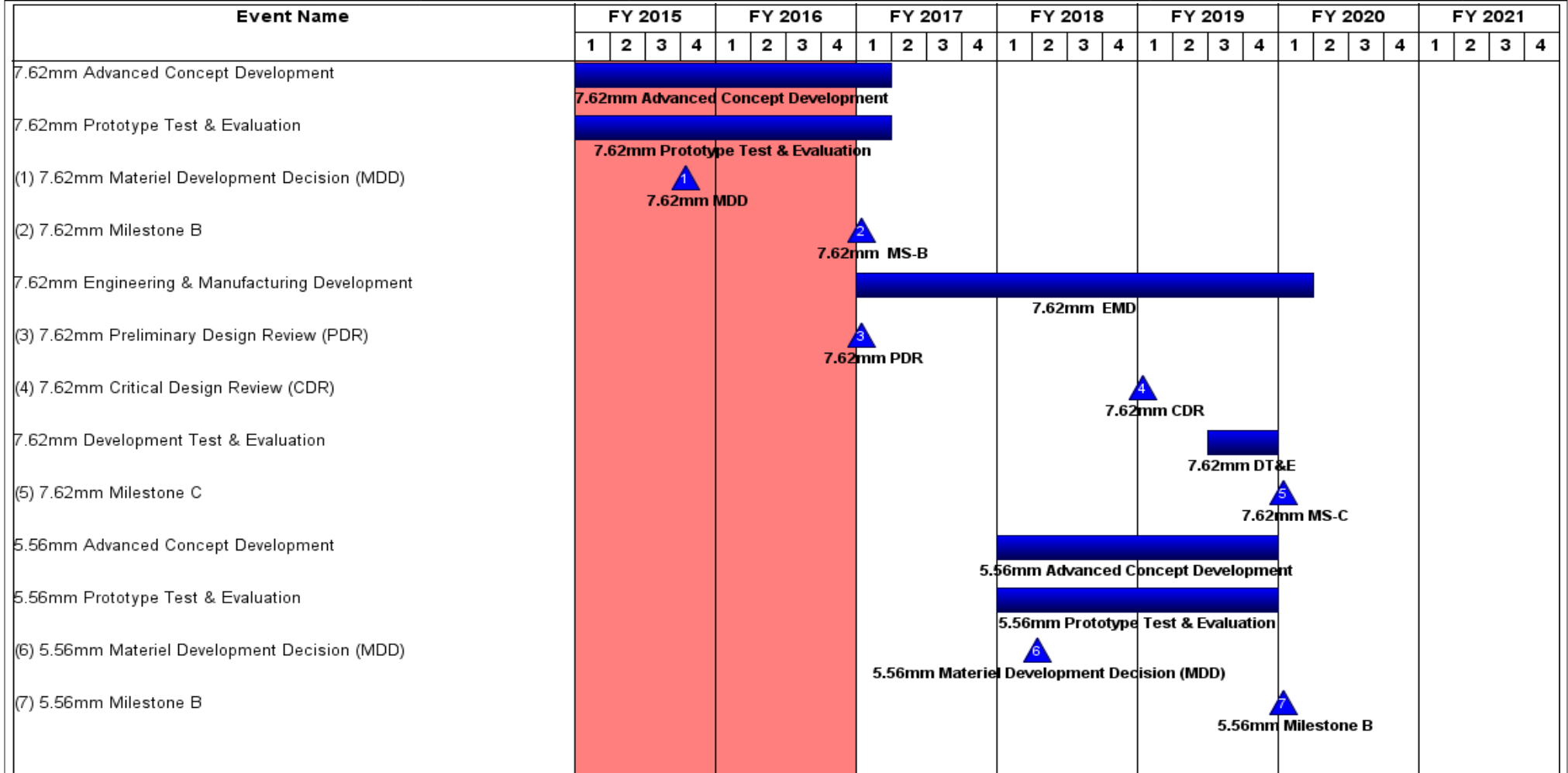
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-	0.000	10.270	-	10.270	-	-	-

Remarks

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



Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP5 / Adv Armor-Piercing (ADVAP) for Small Caliber Ammo
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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army **Date:** February 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP5 / Adv Armor-Piercing (ADVAP) for Small Caliber Ammo
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
5.56mm Engineering & Manufacturing Development (1) 5.56mm Preliminary Design Review (PDR) (2) 5.56mm Critical Design Review (CDR)																					5.56mm EMD											
																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP5 / <i>Adv Armor-Piercing (ADVAP) for Small Caliber 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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP6 / Lightweight Cartridge Case for Small Caliber 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
EP6: <i>Lightweight Cartridge Case for Small Caliber Ammo</i>	-	0.000	0.000	1.290	-	1.290	3.808	3.820	7.829	4.826	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The 0604802A EP6, Lightweight Cartridge Case for Small Caliber Ammunition, program is not a new start. Funds in this 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. Lightweight Small Caliber Ammunition will develop and qualify lightweight cartridge case for 7.62mm ammunition and .50 caliber to replace current brass cartridge case.

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 Family of Ammunition 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 the source selection evaluation process and the development of entrance and exit criteria for the Engineering and Manufacturing Development (EMD) Phase I efforts.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: 7.62mm Engineering and Manufacturing Development (EMD) for Lightweight Small Caliber Ammunition (LSCA)	-	-	1.290	-	1.290
Description: Develop, demonstrate, and quantify a Lightweight Small Caliber Ammunition (LSCA) 7.62mm capability that will provide an ammunition weight savings of twenty percent to the M240 gunner, assistant gunner and ammo bearer.					
FY 2017 Base Plans: FY 2017, the Government will conduct source selection in preparation for Phase I EMD effort.					
Accomplishments/Planned Programs Subtotals	-	-	1.290	-	1.290

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP6 / Lightweight Cartridge Case for Small Caliber Ammo
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PE 0603639A Project EL8: <i>Lightweight Cartridge Case for Small Caliber Ammunition</i>	-	2.400	1.280	-	1.280	2.500	-	-	-	0.000	6.180

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

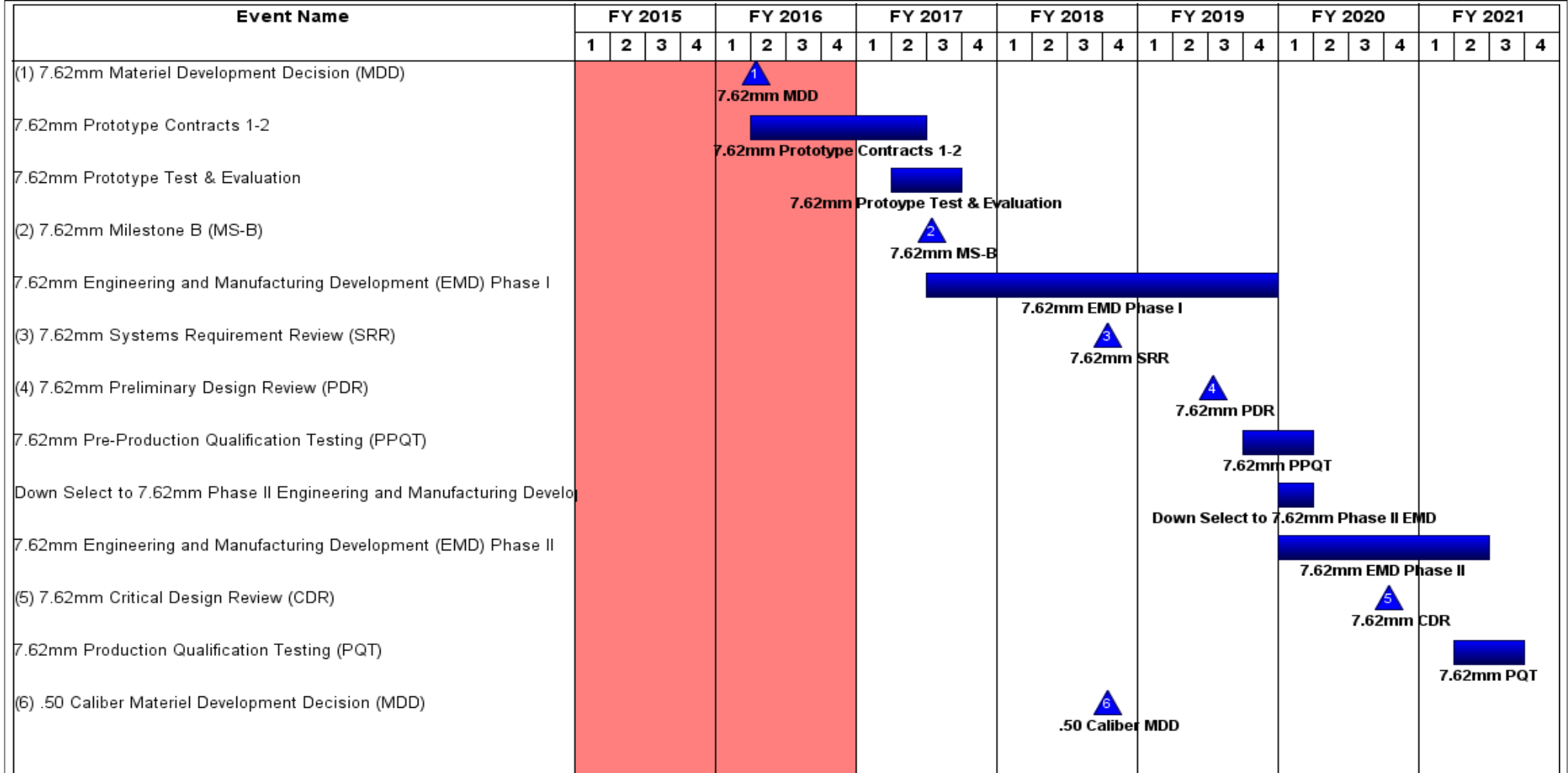
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EP6 / Lightweight Cartridge Case for Small Caliber 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	Various	Picatinny Arsenal : New Jersey	0.000	-		-		0.205		-		0.205	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.205		-		0.205	-	-	-
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	-		-		0.450		-		0.450	Continuing	Continuing	Continuing
Army Research Lab (ARL)	MIPR	Aberdeen Proving Grounds : Maryland	0.000	-		-		0.265		-		0.265	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.715		-		0.715	-	-	-
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	Aberdeen Proving Grounds : Maryland	0.000	-		-		0.370		-		0.370	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.370		-		0.370	-	-	-
Project Cost Totals			0.000	-		0.000		1.290		-		1.290	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP6 / Lightweight Cartridge Case for Small Caliber Ammo
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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army **Date:** February 2016

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP6 / Lightweight Cartridge Case for Small Caliber Ammo
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
.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			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP6 / Lightweight Cartridge Case for Small Caliber Ammo

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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP7 / 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
EP7: Tunable Pyrotechnic Aircraft Countermeasure Flares	-	0.000	1.000	1.431	-	1.431	4.400	2.500	0.000	0.000	0.000	9.331
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The program will transition from 0603639 EB9.

A. Mission Description and Budget Item Justification

This project will support Integrated System Design (ISD), System Capability (SC) and Manufacturing Process Demonstrations (MPD) on current pyrotechnic munitions and tunable pyrotechnic aircraft counter measures and decoys. The project will also support ISD, SC and MPD on new expendable countermeasure munitions that will protect Army aircraft from advanced and current guided missile threats. Activities include modeling and simulation, flight testing, qualification testing, engineering to reduce size and weight, environmental considerations, safety enhancements, manufacturing enhancements, qualification of other service and foreign munitions that could meet current requirements, product improvements, insertion of new technologies to increase performance, and enhancement of current flare solutions for new and existing aircraft. Systems include impulse cartridges, pen flares, hand held signals, trip flares, simulators, marine markers, smoke pots, smoke grenades, rail road flares and other type of emergency/distress devices, aircraft expendables (to include Radio Frequency (RF) expendables), and primers used in munitions systems.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Improvements to countermeasure flares	-	1.000	1.431	-	1.431
Description: This program will develop improvements to legacy countermeasure flare solutions and qualify them for Army use.					
FY 2016 Plans: Develop Modeling and Simulation (M&S) parameters, conduct engineering and testing to development of alternative timing solutions that increase effectiveness for aircraft expendables in to M&S. Modify current countermeasure payloads to increase decoy effectiveness.					
FY 2017 Base Plans: Conduct flight effectiveness testing on Army platforms based on M&S results. Generate necessary documentation to support Airworthiness (AWR) and fielding of new countermeasure solutions.					
Accomplishments/Planned Programs Subtotals	-	1.000	1.431	-	1.431

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Tunable Pyrotechnic Aircraft Countermeasure Flares
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603639A - Tank and Medium Caliber: <i>EB9 - Tunable Pyrotechnic Aircraft Countermeasure Flares</i>	0.850	3.000	3.400	-	3.400	-	-	-	-	0	7.250

Remarks

D. Acquisition Strategy

The Acquisition strategy is under development and will be approved by the Milestone Decision Authority (MDA) in 3rdQ FY2016. It is anticipated that these items will be restricted to the National Technology and Industrial Base (NTIB).

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Tunable Pyrotechnic Aircraft Countermeasure Flares
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	MIPR	PM CCS : Picatinny Arsenal	0.000	-		0.193		0.231	Jan 2017	-		0.231	0	0.424	0
Subtotal			0.000	-		0.193		0.231		-		0.231	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			
Product Development	MIPR	ARDEC : Picatinny Arsenal	0.000	-		0.607		-		-		-	0	0.607	0
Subtotal			0.000	-		0.607		-		-		-	0.000	0.607	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test & Evaluation	MIPR	AED : Redstone Arsenal	0.000	-		0.200		1.200	Apr 2017	-		1.200	0	1.400	0
Subtotal			0.000	-		0.200		1.200		-		1.200	0.000	1.400	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	-	1.000	1.431	-	1.431	0.000	2.431	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Tunable Pyrotechnic Aircraft Countermeasure Flares
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Generate Countermeasure Flare Modeling & Simulation Parameters																												
Develop M&S countermeasure solutions and payload configurations																												
Test & Evaluation of countermeasure solutions																												
(1) Cloud CM Milestone C																					▲							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP7 / <i>Tunable Pyrotechnic Aircraft Countermeasure Flares</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Generate Countermeasure Flare Modeling & Simulation Parameters	2	2016	3	2016
Develop M&S countermeasure solutions and payload configurations	4	2016	3	2017
Test & Evaluation of countermeasure solutions	3	2017	1	2019
Cloud CM Milestone C	3	2019	3	2019

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 / 40mm High Velocity High Explosive Airburst (HEDP)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
EU4: 40mm High Velocity High Explosive Airburst (HEDP)	-	0.000	0.000	0.303	-	0.303	2.809	6.820	6.828	6.825	0.000	23.585
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
PE 0604802A, Project EU4, 40mm High Velocity High Explosive Airburst (HEAB) is a new start.

A. Mission Description and Budget Item Justification

The Army has identified a capability gap to defeat enemy personnel in defilade using the MK19 weapons system. The draft Capability Development Document (CDD) has been prepared and is expected to be approved in FY 2017. The improved 40mm High Velocity HEAB cartridge, with airburst fuze, allows the warfighter to effectively engage multiple targets and provide the grenadier with a higher probability of defeating personnel targets in defilade positions, increasing Soldier Survivability. FY 2017 dollars support the development of the Acquisition Strategy, Milestone B, and procurement support documents.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Pre Engineering Manufacturing Development Activities	-	-	0.303	-	0.303
Description: After Milestone B approval but before the start of EMD, pre-award activities need to be accomplished.					
FY 2017 Base Plans: Funds in FY 2017 will support key accomplishments to include the development/approval of Acquisition Strategy, Milestone B, and procurement support document.					
Accomplishments/Planned Programs Subtotals	-	-	0.303	-	0.303

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

N/A

Remarks

D. Acquisition Strategy

The 40mm High Velocity High Explosive Airburst (HEAB) cartridge will be developed through a competitive Engineering and Manufacturing Development (EMD) program. As part of the acquisition strategy, two contractors will be awarded EMD contracts. After 12 months of design and development, the contractors will deliver their hardware samples for a shoot off competition. The government will evaluate the results, downselect and award one final EMD contract to mature the winning

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 / 40mm High Velocity High Explosive Airburst (HEDP)
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contractor's design. The contractor will finalize the HEAB cartridge design through a series of engineering tests and culminating in a Developmental Test & Evaluation. The test results will support the documentation for Milestone C, which is scheduled for 3Q FY 2021. After EMD is complete, a contract will be awarded for Low Rate Initial Production (LRIP) and two production year options.

E. Performance Metrics

N/A

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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 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EU4 / 40mm High Velocity High Explosive Airburst (HEDP)							
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
Project Manager Maneuver Ammunition Systems (PM MAS) labor and travel	MIPR	Picatinny Arsenal : NJ	0.000	-		-		0.025		-		0.025	0	0.025	0
Subtotal			0.000	-		-		0.025		-		0.025	0.000	0.025	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
Armament Research Development Engineering Center (ARDEC)	MIPR	Picatinny Arsenal : NJ	0.000	-		-		0.278		-		0.278	0	0.278	0
Subtotal			0.000	-		-		0.278		-		0.278	0.000	0.278	0.000
Project Cost Totals			0.000	-		0.000		0.303		-		0.303	0.000	0.303	0.000
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 / 40mm High Velocity High Explosive Airburst (HEDP)
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Milestone B Support Documents					Documentation																											
(1) Milestone B 40mm (HEAB)																	MS-B ▲															
(2) Engineering Manufacturing Development Contract Award																	EMD Contract Award ▲															
Engineering Manufacturing Development																																
Shoot Off/Bid Sample Test																																
(3) Test Readiness Review DET																					TRR DET ▲											
Development Engineering Test																																
(4) Test Readiness Review DT&E																					TRR DT&E ▲											
Development Test & Evaluation																																
(5) MS-C																									MS-C ▲							
(6) Production Contract Award																									Production Contract Award ▲							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 I 40mm High Velocity High Explosive Airburst (HEDP)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B Support Documents	2	2017	2	2018
Milestone B 40mm (HEAB)	2	2018	2	2018
Engineering Manufacturing Development Contract Award	3	2018	3	2018
Engineering Manufacturing Development	3	2018	1	2021
Shoot Off/Bid Sample Test	1	2019	1	2019
Test Readiness Review DET	4	2019	4	2019
Development Engineering Test	4	2019	1	2020
Test Readiness Review DT&E	3	2020	3	2020
Development Test & Evaluation	3	2020	4	2020
MS-C	1	2021	1	2021
Production Contract Award	2	2021	2	2021

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU5 / .50 Caliber All-Purpose Tactical cartridge (APTC)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
EU5: .50 Caliber All-Purpose Tactical cartridge (APTC)	-	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	2.000	0.000	2.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

NA

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm High Explosive Extended Range Artillery
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
<i>EU6: 155mm High Explosive Extended Range Artillery</i>	-	0.000	0.000	0.000	-	0.000	0.000	7.000	5.000	3.000	0.000	15.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

NA

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EU7 / 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
EU7: <i>Enhanced Lethality Cannon Munitions</i>	-	0.000	0.000	0.000	-	0.000	0.000	8.000	8.000	8.000	0.000	24.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

NA

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EU8 / Improved Multi-Option Fuze			
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
EU8: Improved Multi-Option Fuze	-	0.000	0.000	0.000	-	0.000	8.000	8.000	10.000	0.000	0.000	26.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

NA

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EW1 / 40mm Inc Range Anti-Pers Ammo(IRAP)HEAB f/M203			
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
EW1: 40mm Inc Range Anti-Pers Ammo(IRAP)HEAB f/M203	-	0.000	0.000	0.353	-	0.353	5.308	9.732	9.023	7.205	0.000	31.621
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, the program will transition from 0603639A 694, Medium Caliber Ammunition. 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.

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 Base	FY 2017 OCO	FY 2017 Total
Title: Engineering Manufacturing Development Activities	-	-	0.050	-	0.050
Description: After Milestone B approval but before the start of EMD, pre-award activities need to be accomplished.					
FY 2017 Base 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.					
Title: Engineering Manufacturing Development Phase I	-	-	0.303	-	0.303
Description: 40mm IRAP program will enter EMD Phase I in the 4th Quarter FY 2017					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Inc Range Anti-Pers Ammo(IRAP)HEAB f/M203
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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> FY 2017 initiate EMD Phase I with one or more contract awards for competing prototypes.					
Accomplishments/Planned Programs Subtotals	-	-	0.353	-	0.353

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>
• 0603639A 694: <i>Medium Caliber Ammunition 0603639A 694</i>	-	-	2.170	-	2.170	-	-	-	-	0.000	2.170

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

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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 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EW1 / 40mm Inc Range Anti-Pers Ammo(IRAP)HEAB f/M203							
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
Project Manager Maneuver Ammunition Systems (PM MAS) labor and travel	MIPR	Picatinny Arsenal : NJ	0.000	-		-		0.303		-		0.303	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.303		-		0.303	-	-	-
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 Engineering Center (ARDEC)	MIPR	Picatinny Arsenal : NJ	0.000	-		-		0.050		-		0.050	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.050		-		0.050	-	-	-
Project Cost Totals			0.000	-		0.000		0.353		-		0.353	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Inc Range Anti-Pers Ammo(IRAP)HEAB f/M203
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Tech Demo/CRADA Testomg					Testing																															
(1) Milestone B (IRAP)													MS-E1																							
Engineering Manufacturing Development																	EMD																			
(2) Test Readiness Review DET I (IRAP)																					TRR DET 2															
Development Engineering Test Phase I																					DET 1															
(3) Test Readiness Review DET II (IRAP)																									TRR DET 2											
Development Engineering Test Phase II																									DET 2											
(4) Test Readiness Review DT&E (IRAP)																													TRR DT&E							
Developmental Test & Evaluation																													DT&E							
(5) MS-C (IRAP)																																	MS-C			
Production Contract (IRAP)																													Production Contract							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Inc Range Anti-Pers Ammo(IRAP)HEAB f/M203

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Tech Demo/CRADA Testomg	1	2017	2	2017
Milestone B (IRAP)	4	2017	4	2017
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

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
S36: Precision Guidance Kit	-	6.881	9.530	15.957	-	15.957	14.772	5.860	8.081	8.297	0.000	69.378
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program funds engineering development of precision guidance systems applicable to Indirect Fire artillery weapon systems. The Precision Guidance Kit (PGK) is a Global Positioning System guidance kit with fuzing functions. PGK provides near precision accuracy and effectiveness for 155mm High Explosive artillery projectiles. PGK improves the accuracy of existing artillery ammunition by correcting the trajectory of projectiles to their designated target location. Precision guidance systems effectively reduce target delivery error reducing the number of rounds required to conduct a fire mission. On-going development addresses performance in jammed environments as well as the implementation of an M-Code capable GPS receiver.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Contractor Engineering and Manufacturing Development</p> <p>Description: Contractor Engineering and Manufacturing Development</p> <p>FY 2015 Accomplishments: Design maturation of PGK system and components to achieve Anti-Jam capability. This includes a preliminary design review, performance modeling, bench testing and GPS receiver development.</p> <p>FY 2016 Plans: GPS Design maturation of a PGK with Anti-Jam capability including prototype development and testing.</p> <p>FY 2017 Base Plans: GPS Design maturation of a PGK with Anti-Jam capability including critical design review.</p>	4.092	6.050	12.707	-	12.707
<p>Title: Government and Engineering Support</p> <p>Description: Continue Engineering Support</p> <p>FY 2015 Accomplishments: Engineering Support of Anti-Jam Development</p> <p>FY 2016 Plans: Engineering Support of Anti-Jam Development.</p> <p>FY 2017 Base Plans:</p>	0.994	2.480	2.250	-	2.250

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Engineering Support of Anti-Jam Development.					
Title: Continue Development/Operational Testing	1.795	1.000	1.000	-	1.000
Description: Continue Development/Operational Test					
FY 2015 Accomplishments: Operational Test of PGK increment 1 was completed in 3Q FY 2015.					
FY 2016 Plans: Developmental Testing of PGK technologies with Anti-Jam capability.					
FY 2017 Base Plans: Developmental Testing of PGK prototypes in a jammed environment with Anti-Jam capability.					
Accomplishments/Planned Programs Subtotals	6.881	9.530	15.957	-	15.957

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>
• E99250: Procurement of Ammunition Army: Precision Guidance Kit (PGK)	50.568	55.324	45.941	18.221	64.162	48.340	58.760	60.380	67.222	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Precision Guidance Kit (PGK) is a Global Positioning System (GPS) guidance kit with fuzing functions for 155mm High Explosive (HE) artillery projectiles. PGK provides near precision accuracy and effectiveness for 155mm HE projectiles. Using an integrated GPS receiver, the PGK corrects the inherent errors associated with ballistic firing solutions and reduces the number of artillery projectiles required to execute the mission. The current PGK Increment qualified the PGK for the M795 and M549A1 HE projectiles. The Acquisition Strategy/Acquisition Plan for the PGK program was approved by the Milestone Decision Authority on 20 October 2005, subsequently revised and approved on 14 December 2012. Alliant Techsystems (ATK) was competitively awarded the Engineering and Manufacturing Development (EMD) phase in May 2007 following a Technology Development Demonstration. Approval to initiate the procurement of Low Rate Initial Production (LRIP) occurred at Milestone C in March 2013. Initial Operational Test and Evaluation (IOT&E) was completed 3Q FY 2015, Full Material Release (FMR) was approved 1Q FY 2016, Full Rate Production (FRP) decision is planned for 2Q FY 2016, and Initial Operational Capability (IOC) is scheduled for 2Q FY 2016. Continued development efforts support integration of GPS Anti-Jam capability and M-Code compliance with Public Law 111-383 Sec 913.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) S36 / <i>Precision Guidance Kit</i>

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

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management Support	MIPR	Camber : Mt Arlington, NJ	1.936	-		-		-		-		-	0	1.936	1.936
LNO Support - Ft. Sill	MIPR	US ARMY Field Artillery Center : Ft. Sill, OK	0.065	0.065	Jul 2015	0.050	Jul 2016	-		-		-	0	0.180	0.180
Miscellaneous Support Contract	MIPR	MITRE Corporation : Fort Monmouth, NJ	0.600	-		-		-		-		-	0	0.600	0.600
PGK Parallel Studies and Analysis Support -	MIPR	Command and Control Directorate : Ft Monmouth, NJ	0.300	-		-		-		-		-	0	0.300	0.300
Subtotal			2.901	0.065		0.050		-		-		-	0.000	3.016	3.016

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			
PGK TD Contract	C/CPAF	Alliant Techsystems (ATK) : Plymouth, MN	5.279	-		-		-		-		-	0	5.279	5.279
PGK TD Contract	C/CPAF	BAE : Minneapolis, MN	3.103	-		-		-		-		-	0	3.103	3.103
Soft Recovery Modules	MIPR	SubSystems Technology : Rosslyn, VA	0.116	-		-		-		-		-	0.000	0.116	0.116
PGK EMD & Phase 1-2 (Reliability Failure/Root Cause Analysis)	C/CPAF	Alliant Techsystems (ATK) : Plymouth, MN	53.947	-		-		-		-		-	0	53.947	53.947
PGK EMD - Phase 3a to 5	C/FFP	Alliant Techsystems (ATK) : Plymouth, MN	25.117	-		-		-		-		-	0	25.117	25.117
DOTC - PGK GPS Anti-Jam Development	C/CPFF	Alliant Techsystems (ATK) : Plymouth, MN	16.226	4.092	Nov 2015	7.000	Apr 2016	12.707	Jan 2017	-		12.707	0	40.025	40.025

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DOTC - GDOTS - Engineering & Technology Assessment. Low Cost Roll Control Solutions	C/CPFF	General Dynamics Ordnance & Tactical Systems : Bothell, WA	2.093	-		-		-		-		-	0	2.093	2.093
DOTC - BAE Systems - Engineering & Technology Assessment. Low Cost Course Correction solutions.	C/CPFF	BAE/Rokar : Minneapolis, MN	0.500	-		-		-		-		-	0	0.500	0.500
High Angle Software Configuration	C/CPFF	Raytheon : Ft Wayne, IN	0.105	-		-		-		-		-	0	0.105	0.105
Subtotal			106.486	4.092		7.000		12.707		-		12.707	0.000	130.285	130.285

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PM Office	PO	PM CAS : Picatinny, NJ	10.763	0.661	Dec 2014	0.670	Jan 2016	0.670	Dec 2016	-		0.670	0	12.764	12.764
Government Engineering Support	MIPR	ARDEC : Picatinny, NJ	28.598	0.220	Jan 2015	1.480	Jan 2016	1.500	Jan 2017	-		1.500	0	31.798	31.798
Jammer Support	MIPR	Electronic Proving Ground : Ft Huachuca, AZ	0.288	0.028	Jun 2015	0.080	Jun 2016	0.080	Jun 2017	-		0.080	0	0.476	0.476
ATEC Support	MIPR	Army Test and Evaluation Command : Aberdeen, MD	0.005	0.020	Jun 2015	-		-		-		-	0	0.025	0.025
Subtotal			39.654	0.929		2.230		2.250		-		2.250	0.000	45.063	45.063

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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Component Air Gun/ Railgun Testing	MIPR	ARDEC : Picatinny, NJ	0.317	0.020	Dec 2015	-		-		-		-	0	0.337	0.337
Other Development Testing	MIPR	Various : Various	1.725	0.044	Feb 2015	-		-		-		-	0	1.769	1.769
System Development Testing Increment 1	MIPR	Yuma Proving Ground : Yuma, AZ	10.442	-		-		-		-		-	0	10.442	10.442
Limited User Test	MIPR	Yuma Proving Ground : Yuma, AZ	1.631	-		-		-		-		-	0	1.631	1.631
Development Testing for GPS Anti-Jam	MIPR	Yuma Proving Ground : Yuma, AZ	0.590	-		0.250	Jan 2016	1.000	Jan 2017	-		1.000	0	1.840	1.840
Initial Operational Test & Evaluation - Increment 1	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	1.000	Feb 2015	-		-		-		-	0	1.000	1.000
Initial Operational Test & Evaluation - Troop Support	MIPR	Ft. Sill, OK : Ft. Sill, OK	0.000	0.731	Feb 2015	-		-		-		-	0	0.731	0.731
Cold Region Testing	MIPR	Cold Region Test Center : Yuma, AZ	0.300	-		-		-		-		-	0	0.300	0.300
Airdrop Testing	MIPR	Yuma Proving Ground : Yuma, AZ	0.200	-		-		-		-		-	0	0.200	0.200
Subtotal			15.205	1.795		0.250		1.000		-		1.000	0.000	18.250	18.250
Project Cost Totals			164.246	6.881		9.530		15.957		-		15.957	0.000	196.614	196.614

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
First Article Test (FAT)	FAT																											
Initial Operational Test and Evaluation (IOT&E)	IOT&E																											
(1) Full Materiel Release					1 FMR																							
(2) Full Rate Production					2 FRP																							
(3) Initial Operational Capability (IOC)					3 IOC																							
Anti-Jam Prototype Development Testing					AJ Prototype Development Testing																							
(4) Anti-Jam / M-Code Critical Design Review													4 AJ / M-Code CDR															
Anti-Jam / M-Code Contractor Verification													AJ / M-Code Contractor Verification															
Anti-Jam / M-Code Government Qualification																	AJ / M-Code Government Qualification											
Initial Operational Test and Evaluation (IOT&E) - Anti-Jam / M-Code																					IOT&E							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) S36 / <i>Precision Guidance Kit</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
First Article Test (FAT)	1	2015	1	2015
Initial Operational Test and Evaluation (IOT&E)	2	2015	3	2015
Full Materiel Release	1	2016	1	2016
Full Rate Production	2	2016	2	2016
Initial Operational Capability (IOC)	2	2016	2	2016
Anti-Jam Prototype Development Testing	2	2015	2	2018
Anti-Jam / M-Code Critical Design Review	3	2018	3	2018
Anti-Jam / M-Code Contractor Verification	3	2018	2	2020
Anti-Jam / M-Code Government Qualification	3	2020	3	2021
Initial Operational Test and Evaluation (IOT&E) - Anti-Jam / M-Code	4	2021	4	2021