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**Department of Defense
Fiscal Year (FY) 2018 Budget Estimates**

May 2017



Army

Justification Book of

Research, Development, Test & Evaluation, Army

RDT&E – Volume II, Budget Activity 5B

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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, \$9,544,808,000 to remain available for obligation until September 30, 2019.

The following Justification Books were prepared at a cost of \$250,916: 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 2018 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 2018.

2. **Relationship of the FY 2018 Budget Submitted to Congress to the FY 2017 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>Budget Activity</u>	<u>OSDPE/Project</u>	<u>Project Title</u>
01	0601104A/FF5	Distributed Collaborative Intelligent Systems CTA
01	0601104A/FF7	Internet of Battlefield Things CTA
03	0603001A/FF6	Individual Protection
03	0603009A/FH1	Tractor Hike
04	0603639A/XT5	30mm Anti-Personnel and Counter-Air
04	0603645A/EV7	Combat Vehicle Prototyping
04	0603807A/VS7	MEDEVAC Mission Equipment Package (MEP) - Adv Dev
04	0604017A/FD2	Soldier Robotics Systems
04	0604017A/FD3	Battery Modernization & Interface Standardization
04	0604017A/FD9	Robotics Systems

<u>Budget Activity</u>	<u>OSDPE/Project</u>	<u>Project Title</u>
04	0604117A/FI4	Maneuver – Short Range Air Defense (M-SHORAD)
04	0604120A/EJ3	ANTI-JAM ANTENNA
04	0604121A/FD6	Synthetic Training Environment Refine & Prototype
05	0604601A/FF2	Small Arms Fire Control
05	0604601A/FI2	Lightweight 30mm Cannon
05	0604604A/H07	Family Of Med Tac Veh
05	0604768A/688	ATACMS BLK II
05	0604768A/P01	MULTI - MODE SEEKER DEVELOPMENT AND TEST
05	0604802A/EW1	40mm LV High Explosive Air Burst, XM1166
05	0604802A/FA6	30mm Lethality
05	0604804A/FG4	Ultra-Lightweight Camouflage Net System (ULCANS)
05	0604818A/ER9	Expeditionary Army Command Post
05	0604823A/L87	Hypervelocity Projectile System
05	0604852A/FE8	Vehicle Protection Suite
05	0605013A/VR3	ASMIS-R (REPORTIT)
05	0605037A/EQ6	Evidence Collection and Detainee Processing
05	0605053A/FB2	Man Transportable Robotic System (MTRS) Inc II
05	0605053A/FB3	Robotics Architecture
05	0605053A/FB4	Common Robotic Systems
05	0605053A/FB6	Squad Multipurpose Equipment Transport (SMET)
05	0605053A/FB7	Robotics Enhanced Program (REP)
05	0605053A/FB8	Soldier Borne Sensor (SBS)

<u>Budget Activity</u>	<u>OSDPE/Project</u>	<u>Project Title</u>
05	0605053A/FB9	MTRS Standardization
05	1205117A/FG3	Tractor Bears
06	0606001A/FD4	Military Ground-Based CREW Technology
07	0203735A/280	RECOV VEH IMPROV PROG
07	0203735A/431	M113 IMPROVEMENTS
07	0203743A/FF9	PIM Improvement Program
07	0203802A/788	ATACMS PIP
07	0205412A/EE6	Environmental Information Tech Modernization
07	0303028A/FG2	Counterintelligence & Human Intel Modernization
07	0303140A/FF8	Unit Activity Monitoring (UAM)
07	0305172A/XT9	Combined Advanced Applications

B. Program Element/Project Restructures:

<u>Budget Activity</u>	<u>Old OSDPE/Project: Title</u>	<u>New OSDPE/Project: Title</u>
04	0603308A/990: Space and Missile Defense Integration	1206308A/FE5: Space and Missile Defense Integration
04	0603308A/EB7: Army Space System Enhancement/Integration	1206308A/FE6: Army Space System Enhancement/Integration
04	0305219AMQ1: MQ-1 Gray Eagle – Army UAV (MIP)	0603804A/EW8: Armored Engineer Vehicles
05	0604201A/VU3: Networking and Mission Planning	0604201A/EW7: Degraded Visual Environment
05	0603639A/EB8: OWL for Small Caliber Ammunition	0604802A/EP4: One-Way Luminescence For Small Caliber Ammo
05	0603639A/EU2: Improved Multi-Option Fuze (iMOFA/iMOFM)	0604802A/EU8: Improved Multi-Option Fuze
05	0604827A/S65: Platoon Power Generator	0604827A/EY2: Integrated Soldier Power Data System Core
05	0604827A/S65: Platoon Power Generator	0604827A/EY4: Universal Battery Charger
05	0203735A/EE2: Stryker Improvement	0604852A/XU9: Active Protection System
05	0605013A/738: AcqBiz	0605013A/FE9: ALTESS (P & R Forms)
05	0603627A/E79: Smoke/Obscurant System	0605038A/EQ7: NBC Reconnaissance Vehicle (NBCRV)
05	0605051A/ER8: Common Missile Warning System (CMWS)	0605049A/XT4: Advanced Threat Detection System (ATDS)
05	0303142A/EA3: Transportable Tactical Cmd Comms (T2C2)	0605766A/EX7: Air Vigilance System Development
06	0605898A/M03: Command HQ - MRDC	0605898A/XW7: Command HQ - ARI
06	0605301A/DX2: Army Kwajalein and Mission Support	0606002A/XW9: Reagan Test Site
07	0303142A/253: Dscs-Dcs (Phase II)	1203142A/FE1: Dscs-Dcs (Phase II)
07	0303142A/456: MILSATCOM System Engineering	1203142A/FE2: MILSATCOM System Engineering
07	0303142A/EA3: Transportable Tactical Cmd Comms (T2C2)	1203142A/FE4: Enroute Mission Command
07	0208053A/635: Joint Tact Grd Station P3I (MIP)	1208053A/FE7: Joint Tact Grd Station-P3I(MIP)
07	0305219A/RQ7: RQ-7 Shadow UAV	0607143A/EX1: Unmanned Aircraft Systems Universal Products

C. Program Terminations:

<u>Budget Activity</u>	<u>OSDPE/Project</u>	<u>OSDPE Title/Project Title</u>
01	0601104A/H53	University & Industry Rsch Ctrs / Army High Performance Computing Research Center
01	0601104A/H53	University & Industry Rsch Ctrs / Micro-autonomous Systems Technology (MAST) CTA
05	0604601A/S62	Infantry Support Weapons / Counter-Defilade Target Engagement - SDD

- 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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Department of Defense
 FY 2018 President's Budget Request
 Exhibit R-1 FY 2018 President's Budget Request
 Total Obligational Authority
 (Dollars in Thousands)

26 Apr 2017

Appropriation	FY 2016	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017
	Base + OCO	PB Request with CR Adj Base	Total PB Requests* with CR Adj Base	PB Request with CR Adj OCO	Total PB Requests* with CR Adj OCO	Less Enacted Div B P.L.114-254** OCO	Remaining Req with CR Adj OCO
Research, Development, Test & Eval, Army	7,861,744	7,547,794	7,897,415	1,500	233,300	-78,700	154,600
Total Research, Development, Test & Evaluation	7,861,744	7,547,794	7,897,415	1,500	233,300	-78,700	154,600

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Appropriation	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Research, Development, Test & Eval, Army	7,627,994	8,130,715	-78,700	8,052,015	9,425,440	119,368	9,544,808
Total Research, Development, Test & Evaluation	7,627,994	8,130,715	-78,700	8,052,015	9,425,440	119,368	9,544,808

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	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO
<u>Summary Recap of Budget Activities</u>							
Basic Research	450,831	428,943	428,943				
Applied Research	1,070,349	907,574	907,574				
Advanced Technology Development	1,113,746	930,065	943,365				
Advanced Component Development & Prototypes	499,287	550,635	566,835	9,375	25,395		25,395
System Development & Demonstration	2,202,652	2,265,094	2,393,383	84,043	288,443	-78,700	209,743
RDT&E Management Support	1,259,926	1,136,134	1,161,991				
Operational Systems Development	1,264,953	1,296,954	1,462,929	7,104	18,484		18,484
Undistributed		32,395	32,395	-99,022	-99,022		-99,022
Total Research, Development, Test & Evaluation	7,861,744	7,547,794	7,897,415	1,500	233,300	-78,700	154,600
<u>Summary Recap of FYDP Programs</u>							
General Purpose Forces	802,086	618,038	697,138		4,530		4,530
Intelligence and Communications	400,329	238,711	268,755	7,104	8,854		8,854
Research and Development	6,596,225	6,591,738	6,832,215	93,418	318,938	-78,700	240,238
Central Supply and Maintenance	58,503	62,287	62,287				
Administration and Associated Activities	65	32,395	32,395	-99,022	-99,022		-99,022
Space							
Classified Programs	4,536	4,625	4,625				
Total Research, Development, Test & Evaluation	7,861,744	7,547,794	7,897,415	1,500	233,300	-78,700	154,600

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	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<u>Summary Recap of Budget Activities</u>							
Basic Research	428,943	428,943		428,943	430,022		430,022
Applied Research	907,574	907,574		907,574	889,182		889,182
Advanced Technology Development	930,065	943,365		943,365	1,070,977		1,070,977
Advanced Component Development & Prototypes	560,010	592,230		592,230	890,889	18,000	908,889
System Development & Demonstration	2,427,837	2,681,826	-78,700	2,603,126	3,012,840	57,840	3,070,680
RDT&E Management Support	1,136,134	1,161,991		1,161,991	1,253,845		1,253,845
Operational Systems Development	1,304,058	1,481,413		1,481,413	1,877,685	43,528	1,921,213
Undistributed	-66,627	-66,627		-66,627			
Total Research, Development, Test & Evaluation	7,627,994	8,130,715	-78,700	8,052,015	9,425,440	119,368	9,544,808
<u>Summary Recap of FYDP Programs</u>							
General Purpose Forces	618,038	701,668		701,668	710,401	15,000	725,401
Intelligence and Communications	245,815	277,609		277,609	370,519	29,728	400,247
Research and Development	6,763,856	7,151,153	-78,700	7,072,453	8,215,942	74,640	8,290,582
Central Supply and Maintenance	62,287	62,287		62,287	60,877		60,877
Administration and Associated Activities	-66,627	-66,627		-66,627			
Space					60,547		60,547
Classified Programs	4,625	4,625		4,625	7,154		7,154
Total Research, Development, Test & Evaluation	7,627,994	8,130,715	-78,700	8,052,015	9,425,440	119,368	9,544,808

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System Development & Demonstration	2,202,652	2,265,094	2,393,383	84,043	288,443	-78,700	209,743
RDT&E Management Support	1,259,926	1,136,134	1,161,991				
Operational Systems Development	1,264,953	1,296,954	1,462,929	7,104	18,484		18,484
Undistributed		32,395	32,395	-99,022	-99,022		-99,022
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<u>Summary Recap of FYDP Programs</u>							
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Central Supply and Maintenance	58,503	62,287	62,287				
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Space							
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Summary Recap of Budget Activities	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Basic Research	428,943	428,943		428,943	430,022		430,022
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Advanced Technology Development	930,065	943,365		943,365	1,070,977		1,070,977
Advanced Component Development & Prototypes	560,010	592,230		592,230	890,889	18,000	908,889
System Development & Demonstration	2,427,837	2,681,826	-78,700	2,603,126	3,012,840	57,840	3,070,680
RDT&E Management Support	1,136,134	1,161,991		1,161,991	1,253,845		1,253,845
Operational Systems Development	1,304,058	1,481,413		1,481,413	1,877,685	43,528	1,921,213
Undistributed	-66,627	-66,627		-66,627			
Total Research, Development, Test & Evaluation	7,627,994	8,130,715	-78,700	8,052,015	9,425,440	119,368	9,544,808
<u>Summary Recap of FYDP Programs</u>							
General Purpose Forces	618,038	701,668		701,668	710,401	15,000	725,401
Intelligence and Communications	245,815	277,609		277,609	370,519	29,728	400,247
Research and Development	6,763,856	7,151,153	-78,700	7,072,453	8,215,942	74,640	8,290,582
Central Supply and Maintenance	62,287	62,287		62,287	60,877		60,877
Administration and Associated Activities	-66,627	-66,627		-66,627			
Space					60,547		60,547
Classified Programs	4,625	4,625		4,625	7,154		7,154
Total Research, Development, Test & Evaluation	7,627,994	8,130,715	-78,700	8,052,015	9,425,440	119,368	9,544,808

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

Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	Se c
1	0601101A	In-House Laboratory Research	01	12,525	12,381	12,381					U
2	0601102A	Defense Research Sciences	01	271,933	253,116	253,116					U
3	0601103A	University Research Initiatives	01	67,225	69,166	69,166					U
4	0601104A	University and Industry Research Centers	01	99,148	94,280	94,280					U
		Basic Research		450,831	428,943	428,943					
5	0602105A	Materials Technology	02	67,806	31,533	31,533					U
6	0602120A	Sensors and Electronic Survivability	02	57,202	36,109	36,109					U
7	0602122A	TRACTOR HIP	02	6,879	6,995	6,995					U
8	0602211A	Aviation Technology	02	58,497	65,914	65,914					U
9	0602270A	Electronic Warfare Technology	02	18,502	25,466	25,466					U
10	0602303A	Missile Technology	02	51,801	44,313	44,313					U
11	0602307A	Advanced Weapons Technology	02	36,906	28,803	28,803					U
12	0602308A	Advanced Concepts and Simulation	02	26,886	27,688	27,688					U
13	0602601A	Combat Vehicle and Automotive Technology	02	95,763	67,959	67,959					U
14	0602618A	Ballistics Technology	02	118,221	85,436	85,436					U
15	0602622A	Chemical, Smoke and Equipment Defeating Technology	02	3,713	3,923	3,923					U
16	0602623A	Joint Service Small Arms Program	02	5,270	5,545	5,545					U
17	0602624A	Weapons and Munitions Technology	02	81,447	53,581	53,581					U

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1	0601101A	In-House Laboratory Independent Research	01	12,381	12,381		12,381	12,010		12,010	U
2	0601102A	Defense Research Sciences	01	253,116	253,116		253,116	263,590		263,590	U
3	0601103A	University Research Initiatives	01	69,166	69,166		69,166	67,027		67,027	U
4	0601104A	University and Industry Research Centers	01	94,280	94,280		94,280	87,395		87,395	U
		Basic Research		428,943	428,943		428,943	430,022		430,022	
5	0602105A	Materials Technology	02	31,533	31,533		31,533	29,640		29,640	U
6	0602120A	Sensors and Electronic Survivability	02	36,109	36,109		36,109	35,730		35,730	U
7	0602122A	TRACTOR HIP	02	6,995	6,995		6,995	8,627		8,627	U
8	0602211A	Aviation Technology	02	65,914	65,914		65,914	66,086		66,086	U
9	0602270A	Electronic Warfare Technology	02	25,466	25,466		25,466	27,144		27,144	U
10	0602303A	Missile Technology	02	44,313	44,313		44,313	43,742		43,742	U
11	0602307A	Advanced Weapons Technology	02	28,803	28,803		28,803	22,785		22,785	U
12	0602308A	Advanced Concepts and Simulation	02	27,688	27,688		27,688	28,650		28,650	U
13	0602601A	Combat Vehicle and Automotive Technology	02	67,959	67,959		67,959	67,232		67,232	U
14	0602618A	Ballistics Technology	02	85,436	85,436		85,436	85,309		85,309	U
15	0602622A	Chemical, Smoke and Equipment Defeating Technology	02	3,923	3,923		3,923	4,004		4,004	U
16	0602623A	Joint Service Small Arms Program	02	5,545	5,545		5,545	5,615		5,615	U
17	0602624A	Weapons and Munitions Technology	02	53,581	53,581		53,581	41,455		41,455	U

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18	0602705A	Electronics and Electronic Devices	02	62,654	56,322	56,322					U
19	0602709A	Night Vision Technology	02	37,501	36,079	36,079					U
20	0602712A	Countermine Systems	02	35,586	26,497	26,497					U
21	0602716A	Human Factors Engineering Technology	02	23,220	23,671	23,671					U
22	0602720A	Environmental Quality Technology	02	20,270	22,151	22,151					U
23	0602782A	Command, Control, Communications Technology	02	34,749	37,803	37,803					U
24	0602783A	Computer and Software Technology	02	12,266	13,811	13,811					U
25	0602784A	Military Engineering Technology	02	80,130	67,416	67,416					U
26	0602785A	Manpower/Personnel/Training Technology	02	22,474	26,045	26,045					U
27	0602786A	Warfighter Technology	02	38,420	37,403	37,403					U
28	0602787A	Medical Technology	02	74,186	77,111	77,111					U
		Applied Research		1,070,349	907,574	907,574					
29	0603001A	Warfighter Advanced Technology	03	54,606	38,831	38,831					U
30	0603002A	Medical Advanced Technology	03	103,753	68,365	68,365					U
31	0603003A	Aviation Advanced Technology	03	99,542	94,280	94,280					U
32	0603004A	Weapons and Munitions Advanced Technology	03	95,504	68,714	68,714					U
33	0603005A	Combat Vehicle and Automotive Advanced Technology	03	136,624	122,132	122,132					U
34	0603006A	Space Application Advanced Technology	03	5,384	3,904	3,904					U

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18	0602705A	Electronics and Electronic Devices	02	56,322	56,322		56,322	58,352		58,352	U
19	0602709A	Night Vision Technology	02	36,079	36,079		36,079	34,723		34,723	U
20	0602712A	Countermines Systems	02	26,497	26,497		26,497	26,190		26,190	U
21	0602716A	Human Factors Engineering Technology	02	23,671	23,671		23,671	24,127		24,127	U
22	0602720A	Environmental Quality Technology	02	22,151	22,151		22,151	21,678		21,678	U
23	0602782A	Command, Control, Communications Technology	02	37,803	37,803		37,803	33,123		33,123	U
24	0602783A	Computer and Software Technology	02	13,811	13,811		13,811	14,041		14,041	U
25	0602784A	Military Engineering Technology	02	67,416	67,416		67,416	67,720		67,720	U
26	0602785A	Manpower/Personnel/Training Technology	02	26,045	26,045		26,045	20,216		20,216	U
27	0602786A	Warfighter Technology	02	37,403	37,403		37,403	39,559		39,559	U
28	0602787A	Medical Technology	02	77,111	77,111		77,111	83,434		83,434	U
		Applied Research		907,574	907,574		907,574	889,182		889,182	
29	0603001A	Warfighter Advanced Technology	03	38,831	38,831		38,831	44,863		44,863	U
30	0603002A	Medical Advanced Technology	03	68,365	68,365		68,365	67,780		67,780	U
31	0603003A	Aviation Advanced Technology	03	94,280	94,280		94,280	160,746		160,746	U
32	0603004A	Weapons and Munitions Advanced Technology	03	68,714	68,714		68,714	84,079		84,079	U
33	0603005A	Combat Vehicle and Automotive Advanced Technology	03	122,132	122,132		122,132	125,537		125,537	U
34	0603006A	Space Application Advanced Technology	03	3,904	3,904		3,904	12,231		12,231	U

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35	0603007A	Manpower, Personnel and Training Advanced Technology	03	11,571	14,417	14,417					U
36	0603009A	TRACTOR HIKE	03	9,002	8,074	21,374					U
37	0603015A	Next Generation Training & Simulation Systems	03	16,735	18,969	18,969					U
38	0603020A	TRACTOR ROSE	03	11,912	11,910	11,910					U
39	0603125A	Combating Terrorism - Technology Development	03	32,430	27,686	27,686					U
40	0603130A	TRACTOR NAIL	03	2,381	2,340	2,340					U
41	0603131A	TRACTOR EGGS	03	2,431	2,470	2,470					U
42	0603270A	Electronic Warfare Technology	03	31,810	27,893	27,893					U
43	0603313A	Missile and Rocket Advanced Technology	03	102,490	52,190	52,190					U
44	0603322A	TRACTOR CAGE	03	10,999	11,107	11,107					U
45	0603461A	High Performance Computing Modernization Program	03	215,138	177,190	177,190					U
46	0603606A	Landmine Warfare and Barrier Advanced Technology	03	13,425	17,451	17,451					U
47	0603607A	Joint Service Small Arms Program	03	4,903	5,839	5,839					U
48	0603710A	Night Vision Advanced Technology	03	39,329	44,468	44,468					U
49	0603728A	Environmental Quality Technology Demonstrations	03	14,533	11,137	11,137					U
50	0603734A	Military Engineering Advanced Technology	03	26,247	20,684	20,684					U

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35	0603007A	Manpower, Personnel and Training Advanced Technology	03	14,417	14,417		14,417	6,466		6,466	U
36	0603009A	TRACTOR HIKE	03	8,074	21,374		21,374	28,552		28,552	U
37	0603015A	Next Generation Training & Simulation Systems	03	18,969	18,969		18,969	16,434		16,434	U
38	0603020A	TRACTOR ROSE	03	11,910	11,910		11,910				U
39	0603125A	Combating Terrorism - Technology Development	03	27,686	27,686		27,686	26,903		26,903	U
40	0603130A	TRACTOR NAIL	03	2,340	2,340		2,340	4,880		4,880	U
41	0603131A	TRACTOR EGGS	03	2,470	2,470		2,470	4,326		4,326	U
42	0603270A	Electronic Warfare Technology	03	27,893	27,893		27,893	31,296		31,296	U
43	0603313A	Missile and Rocket Advanced Technology	03	52,190	52,190		52,190	62,850		62,850	U
44	0603322A	TRACTOR CAGE	03	11,107	11,107		11,107	12,323		12,323	U
45	0603461A	High Performance Computing Modernization Program	03	177,190	177,190		177,190	182,331		182,331	U
46	0603606A	Landmine Warfare and Barrier Advanced Technology	03	17,451	17,451		17,451	17,948		17,948	U
47	0603607A	Joint Service Small Arms Program	03	5,839	5,839		5,839	5,796		5,796	U
48	0603710A	Night Vision Advanced Technology	03	44,468	44,468		44,468	47,135		47,135	U
49	0603728A	Environmental Quality Technology Demonstrations	03	11,137	11,137		11,137	10,421		10,421	U
50	0603734A	Military Engineering Advanced Technology	03	20,684	20,684		20,684	32,448		32,448	U

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51	0603772A	Advanced Tactical Computer Science and Sensor Technology	03	36,658	44,239	44,239					U
52	0603794A	C3 Advanced Technology	03	36,339	35,775	35,775					U
		Advanced Technology Development		1,113,746	930,065	943,365					
53	0603305A	Army Missile Defense Systems Integration	04	29,270	9,433	9,433					U
54	0603308A	Army Space Systems Integration	04	29,561	23,056	23,056	9,375	9,375		9,375	U
55	0603327A	Air and Missile Defense Systems Engineering	04			14,200					U
56	0603619A	Landmine Warfare and Barrier - Adv Dev	04	40,943	72,117	72,117					U
57	0603627A	Smoke, Obscurant and Target Defeating Sys-Adv Dev	04	12,894	28,244	28,244		16,020		16,020	U
58	0603639A	Tank and Medium Caliber Ammunition	04	42,272	40,096	42,096					U
59	0603645A	Armored System Modernization - Adv Dev	04								U
60	0603747A	Soldier Support and Survivability	04	5,035	10,506	10,506					U
61	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	17,562	15,730	15,730					U
62	0603774A	Night Vision Systems Advanced Development	04	7,003	10,321	10,321					U
63	0603779A	Environmental Quality Technology - Dem/Val	04	8,464	7,785	7,785					U
64	0603790A	NATO Research and Development	04	5,835	2,300	2,300					U
65	0603801A	Aviation - Adv Dev	04		10,014	10,014					U

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51	0603772A	Advanced Tactical Computer Science and Sensor Technology	03	44,239	44,239		44,239	52,206		52,206	U
52	0603794A	C3 Advanced Technology	03	35,775	35,775		35,775	33,426		33,426	U
		Advanced Technology Development		930,065	943,365		943,365	1,070,977		1,070,977	
53	0603305A	Army Missile Defense Systems Integration	04	9,433	9,433		9,433	9,634		9,634	U
54	0603308A	Army Space Systems Integration	04	32,431	32,431		32,431				U
55	0603327A	Air and Missile Defense Systems Engineering	04		14,200		14,200	33,949	15,000	48,949	U
56	0603619A	Landmine Warfare and Barrier - Adv Dev	04	72,117	72,117		72,117	72,909		72,909	U
57	0603627A	Smoke, Obscurant and Target Defeating Sys-Adv Dev	04	28,244	44,264		44,264	7,135		7,135	U
58	0603639A	Tank and Medium Caliber Ammunition	04	40,096	42,096		42,096	41,452		41,452	U
59	0603645A	Armored System Modernization - Adv Dev	04					32,739		32,739	U
60	0603747A	Soldier Support and Survivability	04	10,506	10,506		10,506	10,157	3,000	13,157	U
61	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	15,730	15,730		15,730	27,733		27,733	U
62	0603774A	Night Vision Systems Advanced Development	04	10,321	10,321		10,321	12,347		12,347	U
63	0603779A	Environmental Quality Technology - Dem/Val	04	7,785	7,785		7,785	10,456		10,456	U
64	0603790A	NATO Research and Development	04	2,300	2,300		2,300	2,588		2,588	U
65	0603801A	Aviation - Adv Dev	04	10,014	10,014		10,014	14,055		14,055	U

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66	0603804A	Logistics and Engineer Equipment - Adv Dev	04	20,271	20,834	20,834					U
67	0603807A	Medical Systems - Adv Dev	04	39,711	33,503	33,503					U
68	0603827A	Soldier Systems - Advanced Development	04	22,251	31,120	31,120					U
69	0604017A	Robotics Development	04								U
70	0604100A	Analysis Of Alternatives	04	7,533	6,608	6,608					U
71	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04		35,132	35,132					U
72	0604115A	Technology Maturation Initiatives	04	34,493	70,047	70,047					U
73	0604117A	Maneuver - Short Range Air Defense (M-SHORAD)	04								U
74	0604118A	TRACTOR BEAM	04								U
75	0604120A	Assured Positioning, Navigation and Timing (PNT)	04	26,967	83,279	83,279					U
76	0604121A	Synthetic Training Environment Refinement & Prototyping	04								U
77	0604319A	Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)	04	149,222							U
78	0305251A	Cyberspace Operations Forces and Force Support	04		40,510	40,510					U
79	1206308A	Army Space Systems Integration	04								U
		Advanced Component Development & Prototypes		499,287	550,635	566,835	9,375	25,395		25,395	
80	0604201A	Aircraft Avionics	05	18,194	83,248	83,248					U

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66	0603804A	Logistics and Engineer Equipment - Adv Dev	04	20,834	20,834		20,834	35,333		35,333	U
67	0603807A	Medical Systems - Adv Dev	04	33,503	33,503		33,503	33,491		33,491	U
68	0603827A	Soldier Systems - Advanced Development	04	31,120	31,120		31,120	20,239		20,239	U
69	0604017A	Robotics Development	04					39,608		39,608	U
70	0604100A	Analysis Of Alternatives	04	6,608	6,608		6,608	9,921		9,921	U
71	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04	35,132	35,132		35,132	76,728		76,728	U
72	0604115A	Technology Maturation Initiatives	04	70,047	70,047		70,047	115,221		115,221	U
73	0604117A	Maneuver - Short Range Air Defense (M-SHORAD)	04					20,000		20,000	U
74	0604118A	TRACTOR BEAM	04					10,400		10,400	U
75	0604120A	Assured Positioning, Navigation and Timing (PNT)	04	83,279	83,279		83,279	164,967		164,967	U
76	0604121A	Synthetic Training Environment Refinement & Prototyping	04					1,600		1,600	U
77	0604319A	Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)	04					11,303		11,303	U
78	0305251A	Cyberspace Operations Forces and Force Support	04	40,510	40,510		40,510	56,492		56,492	U
79	1206308A	Army Space Systems Integration	04					20,432		20,432	U
		Advanced Component Development & Prototypes		560,010	592,230		592,230	890,889	18,000	908,889	
80	0604201A	Aircraft Avionics	05	83,248	83,248		83,248	30,153		30,153	U

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81	0604270A	Electronic Warfare Development	05	20,586	34,642	37,242					U
82	0604280A	Joint Tactical Radio	05	4,415							U
83	0604290A	Mid-tier Networking Vehicular Radio (MNVR)	05	8,416	12,172	12,172					U
84	0604321A	All Source Analysis System	05	4,309	3,958	3,958					U
85	0604328A	TRACTOR CAGE	05	15,138	12,525	12,525					U
86	0604601A	Infantry Support Weapons	05	86,966	66,943	66,943					U
87	0604604A	Medium Tactical Vehicles	05								U
88	0604611A	JAVELIN	05	3,789	20,011	20,011					U
89	0604622A	Family of Heavy Tactical Vehicles	05		11,429	11,429					U
90	0604633A	Air Traffic Control	05	9,714	3,421	3,421					U
91	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05	13,599	39,282	39,282					U
92	0604642A	Light Tactical Wheeled Vehicles	05		494	494					U
93	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05		9,678	9,678					U
94	0604710A	Night Vision Systems - Eng Dev	05	65,482	84,519	84,519					U
95	0604713A	Combat Feeding, Clothing, and Equipment	05	1,694	2,054	2,054					U
96	0604715A	Non-System Training Devices - Eng Dev	05	26,768	30,774	35,774	33	33		33	U
97	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	33,619	53,332	61,532		143,900	-78,700	65,200	U

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81	0604270A	Electronic Warfare Development	05	34,642	37,242		37,242	71,671		71,671	U
82	0604280A	Joint Tactical Radio	05								U
83	0604290A	Mid-tier Networking Vehicular Radio (MNVR)	05	12,172	12,172		12,172	10,589		10,589	U
84	0604321A	All Source Analysis System	05	3,958	3,958		3,958	4,774		4,774	U
85	0604328A	TRACTOR CAGE	05	12,525	12,525		12,525	17,252		17,252	U
86	0604601A	Infantry Support Weapons	05	66,943	66,943		66,943	87,643		87,643	U
87	0604604A	Medium Tactical Vehicles	05					6,039		6,039	U
88	0604611A	JAVELIN	05	20,011	20,011		20,011	21,095		21,095	U
89	0604622A	Family of Heavy Tactical Vehicles	05	11,429	11,429		11,429	10,507		10,507	U
90	0604633A	Air Traffic Control	05	3,421	3,421		3,421	3,536		3,536	U
91	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05	39,282	39,282		39,282				U
92	0604642A	Light Tactical Wheeled Vehicles	05	494	494		494	7,000		7,000	U
93	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05	9,678	9,678		9,678	36,242		36,242	U
94	0604710A	Night Vision Systems - Eng Dev	05	84,519	84,519		84,519	108,504		108,504	U
95	0604713A	Combat Feeding, Clothing, and Equipment	05	2,054	2,054		2,054	3,702		3,702	U
96	0604715A	Non-System Training Devices - Eng Dev	05	30,807	35,807		35,807	43,575		43,575	U
97	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	132,032	205,432	-78,700	126,732	28,726		28,726	U

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98	0604742A	Constructive Simulation Systems Development	05	22,609	17,887	17,887					U
99	0604746A	Automatic Test Equipment Development	05	8,636	8,813	8,813					U
100	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	8,843	10,487	10,487					U
101	0604768A	Brilliant Anti-Armor Submunition (BAT)	05								U
102	0604780A	Combined Arms Tactical Trainer (CATT) Core	05	20,808	15,068	15,068					U
103	0604798A	Brigade Analysis, Integration and Evaluation	05	96,286	89,716	146,655					U
104	0604802A	Weapons and Munitions - Eng Dev	05	18,037	80,365	99,165					U
105	0604804A	Logistics and Engineer Equipment - Eng Dev	05	43,229	75,098	75,098					U
106	0604805A	Command, Control, Communications Systems - Eng Dev	05	2,780	4,245	4,245					U
107	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	39,295	41,124	41,124					U
108	0604808A	Landmine Warfare/Barrier - Eng Dev	05	63,028	39,630	39,630					U
109	0604818A	Army Tactical Command & Control Hardware & Software	05	125,107	205,590	205,590					U
110	0604820A	Radar Development	05	11,821	15,983	15,983					U
111	0604822A	General Fund Enterprise Business System (GFEBs)	05	20,533	6,805	6,805					U
112	0604823A	Firefinder	05	2,850	9,235	9,235					U

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Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Se
98	0604742A	Constructive Simulation Systems Development	05	17,887	17,887		17,887	18,562		18,562	U
99	0604746A	Automatic Test Equipment Development	05	8,813	8,813		8,813	8,344		8,344	U
100	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	10,487	10,487		10,487	11,270		11,270	U
101	0604768A	Brilliant Anti-Armor Submunition (BAT)	05					10,000		10,000	U
102	0604780A	Combined Arms Tactical Trainer (CATT) Core	05	15,068	15,068		15,068	18,566		18,566	U
103	0604798A	Brigade Analysis, Integration and Evaluation	05	89,716	146,655		146,655	145,360		145,360	U
104	0604802A	Weapons and Munitions - Eng Dev	05	80,365	99,165		99,165	145,232		145,232	U
105	0604804A	Logistics and Engineer Equipment - Eng Dev	05	75,098	75,098		75,098	90,965		90,965	U
106	0604805A	Command, Control, Communications Systems - Eng Dev	05	4,245	4,245		4,245	9,910		9,910	U
107	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	41,124	41,124		41,124	39,238		39,238	U
108	0604808A	Landmine Warfare/Barrier - Eng Dev	05	39,630	39,630		39,630	34,684		34,684	U
109	0604818A	Army Tactical Command & Control Hardware & Software	05	205,590	205,590		205,590	164,409		164,409	U
110	0604820A	Radar Development	05	15,983	15,983		15,983	32,968		32,968	U
111	0604822A	General Fund Enterprise Business System (GFEBs)	05	6,805	6,805		6,805	49,554		49,554	U
112	0604823A	Firefinder	05	9,235	9,235		9,235	45,605		45,605	U

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113	0604827A	Soldier Systems - Warrior Dem/Val	05	15,694	12,393	12,393					U
114	0604852A	Suite of Survivability Enhancement Systems - EMD	05								U
115	0604854A	Artillery Systems - EMD	05	2,251	1,756	4,506					U
116	0605013A	Information Technology Development	05	48,028	74,236	74,236					U
117	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	116,215	155,584	155,584					U
118	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	213,034	184,221	184,221					U
119	0605029A	Integrated Ground Security Surveillance Response Capability (IGSSR-C)	05		4,980	4,980					U
120	0605030A	Joint Tactical Network Center (JTNC)	05	12,834	15,041	15,041					U
121	0605031A	Joint Tactical Network (JTN)	05	20,790	16,014	16,014					U
122	0605032A	TRACTOR TIRE	05	10,677	27,254	27,254		10,000		10,000	U
123	0605033A	Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)	05		5,032	5,032					U
124	0605034A	Tactical Security System (TSS)	05		2,904	2,904					U
125	0605035A	Common Infrared Countermeasures (CIRCM)	05	98,496	96,977	96,977	10,900	10,900		10,900	U
126	0605036A	Combating Weapons of Mass Destruction (CWMD)	05		2,089	2,089					U
127	0605037A	Evidence Collection and Detainee Processing	05								U

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113	0604827A	Soldier Systems - Warrior Dem/Val	05	12,393	12,393		12,393	16,127		16,127	U
114	0604852A	Suite of Survivability Enhancement Systems - EMD	05					98,600		98,600	U
115	0604854A	Artillery Systems - EMD	05	1,756	4,506		4,506	1,972		1,972	U
116	0605013A	Information Technology Development	05	74,236	74,236		74,236	81,776		81,776	U
117	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	155,584	155,584		155,584	172,361		172,361	U
118	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	184,221	184,221		184,221	199,778		199,778	U
119	0605029A	Integrated Ground Security Surveillance Response Capability (IGSSR-C)	05	4,980	4,980		4,980	4,418		4,418	U
120	0605030A	Joint Tactical Network Center (JTNC)	05	15,041	15,041		15,041	15,877		15,877	U
121	0605031A	Joint Tactical Network (JTN)	05	16,014	16,014		16,014	44,150		44,150	U
122	0605032A	TRACTOR TIRE	05	27,254	37,254		37,254	34,670	5,000	39,670	U
123	0605033A	Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)	05	5,032	5,032		5,032	5,207		5,207	U
124	0605034A	Tactical Security System (TSS)	05	2,904	2,904		2,904	4,727		4,727	U
125	0605035A	Common Infrared Countermeasures (CIRCM)	05	107,877	107,877		107,877	105,778	21,540	127,318	U
126	0605036A	Combating Weapons of Mass Destruction (CWMD)	05	2,089	2,089		2,089	6,927		6,927	U
127	0605037A	Evidence Collection and Detainee Processing	05					214		214	U

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128	0605038A	Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) Sensor Suite	05								U
129	0605041A	Defensive CYBER Tool Development	05		33,836	33,836		50,500		50,500	U
130	0605042A	Tactical Network Radio Systems (Low-Tier)	05		18,824	18,824					U
131	0605047A	Contract Writing System	05		20,663	20,663					U
132	0605049A	Missile Warning System Modernization (MWSM)	05								U
133	0605051A	Aircraft Survivability Development	05	77,395	41,133	51,133	73,110	73,110		73,110	U
134	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05		83,995	83,995					U
135	0605053A	Ground Robotics	05								U
136	0605350A	WIN-T Increment 3 - Full Networking	05	32,187							U
137	0605380A	AMF Joint Tactical Radio System (JTRS)	05	10,143	5,028	5,028					U
138	0605450A	Joint Air-to-Ground Missile (JAGM)	05	79,897	42,972	42,972					U
139	0605456A	PAC-3/MSE Missile	05	2,201							U
140	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05	222,074	252,811	272,811					U
141	0605625A	Manned Ground Vehicle	05	37,692							U
142	0605626A	Aerial Common Sensor	05	2							U
143	0605766A	National Capabilities Integration (MIP)	05	10,599	4,955	4,955					U

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128	0605038A	Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) Sensor Suite	05					16,125		16,125	U
129	0605041A	Defensive CYBER Tool Development	05	33,836	84,336		84,336	55,165		55,165	U
130	0605042A	Tactical Network Radio Systems (Low-Tier)	05	18,824	18,824		18,824	20,076		20,076	U
131	0605047A	Contract Writing System	05	20,663	20,663		20,663	20,322		20,322	U
132	0605049A	Missile Warning System Modernization (MWSM)	05					55,810		55,810	U
133	0605051A	Aircraft Survivability Development	05	114,243	124,243		124,243	30,879	30,100	60,979	U
134	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05	83,995	83,995		83,995	175,069		175,069	U
135	0605053A	Ground Robotics	05					70,760		70,760	U
136	0605350A	WIN-T Increment 3 - Full Networking	05								U
137	0605380A	AMF Joint Tactical Radio System (JTRS)	05	5,028	5,028		5,028	8,965		8,965	U
138	0605450A	Joint Air-to-Ground Missile (JAGM)	05	42,972	42,972		42,972	34,626		34,626	U
139	0605456A	PAC-3/MSE Missile	05								U
140	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05	252,811	272,811		272,811	336,420		336,420	U
141	0605625A	Manned Ground Vehicle	05								U
142	0605626A	Aerial Common Sensor	05								U
143	0605766A	National Capabilities Integration (MIP)	05	4,955	4,955		4,955	6,882		6,882	U

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144	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05	31,197	11,530	11,530					U
145	0605830A	Aviation Ground Support Equipment	05	13,528	2,142	2,142					U
146	0210609A	Paladin Integrated Management (PIM)	05	136,353	41,498	41,498					U
147	0303032A	TROJAN - RH12	05	5,022	4,273	4,273					U
148	0303267A	Auctioned Spectrum Relocation Fund	05	71,823							U
149	0303367A	Spectrum Access Research and Development	05	125,283							U
150	0304270A	Electronic Warfare Development	05	12,686	14,425	18,425					U
151	1205117A	Tractor Bears	05								U
		System Development & Demonstration		2,202,652	2,265,094	2,393,383	84,043	288,443	-78,700	209,743	
152	0604256A	Threat Simulator Development	06	27,157	25,675	25,675					U
153	0604258A	Target Systems Development	06	16,163	19,122	19,122					U
154	0604759A	Major T&E Investment	06	65,059	84,777	84,777					U
155	0605103A	Rand Arroyo Center	06	20,014	20,658	20,658					U
156	0605301A	Army Kwajalein Atoll	06	200,393	236,648	236,648					U
157	0605326A	Concepts Experimentation Program	06	18,705	25,596	25,596					U
158	0605502A	Small Business Innovative Research	06	220,833							U
159	0605601A	Army Test Ranges and Facilities	06	273,275	293,748	307,882					U
160	0605602A	Army Technical Test Instrumentation and Targets	06	52,254	52,404	64,127					U

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144	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05	11,530	11,530		11,530	23,467		23,467	U
145	0605830A	Aviation Ground Support Equipment	05	2,142	2,142		2,142	6,930		6,930	U
146	0210609A	Paladin Integrated Management (PIM)	05	41,498	41,498		41,498	6,112		6,112	U
147	0303032A	TROJAN - RH12	05	4,273	4,273		4,273	4,431	1,200	5,631	U
148	0303267A	Auctioned Spectrum Relocation Fund	05								U
149	0303367A	Spectrum Access Research and Development	05								U
150	0304270A	Electronic Warfare Development	05	14,425	18,425		18,425	14,616		14,616	U
151	1205117A	Tractor Bears	05					17,928		17,928	U
		System Development & Demonstration		2,427,837	2,681,826	-78,700	2,603,126	3,012,840	57,840	3,070,680	
152	0604256A	Threat Simulator Development	06	25,675	25,675		25,675	22,862		22,862	U
153	0604258A	Target Systems Development	06	19,122	19,122		19,122	13,902		13,902	U
154	0604759A	Major T&E Investment	06	84,777	84,777		84,777	102,901		102,901	U
155	0605103A	Rand Arroyo Center	06	20,658	20,658		20,658	20,140		20,140	U
156	0605301A	Army Kwajalein Atoll	06	236,648	236,648		236,648	246,663		246,663	U
157	0605326A	Concepts Experimentation Program	06	25,596	25,596		25,596	29,820		29,820	U
158	0605502A	Small Business Innovative Research	06								U
159	0605601A	Army Test Ranges and Facilities	06	293,748	307,882		307,882	307,588		307,588	U
160	0605602A	Army Technical Test Instrumentation and Targets	06	52,404	64,127		64,127	49,242		49,242	U

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161	0605604A	Survivability/Lethality Analysis	06	33,069	38,571	38,571					U
162	0605606A	Aircraft Certification	06	4,571	4,665	4,665					U
163	0605702A	Meteorological Support to RDT&E Activities	06	8,104	6,925	6,925					U
164	0605706A	Materiel Systems Analysis	06	20,203	21,677	21,677					U
165	0605709A	Exploitation of Foreign Items	06	10,396	12,415	12,415					U
166	0605712A	Support of Operational Testing	06	49,128	49,684	49,684					U
167	0605716A	Army Evaluation Center	06	52,265	55,905	55,905					U
168	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	901	7,959	7,959					U
169	0605801A	Programwide Activities	06	61,060	51,822	51,822					U
170	0605803A	Technical Information Activities	06	25,991	33,323	33,323					U
171	0605805A	Munitions Standardization, Effectiveness and Safety	06	48,335	40,545	40,545					U
172	0605857A	Environmental Quality Technology Mgmt Support	06	3,673	2,130	2,130					U
173	0605898A	Army Direct Report Headquarters - R&D - MHA	06	48,312	49,885	49,885					U
174	0606001A	Military Ground-Based CREW Technology	06								U
175	0606002A	Ronald Reagan Ballistic Missile Defense Test Site	06								U
176	0303260A	Defense Military Deception Initiative	06		2,000	2,000					U

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161	0605604A	Survivability/Lethality Analysis	06	38,571	38,571		38,571	41,843		41,843	U
162	0605606A	Aircraft Certification	06	4,665	4,665		4,665	4,804		4,804	U
163	0605702A	Meteorological Support to RDT&E Activities	06	6,925	6,925		6,925	7,238		7,238	U
164	0605706A	Materiel Systems Analysis	06	21,677	21,677		21,677	21,890		21,890	U
165	0605709A	Exploitation of Foreign Items	06	12,415	12,415		12,415	12,684		12,684	U
166	0605712A	Support of Operational Testing	06	49,684	49,684		49,684	51,040		51,040	U
167	0605716A	Army Evaluation Center	06	55,905	55,905		55,905	56,246		56,246	U
168	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	7,959	7,959		7,959	1,829		1,829	U
169	0605801A	Programwide Activities	06	51,822	51,822		51,822	55,060		55,060	U
170	0605803A	Technical Information Activities	06	33,323	33,323		33,323	33,934		33,934	U
171	0605805A	Munitions Standardization, Effectiveness and Safety	06	40,545	40,545		40,545	43,444		43,444	U
172	0605857A	Environmental Quality Technology Mgmt Support	06	2,130	2,130		2,130	5,087		5,087	U
173	0605898A	Army Direct Report Headquarters - R&D - MHA	06	49,885	49,885		49,885	54,679		54,679	U
174	0606001A	Military Ground-Based CREW Technology	06					7,916		7,916	U
175	0606002A	Ronald Reagan Ballistic Missile Defense Test Site	06					61,254		61,254	U
176	0303260A	Defense Military Deception Initiative	06	2,000	2,000		2,000	1,779		1,779	U

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177	0909999A	Financing for Cancelled Account Adjustments	06	65							U
		RDT&E Management Support		1,259,926	1,136,134	1,161,991					
178	0603778A	MLRS Product Improvement Program	07	21,202	9,663	34,763					U
179	0603813A	TRACTOR PULL	07	9,461	3,960	3,960					U
180	0605024A	Anti-Tamper Technology Support	07		3,638	3,638					U
181	0607131A	Weapons and Munitions Product Improvement Programs	07	5,678	14,517	14,517		5,100		5,100	U
182	0607133A	TRACTOR SMOKE	07	7,569	4,479	4,479					U
183	0607134A	Long Range Precision Fires (LRPF)	07		39,275	67,006					U
184	0607135A	Apache Product Improvement Program	07	62,964	66,441	66,441					U
185	0607136A	Blackhawk Product Improvement Program	07	64,011	46,765	46,765					U
186	0607137A	Chinook Product Improvement Program	07	31,122	91,848	91,848					U
187	0607138A	Fixed Wing Product Improvement Program	07	1,105	796	796					U
188	0607139A	Improved Turbine Engine Program	07	49,137	126,105	126,105					U
189	0607140A	Emerging Technologies from NIE	07	2,383	2,369	2,369					U
190	0607141A	Logistics Automation	07	1,318	4,563	4,563					U
191	0607142A	Aviation Rocket System Product Improvement and Development	07			8,000					U
192	0607143A	Unmanned Aircraft System Universal Products	07								U

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177	0909999A	Financing for Cancelled Account Adjustments	06								U
		RDT&E Management Support		1,136,134	1,161,991		1,161,991	1,253,845		1,253,845	
178	0603778A	MLRS Product Improvement Program	07	9,663	34,763		34,763	8,929		8,929	U
179	0603813A	TRACTOR PULL	07	3,960	3,960		3,960	4,014		4,014	U
180	0605024A	Anti-Tamper Technology Support	07	3,638	3,638		3,638	4,094		4,094	U
181	0607131A	Weapons and Munitions Product Improvement Programs	07	14,517	19,617		19,617	15,738		15,738	U
182	0607133A	TRACTOR SMOKE	07	4,479	4,479		4,479	4,513		4,513	U
183	0607134A	Long Range Precision Fires (LRPF)	07	39,275	67,006		67,006	102,014		102,014	U
184	0607135A	Apache Product Improvement Program	07	66,441	66,441		66,441	59,977		59,977	U
185	0607136A	Blackhawk Product Improvement Program	07	46,765	46,765		46,765	34,416		34,416	U
186	0607137A	Chinook Product Improvement Program	07	91,848	91,848		91,848	194,567		194,567	U
187	0607138A	Fixed Wing Product Improvement Program	07	796	796		796	9,981		9,981	U
188	0607139A	Improved Turbine Engine Program	07	126,105	126,105		126,105	204,304		204,304	U
189	0607140A	Emerging Technologies from NIE	07	2,369	2,369		2,369	1,023		1,023	U
190	0607141A	Logistics Automation	07	4,563	4,563		4,563	1,504		1,504	U
191	0607142A	Aviation Rocket System Product Improvement and Development	07		8,000		8,000	10,064		10,064	U
192	0607143A	Unmanned Aircraft System Universal Products	07					38,463		38,463	U

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193	0607665A	Family of Biometrics	07	7,179	12,098	12,098					U
194	0607865A	Patriot Product Improvement	07	87,537	49,482	49,482					U
195	0202429A	Aerostat Joint Project - COCOM Exercise	07	10,171	45,482	45,482					U
196	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07	30,669	30,455	30,455					U
197	0203735A	Combat Vehicle Improvement Programs	07	382,176	316,857	327,357					U
198	0203740A	Maneuver Control System	07	14,864	4,031	4,031					U
199	0203743A	155mm Self-Propelled Howitzer Improvements	07								U
200	0203744A	Aircraft Modifications/Product Improvement Programs	07		35,793	35,793					U
201	0203752A	Aircraft Engine Component Improvement Program	07	349	259	259					U
202	0203758A	Digitization	07	4,188	6,483	6,483					U
203	0203801A	Missile/Air Defense Product Improvement Program	07	3,029	5,122	53,722					U
204	0203802A	Other Missile Product Improvement Programs	07	49,191	7,491	7,491		1,080		1,080	U
205	0203808A	TRACTOR CARD	07	34,686	20,333	20,333					U
206	0205402A	Integrated Base Defense - Operational System Dev	07	10,324				3,450		3,450	U
207	0205410A	Materials Handling Equipment	07	386	124	124					U
208	0205412A	Environmental Quality Technology - Operational System Dev	07								U

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193	0607665A	Family of Biometrics	07	12,098	12,098		12,098	6,159		6,159	U
194	0607865A	Patriot Product Improvement	07	49,482	49,482		49,482	90,217		90,217	U
195	0202429A	Aerostat Joint Project - COCOM Exercise	07	45,482	45,482		45,482	6,749		6,749	U
196	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07	30,455	30,455		30,455	33,520		33,520	U
197	0203735A	Combat Vehicle Improvement Programs	07	316,857	327,357		327,357	343,175		343,175	U
198	0203740A	Maneuver Control System	07	4,031	4,031		4,031	6,639		6,639	U
199	0203743A	155mm Self-Propelled Howitzer Improvements	07					40,784		40,784	U
200	0203744A	Aircraft Modifications/Product Improvement Programs	07	35,793	35,793		35,793	39,358		39,358	U
201	0203752A	Aircraft Engine Component Improvement Program	07	259	259		259	145		145	U
202	0203758A	Digitization	07	6,483	6,483		6,483	4,803		4,803	U
203	0203801A	Missile/Air Defense Product Improvement Program	07	5,122	53,722		53,722	2,723	15,000	17,723	U
204	0203802A	Other Missile Product Improvement Programs	07	7,491	8,571		8,571	5,000		5,000	U
205	0203808A	TRACTOR CARD	07	20,333	20,333		20,333	37,883		37,883	U
206	0205402A	Integrated Base Defense - Operational System Dev	07		3,450		3,450				U
207	0205410A	Materials Handling Equipment	07	124	124		124	1,582		1,582	U
208	0205412A	Environmental Quality Technology - Operational System Dev	07					195		195	U

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209	0205456A	Lower Tier Air and Missile Defense (AMD) System	07	61,653	69,417	73,417					U
210	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	36,032	22,044	38,044					U
211	0208053A	Joint Tactical Ground System	07	28,015	12,649	12,649					U
213	0303028A	Security and Intelligence Activities	07	13,156	11,619	11,619					U
214	0303140A	Information Systems Security Program	07	31,032	38,280	38,280					U
215	0303141A	Global Combat Support System	07	25,304	27,223	28,667					U
216	0303142A	SATCOM Ground Environment (SPACE)	07	9,045	18,815	18,815					U
217	0303150A	WWMCCS/Global Command and Control System	07	6,810	4,718	4,718					U
219	0305127A	Foreign Counterintelligence Activities	07			4,100					U
220	0305172A	Combined Advanced Applications	07								U
221	0305179A	Integrated Broadcast Service (IBS)	07	750							U
222	0305204A	Tactical Unmanned Aerial Vehicles	07	15,370	8,218	8,218					U
223	0305206A	Airborne Reconnaissance Systems	07	20,725	11,799	11,799					U
224	0305208A	Distributed Common Ground/Surface Systems	07	25,592	32,284	32,284					U
225	0305219A	MQ-1C Gray Eagle UAS	07	22,285	13,470	30,970					U
226	0305232A	RQ-11 UAV	07		1,613	1,613					U
227	0305233A	RQ-7 UAV	07	11,797	4,597	7,597					U
228	0307665A	Biometrics Enabled Intelligence	07				7,104	8,854		8,854	U

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209	0205456A	Lower Tier Air and Missile Defense (AMD) System	07	69,417	73,417		73,417	78,926		78,926	U
210	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	22,044	38,044		38,044	102,807		102,807	U
211	0208053A	Joint Tactical Ground System	07	12,649	12,649		12,649				U
213	0303028A	Security and Intelligence Activities	07	11,619	11,619		11,619	13,807		13,807	U
214	0303140A	Information Systems Security Program	07	38,280	38,280		38,280	132,438		132,438	U
215	0303141A	Global Combat Support System	07	27,223	28,667		28,667	64,370		64,370	U
216	0303142A	SATCOM Ground Environment (SPACE)	07	18,815	18,815		18,815				U
217	0303150A	WWMCCS/Global Command and Control System	07	4,718	4,718		4,718	10,475		10,475	U
219	0305127A	Foreign Counterintelligence Activities	07		4,100		4,100				U
220	0305172A	Combined Advanced Applications	07					1,100		1,100	U
221	0305179A	Integrated Broadcast Service (IBS)	07								U
222	0305204A	Tactical Unmanned Aerial Vehicles	07	8,218	8,218		8,218	9,433	7,492	16,925	U
223	0305206A	Airborne Reconnaissance Systems	07	11,799	11,799		11,799	5,080	15,000	20,080	U
224	0305208A	Distributed Common Ground/Surface Systems	07	32,284	32,284		32,284	24,700		24,700	U
225	0305219A	MQ-1C Gray Eagle UAS	07	13,470	30,970		30,970	9,574		9,574	U
226	0305232A	RQ-11 UAV	07	1,613	1,613		1,613	2,191		2,191	U
227	0305233A	RQ-7 UAV	07	4,597	7,597		7,597	12,773		12,773	U
228	0307665A	Biometrics Enabled Intelligence	07	7,104	8,854		8,854	2,537	6,036	8,573	U

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229	0310349A	Win-T Increment 2 - Initial Networking	07	3,649	4,867	4,867					U
230	0708045A	End Item Industrial Preparedness Activities	07	58,503	62,287	62,287					U
231	1203142A	SATCOM Ground Environment (SPACE)	07								U
232	1208053A	Joint Tactical Ground System	07								U
9999	9999999999	Classified Programs		4,536	4,625	4,625					U
		Operational Systems Development		1,264,953	1,296,954	1,462,929	7,104	18,484		18,484	
233	0901560A	Continuing Resolution Programs	20		32,395	32,395	-99,022	-99,022		-99,022	U
		Undistributed			32,395	32,395	-99,022	-99,022		-99,022	
Total Research, Development, Test & Eval, Army				7,861,744	7,547,794	7,897,415	1,500	233,300	-78,700	154,600	

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229	0310349A	Win-T Increment 2 - Initial Networking	07	4,867	4,867		4,867	4,723		4,723	U
230	0708045A	End Item Industrial Preparedness Activities	07	62,287	62,287		62,287	60,877		60,877	U
231	1203142A	SATCOM Ground Environment (SPACE)	07					11,959		11,959	U
232	1208053A	Joint Tactical Ground System	07					10,228		10,228	U
9999	9999999999	Classified Programs		4,625	4,625		4,625	7,154		7,154	U
		Operational Systems Development		1,304,058	1,481,413		1,481,413	1,877,685	43,528	1,921,213	
233	0901560A	Continuing Resolution Programs	20	-66,627	-66,627		-66,627				U
		Undistributed		-66,627	-66,627		-66,627				
Total Research, Development, Test & Eval, Army				7,627,994	8,130,715	-78,700	8,052,015	9,425,440	119,368	9,544,808	

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Night Vision Systems - Eng Dev	0604710A	94	05.....	158

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TROJAN - RH12	0303032A	147	05.....	1090
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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Communications Systems - Eng Dev
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	2.780	4.245	9.910	-	9.910	5.618	5.375	2.210	2.190	Continuing	Continuing
593: Joint Battle Command - Platform (JBC-P)	-	2.780	4.245	9.910	-	9.910	5.618	5.375	2.210	2.190	Continuing	Continuing

Note

PM Mission Command (MC), under PEO C3T, manages Joint Battle Command-Platform (JBC-P) as well as the Command Post Computing Environment (CP CE) and Mounted Computing Environment (MCE) efforts associated to the Army's Common Operating Environment (COE) initiative. In an attempt to streamline work on the COE, at the end of 1QFY2017, PM MC assigned the CP CE team to lead the COE effort and reassigned the MCE's management of engineering efforts from JBC-P to CP CE. This has allowed JBC-P to shift its focus to developing next generation core capabilities, in order to ensure JBC-P stays technologically relevant and most importantly, cyber resilient.

Effective FY2016, the Army segregated the costs of MCE Proj/PE 604818.EJ5, from JBC-P, Proj/PE 0604805A/593, in support of MCE efforts associated to the COE. Effective 1QFY2017, MCE funds have been managed by the PM MC's CP CE team.

A. Mission Description and Budget Item Justification

The Joint Battle Command - Platform (JBC-P) program is the cornerstone of Joint Forces Command and Control (C2) Situational Awareness (SA) and communications. JBC-P provides secure Blue Force Tracking (BFT) capability in Platforms and Command Posts, providing soldiers and commanders a map-based Common Operating Picture of the battlefield, as a result, reducing fratricide.

PdM JBC-P, under PM Mission Command (MC) has partnered with the Communications-Electronics Research, Development and Engineering Center's (CERDEC) Space and Terrestrial Communications Directorate (S&TCD) on the BFT Network Evolving and eXtending Transport (NEXT) integrated planning team (IPT). This IPT has conducted a requirements analysis. Systems engineering studies/planning activities are underway to develop the evolution path of the BFT Network, focusing on 2025 and beyond.

Funding was increased in both FY16 and FY18 to assist PdM JBC-P in its endeavor to fully replicate the operational BFT network; S&TCD is working on developing a model of the current BFT-2 waveform to test in the BFT portion of their Network Test Lab. This Test Lab provides the Government the ability to test proposed fixes, conduct regression testing of future Software and Firmware releases, and replicate any problems the system may experience without impacting the operational network.

A potential Science and Technology (S&T) effort has been identified; research and development of an expeditionary JBC-P Network Services Gateway (NSG) capability which will fill the capability gap of connecting the Lower Tactical Internet (LTI) to the Beyond Line of Site (BLOS) BFT network in an expeditionary environment, when separated from any existing vehicular or Command Post (CP) NSG capability. This effort is currently being led by PdM JBC-P and could potentially develop into an S&T project in the next FY.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0604805A / <i>Command, Control, Communications Systems - Eng Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	2.683	4.245	9.814	-	9.814
Current President's Budget	2.780	4.245	9.910	-	9.910
Total Adjustments	0.097	0.000	0.096	-	0.096
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.184	-			
• SBIR/STTR Transfer	-0.087	-			
• Adjustments to Budget Years	0.000	0.000	0.096	-	0.096

Change Summary Explanation

FY 2016 reprogramming provided additional development and testing of Blue Force Tracking 2 within the Joint Battle Command - Platform product.

FY 2018 Funding was increased to assist PdM JBC-P in its endeavor to fully replicate the operational Blue Force Tracking network; development and test.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Communications Systems - Eng Dev</i>				Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
593: <i>Joint Battle Command - Platform (JBC-P)</i>	-	2.780	4.245	9.910	-	9.910	5.618	5.375	2.210	2.190	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

PM Mission Command (MC), under PEO C3T, manages Joint Battle Command-Platform (JBC-P) as well as the Command Post Computing Environment (CP CE) and Mounted Computing Environment (MCE) efforts associated to the Army's Common Operating Environment (COE) initiative. In an attempt to streamline work on the COE, at the end of 1QFY2017, PM MC assigned the CP CE team to lead the COE effort and reassigned the MCE's management of engineering efforts from JBC-P to CP CE. This has allowed JBC-P to shift its focus to developing next generation core capabilities, in order to ensure JBC-P stays technologically relevant and most importantly, cyber resilient.

Effective FY2016, the Army segregated the costs of MCE Project/PE 604818.EJ5, from JBC-P, Project/PE 0604805A/593, in support of MCE efforts associated to the COE. Effective 1QFY2017, MCE funds have been managed by the PM MC's CP CE team.

A. Mission Description and Budget Item Justification

The Joint Battle Command - Platform (JBC-P) program is the cornerstone of Joint Forces Command and Control (C2) Situational Awareness (SA) and communications. JBC-P provides secure Blue Force Tracking (BFT) capability in Platforms and Command Posts, providing soldiers and commanders a map-based Common Operating Picture of the battlefield, as a result, reducing fratricide.

PdM JBC-P, under PM Mission Command (MC) has partnered with the Communications-Electronics Research, Development and Engineering Center's (CERDEC) Space and Terrestrial Communications Directorate (S&TCD) on the BFT Network Evolving and eXtending Transport (NEXT) integrated planning team (IPT). This IPT has conducted a requirements analysis. Systems engineering studies/planning activities are underway to develop the evolution path of the BFT Network, focusing on 2025 and beyond.

Funding was increased in both FY16 and FY18 to assist PdM JBC-P in its endeavor to fully replicate the operational BFT network; S&TCD is working on developing a model of the current BFT-2 waveform to test in the BFT portion of their Network Test Lab. This Test Lab provides the Government the ability to test proposed fixes, conduct regression testing of future Software and Firmware releases, and replicate any problems the system may experience without impacting the operational network.

A potential Science and Technology (S&T) effort has been identified; research and development of an expeditionary JBC-P Network Services Gateway (NSG) capability which will fill the capability gap of connecting the Lower Tactical Internet (LTI) to the Beyond Line of Site (BLOS) BFT network in an expeditionary environment, when separated from any existing vehicular or Command Post (CP) NSG capability. This effort is currently being led by PdM JBC-P and could potentially develop into an S&T project in the next FY.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Communications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>Title: Software Development</p> <p>Description: Develop capabilities, product applications, platform interoperability, and system services across the JBC-P family of systems, to include the development of capabilities to meet Key Performance Parameters (KPPs), and other system attributes. Develop Multi-Level Security Domains for Network, Users, and Information. Effective 1QFY2017, PM Mission Command's Command Post Computing Environment (CP CE) team has led the integration of the MCE into the COE; efforts are exclusively funded through the MCE funding line.</p> <p>FY 2016 Accomplishments: Developed capabilities, product applications, platform interoperability, and system services across the JBC-P family of systems, to include the development of capabilities to meet Key System Attributes (KSAs) in the CDD (in lieu of CPD). Initial hybrid operating system development to port Android in to JBC-P and began systems engineering to improve the BFT-2 Network. Also developed unique software and integration capabilities in support of the Mounted Computing Environment (MCE), part of the Common Operating Environment (COE).</p> <p>FY 2017 Plans: Full fielding of JBC-P hardware with 1.6.0.6 software commenced in FY16. There is no further significant software development required beyond potential software patching to mitigate issues that may occur in the field.</p> <p>FY 2018 Plans: Full fielding of JBC-P hardware with 1.6.0.6 software will continue. There is no further significant software development required beyond potential software patching to mitigate issues that may occur in the field. JBC-P will move into Post Deployment Software Support (PDSS) in FY19.</p>	0.770	0.200	0.200
<p>Title: Software/Systems Engineering</p> <p>Description: Perform Software/Systems Engineering in support of the development of JBC-P capabilities, applications, and services, to include, but not limited to, conducting engineering studies, architecture development (both software and network), system analyses, technical readiness assessments, technical interchange meetings/events, and development of related reports and other deliverables. Effective 1QFY2017, PM Mission Command's Command Post Computing Environment (CP CE) team has led the integration of the MCE into the COE; efforts are exclusively funded through the MCE funding line.</p> <p>FY 2016 Accomplishments: Continued system engineering efforts for JBC-P balance of CDD threshold requirements and support of the Battle Command product and improvements to the BFT-2 Network.</p> <p>FY 2017 Plans:</p>	1.334	2.669	7.810

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Communications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Continue system engineering efforts for JBC-P balance of CDD threshold requirements and support of the Battle Command product line. Conduct software systems engineering for the integration of the BFT 2.0 Transceiver Waveform Model, Virtual SNCC, Virtual Network Services Gateway (NSG), and continued Modeling and Simulation (M&S) for Systems Engineering, Architecture, and Component Characterization & Validation, Satellite Communications (SATCOM).</p> <p>FY 2018 Plans: Continued system engineering efforts for JBC-P balance of CDD threshold requirements and support of the Battle Command product line. Conduct software systems engineering for the integration of the BFT 2.0 Transceiver Waveform Model, Virtual Satellite Network Control Center (SNCC), Virtual Network Services Gateway (NSG), and continue Modeling and Simulation (M&S) for Systems Engineering, Architecture, and Component Characterization & Validation, Satellite Communications (SATCOM).</p>				
<p>Title: Test, Evaluation and Integration</p> <p>Description: Plan and conduct system software acceptance testing from CDD for baseline products, Integration Events (i.e., tests and assessments) in support of the JBC-P Family of Systems, to include Risk Reduction Events, vulnerability testing, and Army Interoperability Certification (AIC) testing. MCE test efforts are exclusively funded through the MCE funding line. Effective 1QFY2017, PM Mission Command's Command Post Computing Environment (CP CE) team has led the integration of the MCE into the COE; efforts are exclusively funded through the MCE funding line.</p> <p>FY 2016 Accomplishments: Tested software capability, Developmental Testing (DTs), and Risk Reduction Events (RREs) for continued support of JBC-P.</p> <p>FY 2017 Plans: Conducting testing on enhancements to the JBC-P system resulting from integration of the BFT 2.0 Transceiver Waveform Model, Virtual Satellite Network Control Center (SNCC), Virtual Network Services Gateway (NSG), and Modeling and Simulation (M&S) for Systems Engineering, Architecture, and Component Characterization & Validation, Satellite Communications (SATCOM).</p> <p>FY 2018 Plans: Will continue to conduct testing on enhancements to the JBC-P system resulting from integration of the BFT 2.0 Transceiver Waveform Model, Virtual Satellite Network Control Center (SNCC), Virtual Network Services Gateway (NSG), and Modeling and Simulation (M&S) for Systems Engineering, Architecture, and Component Characterization & Validation, Satellite Communications (SATCOM).</p>		0.152	0.365	0.600
<p>Title: Program Management</p> <p>Description: JBC-P Program Management, including technical, logistics, and business staff oversight.</p>		0.524	1.011	1.300

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Communications Systems - Eng Dev	Project (Number/Name) 593 / Joint Battle Command - Platform (JBC-P)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Effective 1QFY2017, PM Mission Command's Command Post Computing Environment (CP CE) team has led the integration of the MCE into the COE; efforts are exclusively funded through the MCE funding line.			
<i>FY 2016 Accomplishments:</i> Provided technical, logistics and business oversight for JBC-P FoS software development and system engineering activities. Program Management includes funds execution, contract management, and logistical support to program's RDT&E activities.			
<i>FY 2017 Plans:</i> Will provide technical, logistics and business oversight for JBC-P family of systems (FoS) system engineering activities. Program Management includes funds execution, contract management, and logistical support to program's RDT&E activities and oversight of the BFT Network Evolving and eXtending Transport (NEXT) integrated planning team (IPT).			
<i>FY 2018 Plans:</i> Will continue to provide technical, logistics and business oversight for JBC-P FoS software development and system engineering activities. Program Management includes funds execution, contract management, and logistical support the BFT Network Evolving and eXtending Transport (NEXT) integrated planning team (IPT).			
Accomplishments/Planned Programs Subtotals	2.780	4.245	9.910

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• Joint Battle Command	137.457	227.573	282.549	-	282.549	176.358	321.963	304.399	220.095	0	1,670.394
- Platform: OPA W61990											

Remarks
Procurement funding in Fiscal Year 2016 through 2022 (Base funding) is designated for the procurement, fielding, and program management of JBC-P Family of Systems including JBC-P and JBC-P Log.

D. Acquisition Strategy
The JBC-P Capabilities Development Document in lieu of Capabilities Production Document (CDD ILO CPD) was Joint Requirements Oversight Council (JROC) approved March 2013. Completed Initial Operational Test & Evaluation (IOT&E) as part of Network Integration Evaluation (NIE) 13.2 in 3QFY13. The IOT&E tested the JBC-P system software on existing FBCB2 hardware (non-dismountable vehicle systems) and future production-representative hardware. On completion of Army Interoperability Certification (AIC) and Joint Interoperability Test Certification (JITC), MDA authorized Full Rate Production (FRP) in 1QFY2014. First unit equipped (FUE) was successfully conducted 3QFY15.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0604805A / <i>Command, Control, Communications Systems - Eng Dev</i>	593 / <i>Joint Battle Command - Platform (JBC-P)</i>

As encouraged by DoD policy, developmental efforts are being performed through intra-government collaboration. System engineering efforts are being performed by CERDEC's Space and Terrestrial Communications Directorate (S&TCD); Command, Power and Integration (CP&I) & the Intelligence and Information Warfare Directorate (I2WD). Hardware along with fielding, training and field support efforts are obtained through existing competitively awarded contracts.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	39.295	41.124	39.238	-	39.238	45.503	50.124	51.490	51.213	Continuing	Continuing
812: <i>Mil HIV Vac&Drug Dev</i>	-	0.332	4.557	1.183	-	1.183	1.192	1.215	1.244	1.080	Continuing	Continuing
832: <i>Field Medical Systems Engineering Development</i>	-	23.119	23.532	24.812	-	24.812	29.438	32.443	33.347	32.743	Continuing	Continuing
849: <i>Infec Dis Drug/Vacc Ed</i>	-	15.461	12.922	13.243	-	13.243	14.873	16.466	16.899	17.390	Continuing	Continuing
VS8: <i>MEDEVAC Mission Equipment Package (MEP) - End Dev</i>	-	0.383	0.113	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) funds advanced development of medical materiel within the System Demonstration and Low Rate Initial Production portions of the acquisition life cycle using 6.5 (System Development and Demonstration) funding. It supports products successfully developed in the Systems Integration portion of the Systems Development and Demonstration phases through completion of the Milestone C Decision Review. Commercially-off-the-shelf (COTS) medical products are also tested and evaluated for military use, when available. This PE primarily includes pivotal (conclusive) human clinical trials necessary for licensure by the Food and Drug Administration (FDA).

Project 812 funds military relevant human immunodeficiency virus (HIV) medical countermeasures. These funds provide for engineering and manufacturing development of candidate vaccines and drugs to permit large-scale field testing. Development focused on military unique needs effecting manning, mobilization, and deployment. Products from this project will normally transition to Department of Defense (DoD) Health Programs or Other Procurement, Army (OPA) Funds.

Project 832 funds the engineering and manufacturing development of medical products for enhanced combat casualty care and follow-on care, including rehabilitation. Mature COTS medical products are also evaluated for military use. Consideration will also be given to reduce the medical sustainment footprint through smaller weight and cube volume, or equipment independence from supporting materiel. Products from this project will normally transition to OPA Funds.

Project 849 funds development of candidate medical countermeasures for military relevant infectious diseases. These products fall in four major areas: vaccines, drugs, diagnostic kits/devices, and insect control measures to limit exposure and disease transmission. FDA approval is a mandatory obligation for all military products placed into the hands of medical providers or service members for human use. Products from this project will normally transition to DoD Health Programs or OPA funds.

Project VS8 program receives products that transition from VS7 and funds effort to complete research and development for the medical evacuation (MEDEVAC) Mission Essential Packages (MEPs) to support 256 Medical Evacuation legacy helicopters. The Army's force design increased the number of air frames in the force from 12 to 15 aircraft for 37 MEDEVAC companies to better meet operational needs.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>
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These Projects are managed by United States (U.S.) Army Medical Materiel Development Activity (USAMMDA) and U.S. Army Medical Materiel Agency (USAMMA) of the U.S. Army Medical Research and Materiel Command.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	45.412	41.124	43.603	-	43.603
Current President's Budget	39.295	41.124	39.238	-	39.238
Total Adjustments	-6.117	0.000	-4.365	-	-4.365
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.616	-			
• Adjustments to Budget Years	-4.501	0.000	-4.402	-	-4.402
• Civ Pay Adjustments	0.000	0.000	0.037	-	0.037

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev	Project (Number/Name) 812 / Mil HIV Vac&Drug Dev
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
812: Mil HIV Vac&Drug Dev	-	0.332	4.557	1.183	-	1.183	1.192	1.215	1.244	1.080	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds militarily relevant human immunodeficiency virus (HIV) medical countermeasures. These funds provide for engineering and manufacturing development of candidate vaccines and drugs to permit large-scale field testing. Development is focused on militarily unique needs effecting manning, mobilization, and deployment.

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

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

	FY 2016	FY 2017	FY 2018
Title: Military HIV Vaccine and Drug Development	0.332	4.557	1.183
Description: This effort provides funds for engineering and manufacturing development of candidate vaccines and drugs to permit large-scale field testing of vaccines for medical countermeasures to HIV.			
FY 2016 Accomplishments: Begin early testing of new Envelope glycoprotein 120 bivalent products in prime-boost formal will allow for efficacy site preparation and potential trial start in first quarter (Q1) of Fiscal Year (FY) 17. Begin final site selection and ramp up of efficacy trial activities.			
FY 2017 Plans: Will conduct a Phase IIB efficacy study (trial to evaluate efficacy in patients with the disease) for the global HIV vaccine candidate.			
FY 2018 Plans: Will continue support of Regional vaccine Phase III (large safety and efficacy trial) in sub-Saharan Africa. Will support Global vaccine efficacy studies at multiple international Army-funded study sites. Support entails the performance of later stage Phase II (safety and effectiveness) and Phase III (pivotal effectiveness) clinical trials of selected Global HIV vaccine.			
Accomplishments/Planned Programs Subtotals	0.332	4.557	1.183

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

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev	Project (Number/Name) 812 / Mil HIV Vac&Drug Dev

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

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev				Project (Number/Name) 832 / Field Medical Systems Engineering Development			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
832: Field Medical Systems Engineering Development	-	23.119	23.532	24.812	-	24.812	29.438	32.443	33.347	32.743	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds the engineering and manufacturing development of medical products for enhanced combat casualty care and follow-on care, including rehabilitation. This Project funds pivotal (conclusive) human clinical trials or mechanical engineering evaluations for effectiveness of devices or biologics (products derived from living organisms) to fulfill unique military requirements. Mature commercial-off-the-shelf (COTS) medical products are also evaluated for military use. Consideration is also given to reducing the medical sustainment footprint through smaller weight and cube volume, or equipment independence from supporting materiel. This work is frequently completed through a laboratory/contractor team with the contractor obtaining the United States (U.S.) Food and Drug Administration (FDA) licensure for sale of the product.

Major contractors/intra-governmental agencies include: IGR Enterprises, Inc.; Army Medical Department Board Test Center; Se Qual Technologies, Inc; Enginivity, Inc.; Ultrasound Diagnostics, Inc.; HemCon Medical Technologies; Cerdak Ltd; Hemerus Medical, LLC; Fast Track Drugs & Biologics, LLC; Integrated Medical Systems, Inc.; National Institutes of Health National Heart, Lung and Blood Institute (NHLBI); and the U.S. Army Aeromedical Research Laboratory, Walter Reed Army Institute of Research (WRAIR) and Institute of Surgical Research (ISR) for user evaluation.

Others collaborating in this Project include Program Executive Office (PEO) Soldier, PEO Combat Service Support (CSS), and Naval Undersea Warfare Center.

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

	FY 2016	FY 2017	FY 2018
Title: Field Medical Systems Engineering Development PM Medical Devices	3.060	3.126	2.519
Description: This effort funds the engineering and manufacturing development of medical products for enhanced combat casualty care managed by Program Manager (PM)-Medical Devices.			
FY 2016 Accomplishments:			
Oxygen Generator (15 LPM) System: In Fiscal Year (FY) 16, transition out of Advanced Development and is to be procured with Army procurement (OPA) funds. Replacement for the M-138 Steam Sterilizer: FDA clearance and Milestone C achieved. Request for Proposals projected early FY16. Medical Equipment Sets Development: Continue development and testing to ensure the most current and cost effective devices are being utilized. Equipment is selected for modernization based on its own life cycle plan as part of Sets, Kits and Outfits (SKO). Modernization also occurs if a product will be discontinued, new models will be available and new technology will be developed to meet the users need. Traumatic Brain Injury (TBI) Diagnostic Assay System Increment II Point of Care Device: This product is transitioning from Army to Defense Health Program Research, Development, Test &			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Evaluation (RDTE) for further development. Noninvasive Neurodiagnostics TBI: The three technologies currently involve the Eye-Tracking System, the QEEG and Balance Platforms. None of these systems are anticipated to be ready at this time for transition to advanced development. Advanced Wound Dressing: Continuing to conduct comparative studies for the Advanced Wound Care commercial products (in-vivo animal or human studies).</p> <p>FY 2017 Plans: Oxygen Generator (15 LPM) System: will undergo airworthiness testing and will be procured with Army procurement (OPA) funds. Medical Equipment Sets COTS Modernization of Life Cycle Equipment: Medical Equipment Sets Development: Will continue development and testing to ensure the most current and cost effective devices are being utilized. Equipment will be selected for modernization based on its own life cycle plan as part of a SKO. Modernization also occurs if a product will be discontinued, new models will be available and new improved technology will be developed to meet the user's need. Junctional / Noncompressible Hemorrhage Control Agent: Will complete studies to achieve a broader indication, improve device feasibility, increase shelf life, decrease unit price, and improve manufacturing efficiency..</p> <p>FY 2018 Plans: Medical Equipment Sets COTS Modernization of Life Cycle Equipment: Will continue development and testing to ensure the most current and cost effective devices are being utilized. Equipment will be selected for modernization based on its own life cycle plan as part of SKO. Junctional / Noncompressible Hemorrhage Control Agent: Developmental efforts will be completed; available for procurement.</p>				
<p>Title: Field Medical Systems Engineering Development PM Pharmaceuticals</p> <p>Description: Funding is provided for engineering and manufacturing development of medical products managed by PM Pharmaceuticals for enhanced combat casualty care and follow-on care, including rehabilitation.</p> <p>FY 2016 Accomplishments: Cryopreserved Platelets: Continue the Phase 2 Efficacy study in patients with complex cardiac bypass and/or thrombocytopenic patients with World Health Organization Grade 2 or higher bleeding. Continue development of Phase 3 (expanded safety, efficacy and dosing) clinical testing and protocols for pivotal study. Freeze-Dried Plasma Program: Continue the Phase 2 (safety and initial efficacy) clinical trials. Continue manufacturing development and validation of Freeze-Dried Plasma batches.</p> <p>FY 2017 Plans: Cryopreserved Platelets: Will continue the Phase 2 safety and efficacy study in patients with complex cardiac bypass and/or thrombocytopenic patients with World Health Organization Grade 2 or higher bleeding. Will continue development of Phase 3 (expanded safety, efficacy and dosing) clinical testing and protocols for pivotal study. Will begin the manufacturing development and validation of Cryopreserved platelet batches. Freeze-Dried Plasma Program: Will continue the Phase 2 (safety and</p>		13.978	13.583	14.951

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>efficacy) clinical trials and prepare for Phase 3 clinical trial (confirming safety and efficacy in diverse populations). Will continue manufacturing development and validation of Freeze-Dried Plasma batches.</p> <p>FY 2018 Plans: Cryopreserved Platelets: Will complete the in-life portion of the Phase 2 safety and effectiveness study in patients with complex cardiac bypass and/or who have an abnormally low amount of platelets. Will continue development of clinical testing protocols for of Phase 3 (expanded safety, effectiveness and dosing) pivotal study. Will continue the manufacturing development and validation of Cryopreserved platelet batches. Freeze-Dried Plasma Program: Based on additional guidance from the FDA, a new Phase 1 dose escalation study that began in FY17 will continue in FY18. Will continue the preparation for a Phase 2 prospective clinical study (safety and efficacy study that follows patients over time to measure progress/outcomes).</p>				
<p>Title: Field Medical Systems Engineering Development PM Integrated Clinical Systems (ICS)</p> <p>Description: This effort funds the engineering and manufacturing development of medical products managed by PM-Integrated Clinical Systems (PM-ICS) for enhanced combat casualty care and follow-on care, including rehabilitation.</p> <p>FY 2016 Accomplishments: Pre-Hospital Medical Informatics Transport: Combat Developers begin the engineering and manufacturing development phase for the Pre-Hospital Medical Informatics Transport.</p>		4.213	-	-
<p>Title: Field Medical Systems Engineering Development PM Medical Support Systems</p> <p>Description: This effort funds the engineering and manufacturing development of medical products managed by PM Medical Support Systems for enhanced combat casualty care and follow-on care, including rehabilitation.</p> <p>FY 2016 Accomplishments: Modernization of medical equipment sets: As part of the medical equipment sets, complete evaluations of commercial litters, cold chain storage devices and commercial items. Airworthiness Testing: Continue to evaluate modernization efforts and conduct airworthiness testing for medical equipment sets Medical Evacuation and Treatment Vehicles Medical Equipment Set and Mission Essential Package with products covering air and ground medical evacuation. Per Army Regulation 70-62, Airworthiness Qualification of Aircraft Systems, all "carry-on" equipment, to include medical devices, must have an Airworthiness release. Medical Evacuation and Treatment Vehicles Medical Equipment Set and Mission Essential Package (MEP): Continue collaboration with Program Executive Office (PEO) Combat Support/Combat Service Support (PEO CS&CSS) and PEO Ground Combat Systems (PEO GCS) on development efforts for AMPV evacuation and treatment platforms. Environmental Sentinel Biomonitor (ESB): Finish Advanced Development of Environmental Sentinel Biomonitor with a MS C planned for early FY16 and transition product to procurement. Waste Treatment System for the Combat Support Hospital: Transition from Small Business Innovation Research in FY16 due to delays in development/ prototype evaluation. Start development of Waste Treatment System</p>		1.868	6.823	3.456

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>

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

(WTS) for the Combat Support Hospital. Altitude Readiness Management System (ARMS): Transition the ARMS product to PEO Soldier and closeout the Advance Development effort. Improved Vector Trap: Continue prototype development of Vector Traps for user evaluation. Portable Vector Identification Workstation: Complete user evaluation of the field deployable vector identification workstation and add to Entomology Set.

FY 2017 Plans:

Modernization of medical equipment sets (MES): As part of the MES modernization, will evaluate the Combat Support Hospital water distribution system, environmental sampling devices, rodent collection/evaluation products, blood component freezers and commercial items. Airworthiness Testing: Will continue to conduct airworthiness testing for MES and MEP with products covering air and ground medical evacuation. Per Army Regulation 70-62, Airworthiness Qualification of Aircraft Systems, all "carry-on" equipment, to include medical devices, must have an Airworthiness release. Medical Evac and Treatment Vehicles MES, MEP, and casualty evacuation (CASEVAC): Will transition from Program Element (PE) 0603807 (Medical Systems Advanced Development) / Project 836 (Field Medical Systems Advanced Development). Will finalize the MES and MEP in collaboration with Program Executive Office Ground Combat Systems (PEO GCS) on development efforts for the Armored Multi-Purpose Vehicle Evacuation and Treatment platforms. Will work with PEO Combat Support/Service Support (CS & CSS) for development and testing of the CASEVAC system for the Joint Light Tactical Vehicle (JLTV). Waste Treatment System (WTS) for the CSH: Product will transition from Rapid Innovation Fund for developmental testing and user evaluation. Improved Flying Vector Trap (IFVT) (Formerly: Improved Vector Tent Traps): Will transition from PE 0603807 (Medical Systems Advanced Development) / Project 836 (Field Medical Systems Advanced Development). Will complete developmental and user testing of the IFVT. Soldier Optimization Decision Aids (SODA): Will develop and conduct Independent Validation and Verification and limited user testing of the Cold Weather Ensemble Decision Aid and Heat Strain Decision Aid; and prepare for networkiness certification and platform integration in collaboration with PEO Soldier for the Nett Warrior Platform. Hard-Walled Shelter Modernization (Radiation Panel): Will complete developmental and user testing of the Rigid Wall Shelter transportation and vibration modifications.

FY 2018 Plans:

Modernization of medical equipment sets: Will evaluate the Field Hospital waste water collection system, vector sampling devices, air sampling products, and other commercial items for medical equipment sets. Airworthiness Testing: Will continue to conduct airworthiness testing for Medical Equipment Set and Mission Essential Package with products covering air and ground medical evacuation. Per Army Regulation 70-62, Airworthiness Qualification of Aircraft Systems, all "carry-on" equipment, to include medical devices, must have an Airworthiness Release. Medical Evacuation and Treatment Vehicles Medical Equipment Set and Mission Essential Package and CASEVAC: Will continue to collaborate with Program Executive Office Ground Combat Systems for the implementation of the MES and MEP in Initial Operational Test and Evaluation of Armored Multipurpose Vehicle (AMPV). Will collaborate with PEO Combat Support/Combat Service Support for implementation of the CASEVAC system for the JLTV. Waste Treatment System for the CSH: Will complete development and incorporate changes to the waste treatment system based upon testing for re-test. IFVT (Formerly: Improved Vector Tent Traps): Will collaborate with the Armed Forces Pest Management

FY 2016	FY 2017	FY 2018

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Board for adoption of the Improved Flying Vector Trap as a Department of Defense (DoD) standardized product. SODA: Will transition the Cold Weather Ensemble Decision Aid and the Heat Strain Decision Aid to Program Executive Office Soldier. Will develop and conduct Independent Validation and Verification and limited user testing of the Environmental Hazards App and Mobility Decision Aids.				
Title: Field Medical Systems Engineering Development -PM Neurotrauma & Psychological Health Description: This effort funds systems engineering development of medical products managed by Program Manager Neurotrauma & Psychological Health for enhanced combat casualty care and follow-on care, including rehabilitation. FY 2018 Plans: Laboratory Assay for Traumatic Brain Injury (TBI) (formerly TBI Diagnostic Assay System) Increment II Point of Care Device: Will finalize the Biomarker and Platform technologies and combine the technologies into one system to conduct validation studies.		-	-	3.886
Accomplishments/Planned Programs Subtotals		23.119	23.532	24.812
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy Develop in-house or industrial prototypes in government-managed programs to meet military and regulatory requirements for production and fielding.				
E. Performance Metrics N/A				

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev				832 / Field Medical Systems Engineering Development							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Medical Product Development Management Services Cost	Various	Various : Various	30.202	1.867		3.917		3.724		-		3.724	Continuing	Continuing	Continuing
Subtotal			30.202	1.867		3.917		3.724		-		3.724	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Freeze-dried Human Plasma	Various	HemCon Medical Technologies, Inc. : Tigard OR	32.750	0.033		-		-		-		-	Continuing	Continuing	Continuing
Hypertonic Saline Dextran	Various	National Institutes of Health, National Heart, Lung and Blood Institute (NHLBI) : Various	15.100	-		-		-		-		-	Continuing	Continuing	Continuing
Medical Product Development Cost	Various	Various : Various	5.242	1.028		-		2.206		-		2.206	Continuing	Continuing	Continuing
Extended Life Red Blood Cell Product	Various	Hemerus Medical, LLC, : Various	3.140	-		-		-		-		-	Continuing	Continuing	Continuing
Cryopreserved Platelets	Various	Clinical Research Management, Inc : Hinckley, OH	2.984	0.309		1.220		4.417		-		4.417	Continuing	Continuing	Continuing
Cryopreserved Platelets	Various	Multiple DoD activities and Dartmouth Hitchcock Med Ctr : North Potomac, MD	14.362	-		-		-		-		-	Continuing	Continuing	Continuing
Cryopreserved Platelets	Various	TBD : TBD	1.450	0.425		-		-		-		-	0.000	1.875	0.000
Intracellular Hemorrhage Treatment	TBD	TBD : TBD	0.000	0.600		-		-		-		-	0.000	0.600	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev				Project (Number/Name) 832 / Field Medical Systems Engineering Development							
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TBI Diagnostic Assay System - Increment II (benchtop/POC/ Bandits)	Various	Banyan BioMarkers, Inc : Alachua, FL	0.373	-		-		-		-		-	0.000	0.373	0.000
Noninvasive Neurodiagnostics	TBD	TBD : TBD	2.647	-		-		-		-		-	0.000	2.647	0.000
Impedance Threshold Device for the Treatment of Traumatic Brain Injury	TBD	Advance Circulatory Systems Inc. : Roseville, MN	0.335	4.052		-		-		-		-	0.000	4.387	0.000
Pre-Hospital Medical Informatics Transport (Ground Transport Telemedicine)	TBD	TBD : TBD	0.950	1.166		4.629		-		-		-	0.000	6.745	0.000
Advanced wound care	Various	TBD : TBD	0.000	-		1.594		-		-		-	0.000	1.594	0.000
Junction Noncompressible Hemorrhage	TBD	RevMedX Inc : Wilsonville OR	0.000	-		1.550		-		-		-	0.000	1.550	0.000
Laboratory Assay for Traumatic Brain Injury	C/Various	Abbott Laboratories : Chicago, IL	0.000	-		-		3.910		-		3.910	Continuing	Continuing	Continuing
Subtotal			79.333	7.613		8.993		10.533		-		10.533	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Regulatory Support	Various	Clinical Research Management, Inc., : Various	6.216	0.307		1.960		0.307		-		0.307	Continuing	Continuing	Continuing
Medical Product Development Support Cost	Various	Various : Various	8.661	1.548		-		1.829		-		1.829	Continuing	Continuing	Continuing
Medical Equipment Sets Development	Various	Various : Various	2.670	-		-		-		-		-	0.000	2.670	0.000
Subtotal			17.547	1.855		1.960		2.136		-		2.136	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev				Project (Number/Name) 832 / Field Medical Systems Engineering Development								
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Medical Product Development T&E Cost	Various	Various : Various	14.408	1.615		-		1.481		-		1.481	Continuing	Continuing	Continuing	
Cryopreserved Platelets	TBD	TBD : TBD	2.893	6.101		4.865		3.260		-		3.260	0.000	17.119	0.000	
Medical Equipment Sets Development	Various	Various : Various	1.206	-		-		0.650		-		0.650	0.000	1.856	0.000	
Freeze Dried Plasma	C/CPFF	TBD : TBD	2.657	4.068		3.797		3.028		-		3.028	0.000	13.550	0.000	
Subtotal			21.164	11.784		8.662		8.419		-		8.419	-	-	-	
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			148.246	23.119		23.532		24.812		-		24.812	-	-	-	
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	[Red shaded area covering FY 2016-2017]																											
Cryopreserved Platelets (CPP) Phase 2 efficacy clinical studies	[Blue bar from FY 2016 Q1 to FY 2018 Q3]																											
Cryopreserved Platelets (CPP) Phase III clinical studies	[Red shaded area]																Phase 3											
(1) Cryopreserved Platelets (CPP) Milestone C	[Red shaded area]																▲ MS-C											
Freeze-dried Plasma (FDP) Phase I safety clinical studies	[Blue bar from FY 2016 Q1 to FY 2018 Q2]																											
FDP Phase 2 efficacy clinical studies	[Blue bar from FY 2016 Q3 to FY 2019 Q1]																											
(2) FDP MS-B	[Red shaded area]																▲ MS-B											
(3) FDP MS-C	[Red shaded area]																▲ MS-C											
(4) Compartment Syndrome Pressure Device MS-A	[Red shaded area]																▲ MS-A											
(5) Noninvasive Neurodiagnostics MS-C	[Red shaded area]																▲ MS-C											
Laboratory Assay for TBI Increment !! Point of Care Device Clinical Trial	[Red shaded area]																[Blue bar from FY 2020 Q1 to FY 2021 Q4]											

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Cryopreserved Platelets (CPP) Phase 2 efficacy clinical studies	3	2015	4	2018
Cryopreserved Platelets (CPP) Phase III clinical studies	4	2017	3	2021
Cryopreserved Platelets (CPP) Milestone C	2	2020	2	2020
Freeze-dried Plasma (FDP) Phase I safety clinical studies	3	2014	2	2018
FDP Phase 2 efficacy clinical studies	2	2016	2	2019
FDP MS-B	3	2016	3	2016
FDP MS-C	4	2020	4	2020
Compartment Syndrome Pressure Device MS-A	2	2018	2	2018
Noninvasive Neurodiagnostics MS-C	4	2019	4	2019
Laboratory Assay for TBI Increment !! Point of Care Device Clinical Trial	1	2020	4	2021

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>				Project (Number/Name) 849 / <i>Infec Dis Drug/Vacc Ed</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
849: <i>Infec Dis Drug/Vacc Ed</i>	-	15.461	12.922	13.243	-	13.243	14.873	16.466	16.899	17.390	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds development of candidate medical countermeasures for militarily relevant infectious diseases. These products fall within four major areas: vaccines, drugs, diagnostic kits/devices, and determining if insects are infected with pathogenic organisms capable of infecting service members' insect control/preventive medicine measures to limit exposure and disease transmission. It funds research that supports conclusive human clinical trials for large-scale human effectiveness (capacity to produce a desired size of an effect under ideal or optimal conditions) testing, expanded human safety clinical trials, long-term animal studies, and related manufacturing tests. This work, which is jointly performed by military laboratories, civilian contracted pharmaceutical firms and foreign research partners, is directed toward the prevention of disease, early diagnosis, and speeding recovery once diagnosed. Medical products approved for human use must successfully complete a series of clinical trials that are required and regulated by the United States (U.S.) Food and Drug Administration (FDA). FDA approval is a mandatory obligation for all military products placed into the hands of medical providers or service members for human use. Development priority is based upon four major factors: (1) the extent of the disease within the Combatant Commands' theater of operations, (2) the clinical severity of the disease, (3) the technical maturity of the proposed solution, and (4) the affordability of the solution (development, production, and sustainment). Malaria, dysentery, hepatitis, and Dengue diseases (a severe debilitating disease transmitted by mosquitoes), which are found in Africa Command, Central Command, European Command, Southern Command, and Pacific Command areas are at the top of the infectious diseases requirements list.

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

	FY 2016	FY 2017	FY 2018
Title: Infectious Disease Drug and Vaccine Engineering Development	15.461	12.922	13.243
Description: Funding for research and development efforts for Drugs and Vaccines.			
FY 2016 Accomplishments:			
Dengue Tetravalent Vaccine (DTV): Complete Phase 3 (safety, efficacy, and dosing) pivotal clinical trials and adult/military-specific indication studies. Submit the master file (product documentation) for endemic countries to the FDA. Complete Milestone C package. Develop Biologic License Application (BLA) for U.S. Licensure. Final reports near completion for BLA submission in Fiscal Year (FY) 17 to the FDA. Commercial Partner to produce validation lots at their dedicated manufacturing facility. Next Generation Malaria Prophylaxis: Continue to complete New Drug Application preparatory work for filing with the FDA. Initiate a retinal safety study in 2016 and prepare the protocols for required soldier specific studies that need to be completed. Topical Antileishmanial Cream (TLC, Paromomycin/Gentamicin): Complete the New Drug Application submission package and submit to the FDA for approval. Validate the manufacturing process for commercial production of the cream. Continue the expanded access and treatment protocols through FY 16. Antimalarial Drug, Artesunate Intravenous: Support FDA inquiries during the review process of the New Drug Application. Work with the commercial partner to support marketing and distribution plans for the			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 849 / <i>Infec Dis Drug/Vacc Ed</i>

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

	FY 2016	FY 2017	FY 2018
<p>drug. Preventive Medicine advanced detection devices: These products fall into the category military operational requirements and are Commercial-Off-The-Shelf (COTS). Preventive Medicine advanced pesticides: These products fall into the category military operational requirements and are Commercial-Off-The-Shelf (COTS). Preventive Medicine spatial repellents: These products fall into the category military operational requirements and are Commercial-Off-The-Shelf (COTS). Preventive Medicine arthropod collection devices: These products fall into the category military operational requirements and are Commercial-Off-The-Shelf (COTS). Diagnostic products: Delays in the previous year's transition for infectious disease diagnostic products due to product maturity. Begin field testing and evaluation of several product candidates to include: Scrub Typhus, Rickettsiae, and Sand Fly Fever. Dengue Vaccine Block II: Prepare for human challenge efforts to show vaccine efficacy and animal studies to determine correlates of immunity in preparation for Phase III (safety, efficacy, and dosing) clinical trials. Arthropod Control/Surveillance: Begin field testing and evaluation of a Dengue Rapid Diagnostic.</p> <p>FY 2017 Plans: DTV: Will continue to fund Block I Dengue Tetravalent Vaccine until FY18. Funding will cover the additional two-year volunteer follow-up and data analysis on pivotal Phase 3 safety and effectiveness clinical trials as well as analysis and submission of adult military/traveler phase 2 (safety and efficacy) data aimed toward FDA licensure (Key Performance Parameter) . Will continue to work with the commercial partner to support FDA submissions, marketing and distribution plans for the vaccine. Will start planning for potential Milestone (MS) C in FY17; fielding anticipated FY18. Next Generation Malaria Prophylaxis: Will continue to complete New Drug Application preparatory work for filing with the FDA. Will continue the retinal safety study started in FY16 and will prepare the protocols for required soldier specific studies that need to be completed. Will start planning for potential MS C in FY17. Topical Antileishmanial Cream (TLC, Paromomycin/Gentamicin): The planned submission of the New Drug Application (NDA) did not occur in FY16 due to the loss of a manufacturing subcontractor. The NDA submission package will be completed and submitted to the FDA for approval in FY17. The manufacturing process will be validated in preparation for commercial production of the cream. The expanded access treatment protocol will continue through FY 17. Antimalarial Drug, Artesunate Intravenous: Will continue to support FDA inquiries during the review process of the New Drug Application. Will continue to work with the commercial partner to support marketing and distribution plans for the drug. Infectious Disease Diagnostic products: In FY17 products within this area will move to the Rapid Diagnostic and Detection Devices. Development (clinical performance testing) of a rapid human dengue diagnostic device will be anticipated. Dengue Vaccine Block II: Development of additional dengue human challenge strains will continue. Evaluation of vaccine candidates through performance of dengue human challenge studies in preparation for Phase III (safety, efficacy, and dosing) clinical trials. Rapid Diagnostic and Detection Devices: Will continue field testing and evaluation of several product candidates to include: dengue, chikungunya and leptospirosis.</p> <p>FY 2018 Plans: DTV: Will Fund Block I Dengue Tetravalent Vaccine through FY18 to complete two-year study subject follow-up required by Thai Ministry of Public Health. Will continue military-specific clinical trials that begin in FY17. Next Generation Malaria Prophylaxis: Will continue to complete New Drug Application preparatory work for filing with the FDA. Will continue the retinal (eye) safety study</p>			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 849 / <i>Infec Dis Drug/Vacc Ed</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
started in FY16 and prepare the protocols for required soldier specific studies. Topical Antileishmanial Cream (TLC, Paromomycin/Gentamicin): Will conduct stability testing of the registration lots of the drug product. Prepare for potential FDA requirements for post-marketing surveillance or clinical trials to gather additional information about a product's safety, effectiveness, or optimal use. Antimalarial Drug, Artesunate Intravenous: Will support the FDA's inquiries during the review process of the New Drug Application. Work with the commercial partner to support commercial marketing and distribution plans for the drug. Dengue Vaccine Block II: Continue development of additional dengue human challenge strains. Will evaluate vaccine candidates using dengue human challenge studies in preparation for pivotal safety, effectiveness, and dosing (Phase III) clinical trials. Rapid Diagnostic and Detection Devices (Infectious Disease Diagnostics (Multiple)): Will continue field testing and evaluation of several product candidates to include: dengue and chikungunya.			
Accomplishments/Planned Programs Subtotals	15.461	12.922	13.243

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

N/A

Remarks

D. Acquisition Strategy

Test and evaluate in-house and commercially developed products in government-managed trials to meet FDA requirements and Environmental Protection Agency registration.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev				849 / Infec Dis Drug/Vacc Ed								
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Medical Product Development Management Services Cost	Various	Various : Various	19.146	0.727		0.792		0.877		-		0.877	Continuing	Continuing	Continuing	
Medical Product Development Management Services Cost	C/CPFF	General Dynamics Information Technology : Frederick MD	1.012	2.756		3.153		3.212		-		3.212	0.000	10.133	0.000	
Subtotal			20.158	3.483		3.945		4.089		-		4.089	-	-	-	
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Medical Product Development Cost	Various	Various : Various	34.044	2.007		1.000		0.963		-		0.963	Continuing	Continuing	Continuing	
Topical Antileishmanial Drug	TBD	TBD : TBD	2.400	-		-		-		-		-	0.000	2.400	0.000	
Topical Antileishmanial Drug	C/TBD	Advantar Laboratories, INC : TBD	1.229	0.662		0.316		0.586		-		0.586	0.000	2.793	0.000	
Dengue Tetravalent Vaccine	TBD	TBD : TBD	1.399	0.648		-		-		-		-	0.000	2.047	0.000	
Hemorrhagic Fever W/ Renal Syndrome	C/TBD	TBD : TBD	0.000	1.000		-		-		-		-	0.000	1.000	0.000	
Subtotal			39.072	4.317		1.316		1.549		-		1.549	-	-	-	
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Medical Product Development Support Cost	Various	Various : Various	17.877	1.503		-		-		-		-	Continuing	Continuing	Continuing	

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev	Project (Number/Name) 849 / Infec Dis Drug/Vacc Ed
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Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medical Product Development Support Cost	PO	Clinical Research Management, In : Hinckley, OH	3.168	0.287		1.308		0.976		-		0.976	0.000	5.739	0.000
Subtotal			21.045	1.790		1.308		0.976		-		0.976	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medical Product Development T&E Cost	Various	Various : Various	38.996	2.725		3.593		4.067		-		4.067	Continuing	Continuing	Continuing
Dengue Tetravalent Vaccine	TBD	WRAIR/AFRIMS : Silver Spring MD	0.000	-		0.881		0.450		-		0.450	0.000	1.331	0.000
Dengue Tetravalent Vaccine	C/TBD	TBD : TBD	0.000	-		1.879		2.112		-		2.112	0.000	3.991	0.000
Product Development of Dengue Tetravalent Vaccine	Various	TBD : TBD	1.384	3.146		-		-		-		-	0.000	4.530	0.000
Subtotal			40.380	5.871		6.353		6.629		-		6.629	-	-	-

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	120.655	15.461	12.922	13.243	-	13.243	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017


Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev	Project (Number/Name) 849 / Infec Dis Drug/Vacc Ed
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Dengue Tetraivalent Vaccine (DTV) Phase 3 Pivotal Clinical Trials	Phase 3 Study																															
(1) DTV Milestone C (MS-C) Engineering, Manufacturing and Development																	FY11-FY18															
(2) DTV Biologic Licensing Application (BLA) Submission																									BLA Submission							
(3) DTV BLA Approval																													BLA Approval			
(4) Malaria Prophylaxis (MS-C) Engineering, Manufacturing and Development																					MS-C											
Paromomycin/Gentamicin TLC Phase 3 Safety and Effectiveness Clinical Trials																	Phase 3 Study															
(5) Paromomycin/Gentamicin TLC (MS-C) Engineering, Manufacturing and Development																					MS-C											
(6) Paromomycin/Gentamicin TLC New Drug Application (NDA)																					NDA Submission											
(7) Paromomycin/Gentamicin TLC FDA Approval																					FDA Approval											
Paromomycin/Gentamicin TLC (Fielding / Delivery)																									Fielding/Delivery							
Leishmania Rapid Diagnostic Device (Fielding / Delivery)																									Fielding/Delivery							
(8) Antimalarial Drug, Artesunate Intravenous FDA Approval																					FDA Approval											
Antimalarial Drug, Artesunate Intravenous (Fielding / Delivery)																									Fielding / Delivery							

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 849 / <i>Infec Dis Drug/Vacc Ed</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Hemorrhagic Fever with Renal Syndrome Clinical Studies	Clinical Studies																											
Dengue Vaccine Block II Adult Indication Studies	Adult Indication Studies																											
Dengue Vaccine Block II OCONUS Clinical Trials	Clinical Trials																											
(1) Antimalarial Drug, Artesunate Intravenous New Drug Application (MS-C)	 NDA (MS-C)																											

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 849 / <i>Infec Dis Drug/Vacc Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Dengue Tetravalent Vaccine (DTV) Phase 3 Pivotal Clinical Trials	1	2011	2	2019
DTV Milestone C (MS-C) Engineering, Manufacturing and Development phase review	1	2021	1	2021
DTV Biologic Licensing Application (BLA) Submission	2	2020	2	2020
DTV BLA Approval	2	2021	2	2021
Malaria Prophylaxis (MS-C) Engineering, Manufacturing and Development phase	4	2017	4	2017
Paromomycin/Gentamicin TLC Phase 3 Safety and Effectiveness Clinical Trial	1	2016	1	2017
Paromomycin/Gentamicin TLC (MS-C) Engineering, Manufacturing and Development	2	2018	2	2018
Paromomycin/Gentamicin TLC New Drug Application (NDA)	3	2017	3	2017
Paromomycin/Gentamicin TLC FDA Approval	4	2018	4	2018
Paromomycin/Gentamicin TLC (Fielding / Delivery)	4	2018	4	2020
Leishmania Rapid Diagnostic Device (Fielding / Delivery)	1	2015	4	2020
Antimalarial Drug, Artesunate Intravenous FDA Approval	4	2017	4	2017
Antimalarial Drug, Artesunate Intravenous (Fielding / Delivery)	3	2017	4	2019
Hemorrhagic Fever with Renal Syndrome Clinical Studies	1	2016	4	2020
Dengue Vaccine Block II Adult Indication Studies	1	2016	4	2020
Dengue Vaccine Block II OCONUS Clinical Trials	1	2016	4	2020
Antimalarial Drug, Artesunate Intravenous New Drug Application (MS-C)	4	2016	4	2016

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>				Project (Number/Name) VS8 / <i>MEDEVAC Mission Equipment Package (MEP) - End Dev</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
VS8: <i>MEDEVAC Mission Equipment Package (MEP) - End Dev</i>	-	0.383	0.113	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

	FY 2016	FY 2017	FY 2018
Title: Interim MEDEVAC Mission Support System (IMMSS)	0.383	0.113	-
Description: Interim MEDEVAC Mission Support System (IMMSS) - Patient Handling System for safely handling patient through a system of seats, patient litters etc.			
FY 2016 Accomplishments: Any modifications to the IMMSS that are made based on new paramedic skills will require validation and verification. Develop plans for required validation and verification to address the new paramedic skills.			
FY 2017 Plans: Interim MEDEVAC Mission Support System (IMMSS): Will complete validation study to verify IMMSS supports Medical Evacuation En Route Care.			
Accomplishments/Planned Programs Subtotals	0.383	0.113	-

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

N/A

Remarks

D. Acquisition Strategy

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev	Project (Number/Name) VS8 / MEDEVAC Mission Equipment Package (MEP) - End Dev

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	63.028	39.630	34.684	-	34.684	39.117	46.842	30.492	30.011	Continuing	Continuing
016: <i>Close Combat Capabilities ENG DEV</i>	-	1.565	2.772	10.736	-	10.736	8.500	8.640	4.760	0.000	0.000	36.973
415: <i>Mine Neutral/Detection</i>	-	49.724	36.858	19.848	-	19.848	30.617	38.202	25.732	30.011	Continuing	Continuing
434: <i>Anti-Personnel Landmine Alternatives (NSD)</i>	-	11.739	0.000	4.100	-	4.100	0.000	0.000	0.000	0.000	0.000	15.839

Note

Funding for Man-Transportable Robotic System (MTRS) Inc II was originally on this APE Project 415. Funding has been zeroed out and will be funded on APE 655053FB2 in FY2018.

A. Mission Description and Budget Item Justification

This program element (PE) provides for the Engineering and Manufacturing Development (EMD) and demonstration of networked munitions, counter mine systems, and counter improvised explosive device capabilities. This PE also implements the National Landmine Policy to develop alternatives to the non-self-destructing counter mobility anti-personnel landmine systems. The PE contributes to area access and area denial (A2/AD) to support unified land operations and improve soldier survivability.

Project 016, Close Combat Capabilities provides for developing improvements to legacy dismounted lane breaching, specifically the Anti-Personnel Obstacle Breaching System (APOBS), and in so doing, provides a pathway to the next generation of dismounted lane breaching systems such as the Rapid Assault Lane Line Charge (RALLC) and the Dismounted Explosive Breaching System (DEBS). The efforts will address capability gaps identified during combat operations and will focus on weight reduction, improved scalability, collateral damage reduction, metallic content elimination, deployment accuracy improvement, and increased effectiveness against the current threat.

Funding line established in FY16. The objective of this effort is to increase the Warfighter lethality and mobility, by optimizing Soldier protection for Explosive Ordnance Disposal (EOD) personnel while effectively managing all life cycle aspects of Personal Protective Equipment (PPE).

Project 415, Mine Neutralization/Detection provides for development of next generation standoff, detection, and neutralization capability programs such as Husky Mounted Detection System (HMDS), Route Clearance & Interrogation System (RCIS), Vehicle Optics Sensor System (VOSS), Standoff Robotic Explosive Hazard Detection System (SREHD), formerly known as the Autonomous Mine Detection System (AMDS), Route Clearance Vehicles (RCV) and Enablers, Multi-Function Video Display (MVD) and Add on Armor (AoA) kits. It also supports development of Explosive Hazard Pre-Detonation (EHP) capability to neutralize/detonate a broad spectrum of improvised explosive hazards while on the move to support area access route clearance missions. Provides funding to the Tank Automotive Research

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>
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Development Engineering Center (TARDEC) Software Engineering Center (SEC) to integrate enhancements and test Explosive Hazard Pre-Detonation (EHP) software releases incorporating support for MVD.

Project 434, Spider Increment 1A will build upon the existing M7 Spider system. The M7 Spider system is a hand-emplaced, remotely controlled (Man-In-The-Loop) system that provides highly responsive terrain-shaping and protection capabilities. M7 Spider replaces persistent anti-personnel landmines, is compliant with US National Landmine policy, and has been fielded to US forces in support of Operation Enduring Freedom and currently being fielded to Engineers and Brigade Combat Teams in the Active and Army National Guard components. Additional capabilities will be developed to enhance the Spider Remote Control Station and demonstrate the ability to employ legacy Government-Off-The-Shelf (GOTS) lethal and non-lethal anti-personnel (AP) munitions and counter mobility obstacles. Spider Increment 1A will utilize an open system architecture to facilitate future munition integration.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	55.215	39.630	33.464	-	33.464
Current President's Budget	63.028	39.630	34.684	-	34.684
Total Adjustments	7.813	0.000	1.220	-	1.220
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.187	-			
• Adjustments to Budget Years	0.000	0.000	1.220	-	1.220
• Other Adjustments 1	10.000	0.000	0.000	-	0.000

Change Summary Explanation

FY 2016: Budget supports Project 016, Close Combat Capabilities, Project 415, Mine Neutral/Detection, and Project 434, Anti-Personnel Landmine Alternatives (NSD).

FY 2017: Budget supports Project 016, Close Combat Capabilities, and Project 415, Mine Neutral/Detection.

FY 2018: Budget supports Project 016, Close Combat Capabilities, and Project 415, Mine Neutral/Detection, and Project 434, Anti-Personnel Landmine Alternatives (NSD).

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 016 / Close Combat Capabilities ENG DEV			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
016: Close Combat Capabilities ENG DEV	-	1.565	2.772	10.736	-	10.736	8.500	8.640	4.760	0.000	0.000	36.973
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding supports the materiel / technology development decision and the engineering and manufacturing development / full rate production decision reviews of Soldier Protection Equipment. Specifically, this funding supports the Next Generation Advanced Bomb Suit (NGABS). It leverages advancements in technology to continue improvements to hard and soft body armor components, helmets and other personal protective equipment for Explosive Ordnance Disposal (EOD) personnel.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Title: Dismounted Lane Breaching System</p> <p>Description: Develops materiel solutions that address operational issues with APOBS related to its weight, lack of scalability, collateral damage, residual metallic debris, deployment accuracy, and effectiveness.</p> <p>FY 2016 Accomplishments: Initiated trade studies/cost-benefit analyses to prioritize user identified capability gaps and the material solutions that address them.</p> <p>FY 2017 Plans: Continue trade studies/cost-benefit analyses to prioritize user identified capability gaps and the material solutions that address them; Prepare Preliminary Design.</p> <p>FY 2018 Base Plans: Finalize design; Award contract for qualification hardware; Build qualification hardware; Finalize test plans; Begin preparation for qualification testing.</p>	1.565	2.772	2.000	-	2.000
<p>Title: Next Generation Advanced Bomb Suit (NGABS)</p> <p>Description: Funding line is new to PM SPIE in FY18. The objective of this effort is to increase the Warfighter lethality and mobility, by optimizing Soldier protection for Explosive Ordnance Disposal (EOD) personnel while effectively managing all life cycle aspects of Personal Protective Equipment (PPE).</p> <p>FY 2018 Base Plans:</p>	-	-	8.736	-	8.736

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Enter into the three year Engineering and Manufacturing Development phase of the NGABS with the objective of developing for the EOD Soldiers a full body protective ensemble that incorporates the latest technological advances in ergonomic design and material science to improve survivability from fragmentation, blast overpressure, impact, thermal hazards, and small arms fire based primarily on the modularity and scalability concept of the Soldier Protection System. The objective of this program is to enhance the tactical utility and applicability of this bomb suit concept which was not the case in legacy designs. Initiate the development of the Capability Production Document (CPD) for NGABS NGABS that includes integration of Suit & Helmet (S&H), Sensors and Heads up Display (HUD).					
Accomplishments/Planned Programs Subtotals	1.565	2.772	10.736	-	10.736

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 121017: NGABS OMA	-	-	-	-	-	-	25.440	39.418	22.702	0	87.560

Remarks

D. Acquisition Strategy

The DLBS acquisition strategy is for developing product improvements such as making the system lighter and more module to the Antipersonnel and Obstacle Breaching System. These improvements will then be incorporated into the technical data package for future procurements.

The NGABS Program is a single-step to full capability acquisition program utilizing full and open competition to ensure best value to the Army. Acquisition strategy for this program varies 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: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Dismounted Lane Breaching System - Program Management	MIPR	PM CCS : Picatinny Arsenal, NJ	0.000	0.100	Dec 2016	0.300	Nov 2016	0.100	Nov 2017	-		0.100	0.000	0.500	0.000
NGABS	Allot	PM SPE : Fort Belvoir	0.000	-		-		0.736		-		0.736	0.000	0.736	0.000
Subtotal			0.000	0.100		0.300		0.836		-		0.836	0.000	1.236	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Dismounted Lane Breaching System - Preliminary Design Efforts	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	0.185	Apr 2016	-		-		-		-	0.000	0.185	Continuing
Dismounted Lane Breaching System - Type Classification Activities	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		-		0.687	Jun 2018	-		0.687	0.000	0.687	0.000
Dismounted Lane Breaching System - Qualification Hardware	C/FFP	TBD : TBD	0.000	-		0.900	May 2017	-		-		-	0.000	0.900	0.000
Dismounted Lane Breaching System - Rocket Design	MIPR	NSWC : Indian Head, MD	0.000	0.315	Dec 2016	0.100	Jan 2017	-		-		-	0.000	0.415	0.000
Dismounted Lane Breaching System - Type Classification Activities	MIPR	NSWC : Indian Head, MD	0.000	-		-		0.168	Jun 2018	-		0.168	0.000	0.168	0.000
NGABS - Product Development	C/FFP	TBD : Various	0.000	-		-		5.000		-		5.000	0.000	5.000	0.000
Subtotal			0.000	0.500		1.000		5.855		-		5.855	0.000	7.355	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV
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Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Dismounted Lane Breaching System - Trade Studies, SOW and Test Plan Prep	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	0.859	Dec 2016	-		-		-		-	Continuing	Continuing	Continuing
Dismounted Lane Breaching System - Logistics, Packaging, System Eng.	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		0.750	Jan 2017	-		-		-	0.000	0.750	0.000
Dismounted Lane Breaching System - Configuration Management	MIPR	NSWC : Dahlgren, VA	0.000	0.106	Dec 2016	0.041	Jan 2017	0.045	Jun 2018	-		0.045	0.000	0.192	0.000
NGABS Support Costs	MIPR	TBD : Various	0.000	-		-		1.000		-		1.000	0.000	1.000	0.000
Subtotal			0.000	0.965		0.791		1.045		-		1.045	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Dismounted Lane Breaching System - Qualification Test	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	-		0.681	Jun 2017	1.000	Mar 2018	-		1.000	0.000	1.681	0.000
NGABS Test & Evaluation	MIPR	TBD : Various	0.000	-		-		2.000		-		2.000	0.000	2.000	0.000
Subtotal			0.000	-		0.681		3.000		-		3.000	0.000	3.681	0.000

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	1.565	2.772	10.736	-	10.736	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Dismounted Lane Breaching System																																
Trade Studies/ Cost Benefit Analyses																																
Trade Studies/ Cost Benefit Analyses																																
SOW/ Test Plan Preparation																																
SOW/ Test Plan Preparation																																
Develop Preliminary Design																																
Develop Preliminary Design																																
(1) Preliminary Design Review																																
PDR																																
Detailed Design Effort																																
Detailed Design Effort																																
(2) User Assessment																																
User Assessment																																
(3) Critical Design Review (CDR)																																
CDR																																
Qualification Hardware Build																																
Qualification Hardware Build																																
(4) Test Readiness Review																																
Test Readiness Review																																
Qualification Testing																																
Qualification Testing																																
(5) MS C or ECP																																
MS C or ECP																																
NGABS EFFORT																																

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) NGABS MDD					▲ ¹																							
(2) NGABS MS B					▲ ²																							
NGABS Developmental Testing																												
(3) NGABS MS C									▲ ³																			

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Dismounted Lane Breaching System	1	2016	1	2020
Trade Studies/ Cost Benefit Analyses	2	2016	4	2016
SOW/ Test Plan Preparation	3	2016	4	2016
Develop Preliminary Design	4	2016	4	2017
Preliminary Design Review	1	2018	1	2018
Detailed Design Effort	1	2018	4	2018
User Assessment	3	2018	3	2018
Critical Design Review (CDR)	4	2018	4	2018
Qualification Hardware Build	4	2018	1	2019
Test Readiness Review	1	2019	1	2019
Qualification Testing	1	2019	2	2019
MS C or ECP	3	2019	3	2019
NGABS EFFORT	1	2017	4	2020
NGABS MDD	4	2017	4	2017
NGABS MS B	1	2018	1	2018
NGABS Developmental Testing	1	2018	4	2019
NGABS MS C	1	2020	1	2020

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 415 / Mine Neutral/Detection			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
415: Mine Neutral/Detection	-	49.724	36.858	19.848	-	19.848	30.617	38.202	25.732	30.011	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2018 funding for the Man Transportable Robotic System (MTRS) Inc II transitions from PE 0604808A Landmine Warfare/Barrier - Eng Dev, Project 415 Mine Neutral/Detection to PE 0605053A Ground Robotics, Project FB2 Man Transportable Robotic System (MTRS) Inc II

A. Mission Description and Budget Item Justification

This Project provides for Engineering Manufacturing and Development (EMD) for the next generation of capabilities to detect, identify and neutralize hybrid threats and explosive hazards such as Improvised Explosive Devices (IEDs) and landmines. These capabilities are a Family of Systems (FOS) encompassing handheld, vehicle mounted, small robotic mounted, aerial platform mounted and area access, and neutralization systems operating in manned, remotely controlled, semi-autonomous or fully autonomous modes. Continued development of this FOS is necessary to support Route Clearance Platoons located within both Engineer Companies and Brigade Engineering Battalion Brigade Combat Teams.

The Husky Mounted Detection System (HMDS) is a counter-explosive device capability that provides standoff detection and marking of metallic encased caches and metallic and low-metallic antitank landmines, unexploded ordnance, trigger mechanisms, and improvised explosive devices (IEDs) in support of route and area-clearance operations. HMDS is a mission equipment package mounted on the Husky route clearance vehicle. The program was restructured in Sep 2016 to align with emerging shallow buried Wire Detection (WD) capabilities integrated onto the HMDS Increment A1 configuration (includes Ground Penetrating Radar (GPR)). These changes are necessary to adapt to changing IED threats. WD Technology will be fully integrated through Engineering Change Proposals (ECPs) beginning in FY18. Prototypes developed under the concluded HMDS Increment A2 effort may be leveraged in development of future capabilities. Future capabilities may include detection of deep buried IEDs and caches, and semi-autonomous control of the Husky vehicle and HMDS from inside a follow-on vehicle.

The Route Clearance & Interrogation System (RCIS) consists of two semi-autonomous vehicles, RCIS Type I and RCIS Type II, and includes designated control vehicles and Operator Control Units (OCUs) which provide a standoff capability to detect and neutralize the full spectrum of explosive hazards. RCIS Type I and Type II are being procured as separate increments. Type I integrates a semi-autonomous kit onto a High Mobility Engineering Excavator (HMEE) for remote control from a Buffalo Mine Protected Clearance Vehicle (MPCV). RCIS Type I semi-autonomous kit will be integrated onto the HMEE and be capable of interrogating and classifying explosive hazards. Type II integrates a semi-autonomous kit on a route clearance lead Medium Mine Protected Vehicle (MMPV) for operation from another MMPV. The RCIS Type II semi-autonomous kit will be able to detect, neutralize and proof explosive hazards. An OCU will be integrated into a Buffalo MPCV for Type I and an MMPV for Type II. RCIS capabilities will be fielded to Route Clearance Squads and Engineer Platoons.

The Vehicle Optics Sensor System (VOSS) provides a telescoping, gyro-stabilized, high-resolution, triple sensor (daylight, night-vision, and thermal-imaging) surveillance system to optically detect from standoff distances, explosive hazards (IEDs and landmines) and their trigger sources. VOSS will be mounted on the MMPV

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>
<p>Type I for Explosive Ordnance Disposal (EOD) and MMPV Type II for Engineers. VOSS will integrate and qualify a Geo-location capability, and develop and integrate a new, less costly, more reliable, sustainable and durable Infrared (IR) camera.</p> <p>The Multifunction Video Display (MVD) provides view/control capability of the enablers (Interrogation Arms, VOSS, Man Transportable Robotic System, Drivers Vision Enhancement, Vehicle Situational Awareness Cameras) in the MMPV Type II to all Operators. New capabilities will be added into that display to view and control future Unmanned Ground Vehicle Systems (UGVs) programs Route Clearance & Integration System (RCIS) and Husky Mounted Detection System (HMDS), Explosive Hazard Pre-Detonation (EHP) Roller and view Unmanned Aerial Vehicles video feeds. Additional software will need to be developed to add these capabilities. In addition, a new capability to push the video feeds of all of the enablers (Interrogation Arms, VOSS, Man Transportable Robotic System, Drivers Vision Enhancement and Vehicle Situational Awareness Cameras) from various vehicles within a Route Clearance Patrol will be developed.</p> <p>Route Clearance Vehicle (RCV) & Enabler Improvements: Develop the hardware used to improve POR RCVs and Enablers</p> <ul style="list-style-type: none"> - Develop product upgrades to MMPV Type II Interrogation Arm - Next Generation HMDS A2 to include Deep Buried Detection on the Husky and semi-autonomous control capability on the Husky and MMPV Type II - Explosive Hazard Pre-Detonation (EHP) Equipment upgrades <p>Force Protection Improvements/Add On Armor (AoA) to execute system level design cycle for rocket propelled grenade (RPG) and explosive formed projectiles (EFP) AoA kits for Husky and Buffalo. Explosive Hazard Pre-Detonation (EHP) capability to include a debris blower, Wire Neutralization System (WNS) and Mine Roller to neutralize/detonate a broad spectrum of improvised explosive hazards while on the move, to support route clearance mission.</p> <p>TARDEC Software Center (SEC) provides support for the Explosive hazard Pre-Detonation (EHP) Roller, updating software throughout Test and Evaluation (T&E) and Low Rate Initial Production (LRIP) activities. The SEC will continue development of the EHP Roller software to integrate EHP Roller functionality with Multi-Visual Display (MVD). In addition, the SEC will develop a Software Integration Lab (SIL) to support integration as well as maintenance and troubleshooting improvements.</p> <p>Standoff Robotic Explosive Hazard Detection System (SREHD), formerly known as the Autonomous Mine Detection System (AMDS), provides increased survivability through mine and explosive hazards stand-off detection, marking and neutralization capability for the dismounted soldier. It provides area access and freedom of movement for the Commander. SREHD consists of payload modules to be mounted on man-portable unmanned ground vehicles. The payloads are for surface laid and buried threats to include mines and explosive hazards. SREHD transitioned from Technical Development to Engineering and Manufacturing Development (EMD) in FY 2014. This capability allows a soldier to remain in a protective posture while detecting and neutralizing a wide variety of hybrid and conventional explosive threats.</p> <p>FY2018 Base funding in the amount of \$7.000 million supports the continued development of the Husky Mounted Detection System (HMDS); \$.876 million completes development of the Vehicle Optics Sensor System (VOSS); \$.7931 million supports continued development of RCIS Type I; \$.750 million supports continued MVD development; \$.137 million supports development of prototype Husky EFP AoA kit; \$.100 million supports EHP software development; \$3.054 supports SHEHD DT corrective actions and IOT&E.</p>		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: HMDS System Engineering & Program Management Support Description: HMDS System Engineering & Program Management Support FY 2016 Accomplishments: Engineering Manufacturing Development (EMD); Critical Design Review FY 2017 Plans: System Engineering and Program Management including matrix support. FY 2018 Base Plans: Development of program documentation, acquisition package for ECP, Type Classification/Materiel Release Activities, and development of logistics products.	11.543	5.969	0.534	-	0.534
Title: HMDS Ground Penetrating Radar (GPR) Description: HMDS Ground Penetrating Radar (GPR) FY 2017 Plans: Technical Support to Husky Vehicles	-	0.203	-	-	-
Title: HMDS Ground Penetrating Radar FY 2016 Accomplishments: Critical Design Review (CDR) and Developmental Testing (DT) FY 2017 Plans: HMDS A2 CDR1 for Ground Penetrating Radar (GPR), Deep Buried Detector (DBD), and Installation Kit; Risk Reduction Testing.	7.784	2.286	-	-	-
Title: HMDS Training Aids, Devices, Simulators and Simulations (TADSS) FY 2016 Accomplishments: Virtual Clearance Training Suite (VCTS) and Interactive Multimedia Instruction (IMI)	3.825	-	-	-	-
Title: HMDS GPR: Engineer Change Proposal (ECP) to add Wire Detection and Infrared Illumination Description: HMDS A1 Tactical GPR: Engineer Change Proposal (ECP) to add Wire Detection and Infrared Illumination	-	2.597	5.975	-	5.975

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>FY 2017 Plans: HMDS A1 Tactical GPR: Engineer Change Proposal (ECP) to add Wire Detection and Infrared Illumination</p> <p>FY 2018 Base Plans: Engineering Change Proposal (ECP) to add Wire Detection (WD) and Infrared Illumination (IR) to HMDS GPR, conduct post award kick off meeting, requirements review and design review.</p>					
<p>Title: HMDS A1 Trainer: Add Wire Detection and develop logistics materials</p> <p>Description: HMDS A1 Trainer: Add Wire Detection and develop logistics materials</p>	-	0.440	-	-	-
<p>FY 2017 Plans: HMDS A1 Trainer: Add Wire Detection and develop logistics materials</p> <p>Title: RCIS Type I & MTRS Inc II</p> <p>Description: RCIS Type I</p>	12.839	16.970	7.931	-	7.931
<p>FY 2016 Accomplishments: RCIS Type I: Engineering and Manufacturing Development (EMD). Draft Performance Work Statement (PWS) released, Pre-Solicitation Industry Conference, Contract Awarded for the High Mobility Engineering Excavator (HMEE) Digital Architecture, Recap Buffalo MPCV, PM support and Interoperability. RCIS FY2016 funding was \$6.408 million. MTRS Inc II: development, RFP approval, Source Selection Evaluation Board, Risk Reduction efforts and PM support. InterOperability Profile (IOP): instantiation and design reviews for IOP. Analytical studies and documentation to support pre-Materiel Development Decision (MDD) activities for emerging programs and Capability Development Documents (CDDs)/Capability Production Documents (CPDs) leading up to Milestone Decision Authority. In FY2016, MTRS Inc II funding was \$5.469 million and IOP \$0.960 million.</p> <p>FY 2017 Plans: RCIS Type I: RFP approval, Source Selection Evaluation Board for the EMD contract, RESET/RECAP Buffalos for RCIS EMD, award contract modification for Delta HMEE software regression testing and hardware reliability testing to support design maturation, and prepare and submit milestone B documentation. RCIS funding: \$7.801 million. MTRS Inc II: Source Selection Evaluation Board, contract award and preparation for Preliminary Design Review. MTRS Inc II funding \$9.168 million.</p> <p>FY 2018 Base Plans:</p>					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
RCIS Type I: Completion of Delta HMEE design maturation; RCIS EMD contract award for Semi-Autonomous Control (SAC) System development, Preliminary Design Review, Reset/Recap Buffalos MPCV, Award of the Delta HMEE EMD contract. RCIS funding \$7.930 million.					
<p>Title: VOSS Geo-Location Capability & Infrared Camera Replacement</p> <p>Description: VOSS capability to determine location of explosive hazards and IR Camera Replacement</p> <p>FY 2016 Accomplishments: In support of Geo-location, conducted multiple rounds of Market Research and thorough Technology Trade Studies to discern most affordable approach to meet requirement. Completed all technical documentation to proceed to testing and validation.</p> <p>FY 2017 Plans: Geo-location Qualification, Performance Spec, Engineering Data, Integration and Prototypes for Infrared Camera Replacement.</p> <p>FY 2018 Base Plans: Geo-location close-out and finalization of technical data to be furnished to Tobyhanna Army Depot for fabrication of integration kit items and cables. Complete IR Camera specifications, technical information and requirements. Independently validate technical data package.</p>	2.013	2.253	0.876	-	0.876
<p>Title: Multifunction Video Display (MVD)</p> <p>Description: Multifunction Video Display (MVD). Digital display used to control and view RCV enablers</p> <p>FY 2016 Accomplishments: Continuing support for MVD SIL at NVESD for development of additional enablers EHP Roller onto MVD.</p> <p>FY 2017 Plans: Continuing Support for MVD SIL at NVESD for development of additional enabler (Interrogation Arm software development for control functionality).</p> <p>FY 2018 Base Plans: Continuing Support for MVD SIL at NVESD for development of additional enabler (Interrogation Arm software development for control functionality).</p>	0.750	0.750	0.750	-	0.750
<p>Title: RCV & Enabler Improvements</p>	2.412	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Develop the hardware used to improve POR RCVs. FY 2016 Accomplishments: Develop system demonstrator of MMPV Type II Interrogation Arm System Improvements and test. Work upgrade to EHP blower camera. EHP roller development					
Title: Add on Armor (AoA) Description: Development AoA efforts for Route Clearance Vehicles (RCV) to include Rocket Propelled Grenade (RPG) and Explosive Formed Projectiles (EFP) for Husky and Buffalo. FY 2016 Accomplishments: Develop and test Buffalo EFP AoA Kit. FY 2017 Plans: Develop Husky EFP AoA Kit. FY 2018 Base Plans: Prototype of Husky EFP AoA Kit	0.300	0.091	0.137	-	0.137
Title: Software Engineering Center (SEC) Description: TARDEC SEC provides support for the Explosive Hazard Pre-Detonation (EHP) Roller, updating software throughout Test and Evaluation (T&E) and Low Rate Initial Production (LRIP) activities. FY 2018 Base Plans: Enhanced Explosive Hazard Pre-Detonation EHP Software for LRIP T&E activities.	-	-	0.100	-	0.100
Title: SREHD (Formerly AMDS) Description: SREHD (AMDS) FY 2016 Accomplishments: Engineering Manufacturing Development (EMD), Critical Design Review (CDR), and Began Development Testing (DT) FY 2017 Plans:	8.258	5.299	3.054	-	3.054

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Engineering Manufacturing Development (EMD), Completion of Development Testing (DT), Limited User Test (LUT), Milestone C, and Initial Operational Test and Evaluation (IOT&E)					
FY 2018 Base Plans: Conduct Corrective Action Plans (CAPS) as a result of Developmental Testing (DT) and Conduct Initial Operational Testing and Evaluation (IOT&E)					
Title: HMDS Testing and Test Support activities	-	-	0.491	-	0.491
FY 2018 Base Plans: Risk Reduction and ECP testing					
Accomplishments/Planned Programs Subtotals	49.724	36.858	19.848	-	19.848

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• R64001: <i>Husky Mounted Detection System (HMDS) R64001</i>	13.565	0.274	21.695	-	21.695	41.423	50.646	81.219	46.019	Continuing	Continuing
• R68102: <i>GSTAMIDS R68102</i>	58.682	39.350	32.442	-	32.442	56.052	42.858	39.164	34.004	Continuing	Continuing
• DA0924: <i>OPA1 Mods in Services DA0924</i>	204.193	219.456	83.940	140.163	224.103	85.842	80.127	70.372	79.291	Continuing	Continuing
• R68260: <i>AMDS R68260</i>	-	10.500	10.571	-	10.571	20.137	25.259	10.984	-	Continuing	Continuing
• 606: <i>Countermines/Barrier Advanced Dev 606</i>	-	3.757	4.149	-	4.149	3.149	3.200	3.264	3.184	Continuing	Continuing
• M80400: <i>Robotic Combat Support System (RCSS)</i>	2.136	2.951	4.516	-	4.516	5.124	12.467	10.013	18.828	Continuing	Continuing
• E50510: <i>DEMO KIT, BLASTING: Munition Array Charge, XM335</i>	-	-	1.586	-	1.586	2.366	3.113	6.980	-	Continuing	Continuing

Remarks

D. Acquisition Strategy
The Husky Mounted Detection System (HMDS) program is pursuing an acquisition approach that delivers capability increments - Increment A, Configuration 1 (A1) to the Warfighter by leveraging the Quick Reaction Capability (QRC) Ground Penetrating Radar (GPR) currently deployed in support of Operation Enduring Freedom (OEF) and Operation Inherent Resolve (OIR). In FY2018, the program will execute an ECP to add a wire detection capability to address evolving threat, and Infrared

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>
<p>illumination to enable nighttime operation. A second ECP to improve operational availability of the HMDS during inclement weather and address obsolescence and Cyber Security deficiencies will follow. Additionally in FY2018, the program will begin Type Classification and material release activities, and achieve First Unit Equipped (FUE) of the HMDS GPR and will retrofit the fielded GPR with each of the ECPs as they become available.</p> <p>The RCIS program will execute an EMD phase for Type I systems starting with an OEM contract award for Delta HMEE support and a contract award to one EMD contractor for the Semi-Autonomous Control (SAC) Kit in 1st Quarter FY 2018. The SAC Kit award will be based on a source selection from full and open competition. The SAC EMD contract awardee will execute Preliminary Design Review (PDR), design, integration, and build phase of seven Semi-Autonomous Capability (SAC) kits, integrated onto six vehicles, with one kit available for engineering and System Integration Lab (SIL) evaluations. These assets will be used for the Government to execute a full Pre-Production Qualification Test (PPQT) and to be evaluated against Capability Production Document (CPD) and performance specification requirements. Production and Technical Data Package (TDP) procurement options on the EMD contract will take advantage of competition to assist in cost reduction. The RCIS Type I program Lifecycle Cost Estimate (LCCE), and associated budget request, was updated based on costs associated with modifying the base HMEE platform to accept the SAC kit, changes in the acquisition strategy and alignment of development and test activities in support of a production decision. To support EMD, ALUGS is funding Reset/Recap of six Buffalo Mine Protected Clearance Vehicle (MPCV) at Letterkenny Army Depot. These will be provided to the SAC contractor for Operator Control Unit (OCU) integration.</p> <p>The Vehicle Optics Sensor System (VOSS) program is pursuing an acquisition approach which harvests Quick Reaction Capability (QRC) procured systems for refresh and insertion into the Program of Record (POR). In FY 2018 VOSS will transition a qualified Geo-location capability and full technical data package for Government fabrication / manufacture, and complete requirements, interfaces and technical data to enable integration of a less costly, more sustainable and durable IR Camera.</p> <p>EHP Debris Blower was procured as a COTS item from a commercial vendor in FY 2016. EHP Roller and EHP Wire Neutralization System (WNS) will be procured starting in FY 2017. MVD will be procured through a sole source contract FY 2017. Spiral development of software upgrades to MVD will be procured in FY 2018. MMPV Type II Interrogation Arm Engineer Change Proposals/upgrades would be procured in the out years once the user identifies the upgrades needed.</p> <p>SREHD (formerly known as AMDS) is currently in the Engineering Manufacturing Development (EMD) phase and is being developed to provide standoff detection, marking, and neutralization of explosive hazards (e.g., landmines, improvised explosive devices (IED), booby-traps (explosive), and unexploded ordnance (UXO)) in complex and urban terrain, including confined areas and subterranean environments (e.g., buildings, bunkers, tunnels, etc.). The EMD phase consists of a preliminary design phase, which culminates with the Preliminary Design Review (PDR), a Risk Reduction Test (RRT) to evaluate the preliminary design, a critical design phase, which culminates with the Critical Design Review (CDR), integration with the Talon IV chassis and the Remote Activation Munition System (RAMS), a prototype build of 11 systems, which will be used for integration activities and to conduct the Government Development Test (DT), and a Logistics Demonstration (LogDemo). Transition to Low Rate Initial Production (LRIP) is scheduled to occur in the 4th Quarter of FY 2017. Initial Operational Test and Evaluation (IOT&E) will occur with LRIP assets in 3rd Quarter of FY 2018. Award of the Full Rate Production (FRP) contract is scheduled to occur in the 4th Quarter of FY 2018 under PAA E50510 / DEMO KIT, BLASTING: Munition Array Charge, XM335, for the neutralization capability, as well under OPA R68260 / AREA MINE DETECTION SYSTEM (AMDS) for the detection and marking capabilities.</p>		
E. Performance Metrics		
N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 415 / Mine Neutral/Detection							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 - HMDS	MIPR	PM CCS : Picatinny Arsenal, NJ	29.566	2.941	Mar 2016	-		-		-		-	0.000	32.507	0.000
HMDS System Engineering & Program Management	MIPR	PM Terrestrial Systems : Fort Belvoir, VA	0.000	-		1.280		0.470	Mar 2018	-		0.470	Continuing	Continuing	Continuing
HMDS PMO SETA	SS/CPFF	TBD : TBD	0.000	-		0.400		0.064	Feb 2018	-		0.064	Continuing	Continuing	0.000
Program Management - RCIS Type I	MIPR	PM FP : Warren, MI	1.358	1.471	Mar 2016	1.790	Mar 2017	1.810	Mar 2018	-		1.810	Continuing	Continuing	0.000
Program Management - MTRS Inc II	MIPR	PM FP : Warren, MI	0.000	1.604	Mar 2016	-		-		-		-	0.000	1.604	0.000
VOSS Geo-location and new Infrared Camera	MIPR	PM Ground Sensors : Ft. Belvoir, VA	0.200	0.161		0.130		0.143	Mar 2018	-		0.143	0.000	0.634	0.000
Program Management - SREHD (Formerly AMDS)	Allot	PM CCS : Picatinny Arsenal, NJ	2.864	0.640	Mar 2016	0.530	Mar 2017	0.440	Mar 2018	-		0.440	Continuing	Continuing	0.000
Subtotal			33.988	6.817		4.130		2.927		-		2.927	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS Inc A2 – Integration of Deep Buried Detection and Wire Detection	SS/CPFF	NIITEK Dulles : VA	33.136	5.600	Jan 2016	2.286		-		-		-	0.000	41.022	0.000
HMDS A1 Dev of Engineering Change Proposal w/ Wire Detect and InfraRed	SS/CPFF	NITEK : Dulles, VA	0.000	-		2.597		5.975	Feb 2018	-		5.975	Continuing	Continuing	0.000
HMDS A1 Dev of Trainer WD, Test Kit Fabrication	SS/CPFF	NITEK : Dulles, VA	0.000	-		0.440		-		-		-	0.000	0.440	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604808A / Landmine Warfare/Barrier - Eng Dev				415 / Mine Neutral/Detection							
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS - TADSS	C/FFP	TBD - executed through PEO STRI : TBD	0.000	4.849	Nov 2015	-		-		-		-	0.000	4.849	0.000
RCIS Type I	SS/FFP	PM FP, PdM ALUGS : Warren, MI	6.528	2.705	Mar 2016	-		1.571	Jan 2018	-		1.571	0.000	10.804	Continuing
RCIS Type I test assets	MIPR	Letterkenny Army Depot : Letterkenny, PA	0.000	0.961	Mar 2017	-		-		-		-	0.000	0.961	0.000
RCIS Type I	C/CPIF	PM FP, ALUGS : WARREN MI	0.000	-		4.133	Jul 2017	3.350	Dec 2017	-		3.350	Continuing	Continuing	0.000
MTRS Inc II	C/FFP	PM FP, PdM UGV : Warren, MI	0.000	-		8.418	Mar 2017	-		-		-	0.000	8.418	0.000
VOSS Geo-location and Infrared Camera	C/CPFF	Various : Ft. Belvoir, VA	1.393	0.827	Mar 2016	1.127		0.295	Mar 2018	-		0.295	0.000	3.642	0.000
Multi-Function Video Display	C/CPFF	NVESD : Fort Belvoir, VA	3.222	0.250		0.250		0.250		-		0.250	3.047	7.019	3.047
RCV & Enablers Improvements - MMPV Type II Interrogation Arm	C/CPFF	KRC : Houghton, MI	0.733	0.500		-		-		-		-	0.000	1.233	0.000
SREHD (Formerly AMDS) Engineering and Manufacturing Development (EMD)	C/CPIF	Carnegie Robotics LLC : Pittsburgh, PA	24.251	3.136	Aug 2016	1.500	Jan 2017	1.150	Jan 2018	-		1.150	Continuing	Continuing	0.000
SREHD (Formerly AMDS) Trainer Development	MIPR	ARDEC : , Picatinny Arsenal, NJ	0.460	-		-		-		-		-	0.000	0.460	0.000
Subtotal			69.723	18.828		20.751		12.591		-		12.591	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection
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Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HMDS - Test Support	C/FFP	USI : Newport News, VA	0.820	0.601	Dec 2015	-		-		-		-	0.000	1.421	0.000
HMDS - Tech Support	C/FFP	MANTECH : Fairfax, VA	0.942	0.531	Nov 2015	0.203		0.175	Nov 2017	-		0.175	Continuing	Continuing	0.000
HMDS	MIPR	NVESD/CERDEC : Fort Belvoir, VA	10.213	2.220	Jan 2016	1.000		-		-		-	Continuing	Continuing	0.000
HMDS - Information Assurance	FFRDC	MITRE : McLean, VA	0.570	0.150	May 2016	0.150		-		-		-	0.000	0.870	0.000
HMDS - LOG DEMO	C/CPFF	FIBERTEK : TBD	0.381	-		-		-		-		-	0.000	0.381	0.000
HMDS	MIPR	PM FP, PdM ALUGS : Warren, MI	3.269	1.160	Jan 2016	-		-		-		-	0.000	4.429	0.000
HMDS - Cost Analysis	C/CPFF	CACI : va	0.048	-		-		-		-		-	0.000	0.048	0.000
HMDS	MIPR	PEO STRI : Orlando, FL	1.701	0.628	Jan 2016	0.490		-		-		-	0.000	2.819	0.000
HMDS	MIPR	CECOM : Aberdeen, MD	2.549	1.515	Jan 2016	1.000		-		-		-	Continuing	Continuing	0.000
HMDS - Test Data Plan Analysis	SS/CPFF	IDA : Alexandria, VA	0.560	0.350	May 2016	0.360		-		-		-	0.000	1.270	0.000
HMDS	MIPR	MSCoE : Ft. Leonard Wood, MO	0.000	0.119	Jan 2016	0.115		-		-		-	Continuing	Continuing	0.000
HMDS	MIPR	Various : Various locations	2.873	-		-		-		-		-	0.000	2.873	0.000
HMDS	MIPR	Product Realization Directorate (PRD)/CERDEC : Aberdeen, MD	1.096	0.447	Jan 2016	0.460		-		-		-	Continuing	Continuing	0.000
HMDS	MIPR	ARDEC : Picatinny Arsenal, NJ	1.901	0.524	Jan 2016	0.714		-		-		-	0.000	3.139	0.000
HMDS	MIPR	ADM : Edgewater, MD	1.206	-		-		-		-		-	0.000	1.206	0.000
HMDS	MIPR	AMRDEC : Redstone Arsenal, AL	0.549	0.472	Jan 2016	-		-		-		-	0.000	1.021	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection
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Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HMDS	MIPR	TARDEC : Warren, MI	0.545	-		-		-		-		-	0.000	0.545	0.000
RCIS Type I	MIPR	PM FP, PdM ALUGS : Warren, MI	5.599	1.037	Mar 2016	1.379	Mar 2017	1.150	Mar 2018	-		1.150	Continuing	Continuing	0.000
Robotics Interoperability	MIPR	PM FP, PdM ALUGS : Warren, MI	3.000	0.960	Mar 2016	-		-		-		-	0.000	3.960	0.000
MTRS Inc II	Various	PM FP, PdM UGV : Warren, MI	4.840	3.865	Mar 2016	-		-		-		-	0.000	8.705	0.000
VOSS Geo-location and Infrared Camera	MIPR	Various : Various	2.376	0.344		-		0.379	Jan 2018	-		0.379	0.000	3.099	0.000
Multi-function Video Display	C/CPFF	NVESD/CERDEC : Fort Belvoir, VA	2.297	0.500		0.500		0.500		-		0.500	0.000	3.797	0.000
Add on Armor (AoA) Husky RPG Kit	MIPR	TARDEC : Warren, MI	0.283	-		-		-		-		-	0.000	0.283	0.000
AoA Husky AoA Kit	MIPR	TARDEC : Warren, MI	0.000	-		0.091		0.137		-		0.137	0.000	0.228	0.000
EHP Roller Development	MIPR	TARDEC : Warren, MI	0.000	0.400	Nov 2015	-		-		-		-	0.000	0.400	0.000
EHP Blower Camera Upgrade	MIPR	TARDEC : Warren, MI	0.000	0.050	Apr 2016	-		-		-		-	0.000	0.050	0.000
SREHD (Formerly AMDS)	MIPR	Various : Various	5.580	3.512	Jan 2016	1.769	Jan 2017	0.890	Jan 2018	-		0.890	Continuing	Continuing	0.000
Subtotal			53.198	19.385		8.231		3.231		-		3.231	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HMDS	MIPR	ATEC : Alexandria, VA	2.302	2.184	Jan 2016	-		0.316	Mar 2018	-		0.316	Continuing	Continuing	Continuing
RCIS Type I	MIPR	ATEC : Aberdeen, MD	1.505	0.234	Sep 2016	0.500	Feb 2017	0.050	Jan 2018	-		0.050	0.000	2.289	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection
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Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
VOSS Geo-location and new Infrared Camera	MIPR	ATEC : Alexandria, VA	3.154	0.739		0.996		0.059	Jan 2018	-		0.059	Continuing	Continuing	Continuing
MTRS Inc II	MIPR	TARDEC, Various : Warren, MI	1.000	-		0.750	Jan 2017	-		-		-	0.000	1.750	0.000
Multi-Function Video Display	WR	KRC : Houghton, MI	1.100	-		-		-		-		-	0.000	1.100	0.000
RCV & Enabler Improvements –MMPV Type II Interrogation Arm.	MIPR	TARDEC : Warren, MI	0.100	0.267		-		-		-		-	0.000	0.367	0.000
Add on Armor (AoA) Husky RPG	MIPR	ATEC : Aberdeen, MD	0.100	-		-		-		-		-	0.000	0.100	0.000
Add on Armor Buffalo EFP	MIPR	ATEC : Aberdeen, MD	0.000	0.300	Jun 2016	-		-		-		-	0.000	0.300	0.000
Add-on Armor	MIPR	ARL : Adelphi, MD	0.100	-		-		-		-		-	0.000	0.100	0.000
SREHD (Formerly AMDS)	MIPR	ATEC : Various	0.898	0.970	Jul 2016	1.500	Aug 2017	0.574	Jun 2018	-		0.574	Continuing	Continuing	0.000
Software Engineering Center (SEC)	MIPR	TARDEC : Warren, MI	0.000	-		-		0.100		-		0.100	0.000	0.100	0.000
Subtotal			10.259	4.694		3.746		1.099		-		1.099	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	167.168	49.724		36.858		19.848		-		19.848	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022																											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																								
HMDS																																																				
(1) HMDS Increment A1 - MS C Review																																	▲ A1 MS C																			
(2) HMDS Increment A1-TC/MR																																	▲ A1 TC/MR																			
(3) HMDS Increment A1-FUE																																					▲ A1 FUE															
(4) HMDS Increment A1-IOC																																									▲ A1 IOC											
(5) HMDS Increment A1 Award ECP for WD																																	▲ A1 ECP WD																			
HMDS Risk Reduction/ECP																																									A1 V1 RR/ECP											
(6) HMDS Increment A1 w/WD FUE																																													▲ HMDS ECP w/WD FUE							
HMDS Testing																																									HMDS Testing											
RCIS Type I and Type II																																																				
(7) RCIS Type I MS B									▲ MS B																																											
(8) RCIS Type I EMD Contract Award									▲ EMD Contract Award																																											
(9) RCIS Type I PDR													▲ PDR																																							

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022								
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
(1) RCIS Type I CDR																	▲ CDR																
(2) RCIS Type I TRR																	▲ TRR																
(3) RCIS Type I MS C																	▲ MS C																
(4) RCIS Type I Low Rate Initial Production (LRIP)																	▲ LRIP																
(5) RCIS Type I Full Rate Production (FRP) Decision Review																													▲ FRP DR				
(6) RCIS Type II initiation																													▲ RCIS Type II Initiation				
MTRS																																	
(7) MTRS Inc II RFP																	▲ RFP																
(8) MTRS PDR																	▲ PDR																
(9) MTRS Inc II MS B/C																	▲ MS B/C																
(10) MTRS Inc II Contract Award																	▲ Contract Award																
VOSS																																	
Geo-location Integration																																	

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Geo-location Qualification																												
(1) Geo-location Operation Test																												
Infrared Camera Integration																												
Infrared Camera Qualification																												
MVD																												
MVD Operational Testing																												
MVD Production Cut-In																												
MVD to Incorporate EHP/ Spiral Software Development																												
MVD Future Incremental Capability Upgrades/ Spiral Software Development																												
RCV & Enablers																												
Husky Semi-autonomous Control Demo																												
RCV Weight Reduction Study																												
RCV Transportability Study																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interrogation Arm Upgrade Demonstrator MMPV Type II					Prototype Development																							
(1) Interrogation Arm Upgrade Demonstrator MMPV Type II Cut-In																												
EHP Debris Blower Camera Upgrade																												
Buffalo RPG Kit reverse engineer																												
(2) RPG Defeat Add on Armor Husky LRIP																												
(3) RPG Defeat Add on Armor Husky LRIP Testing																												
(4) RPG Defeat Add on Armor Husky FRP																												
EHP Roller Development																												
EFP Defeat Add on Armor Research continuation w/ ARL																												
(5) EFP Defeat Add on Armor Prototype Development (Buffalo)																												
(6) EFP Defeat Add on Armor LRIP (Buffalo)																												
(7) EFP Defeat Add on Armor LRIP Testing (Buffalo)																												
(8) EFP Defeat Add on Armor FRP (Buffalo)																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EFP Defeat Add on Armor Prototype Development (Husky)	<div style="position: absolute; top: 50px; left: 50px; font-weight: bold;">Prototype Development</div>				[Bar]																							
(1) EFP Defeat Add on Armor LRIP (Husky)									[Bar]																			
(2) EFP Defeat Add on Armor LRIP Testing (Husky)													[Bar]															
(3) EFP Defeat Add on Armor FRP (Husky)																	[Bar]											
SREHD (Formerly AMDS)																												
SREHD (Formerly AMDS) Risk Reduction Testing (RRT)	[Bar]																											
(4) SREHD (Formerly AMDS) Critical Design Review (CDR)					[Bar]																							
SREHD (Formerly AMDS) Developmental Test (DT)					[Bar]																							
SREHD (Formerly AMDS) Logistics Demonstration (Log Demo)					[Bar]																							
(5) SREHD (Formerly AMDS) Milestone C Low Rate Initial Production									[Bar]																			
SREHD (Formerly AMDS) Initial Operational Test and Evaluation (IOT&E)													[Bar]															
(6) SREHD (Formerly AMDS) Full Rate Production (FRP)																	[Bar]											
(7) SREHD (Formerly AMDS) Initial Operational Capability (IOC)																					[Bar]							

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) SREHD (Formerly AMDS) Full Operational Capability (FOC)																					▲ FOC							

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
HMDS	1	2016	1	2023
HMDS Increment A1 - MS C Review	3	2017	3	2017
HMDS Increment A1-TC/MR	4	2017	4	2017
HMDS Increment A1-FUE	2	2018	2	2018
HMDS Increment A1-IOC	3	2019	3	2019
HMDS Increment A1 Award ECP for WD	2	2017	2	2017
HMDS Risk Reduction/ECP	2	2017	1	2023
HMDS Increment A1 w/WD FUE	3	2020	3	2020
HMDS Testing	2	2018	1	2023
RCIS Type I and Type II	1	2015	4	2022
RCIS Type I MS B	1	2018	1	2018
RCIS Type I EMD Contract Award	1	2018	1	2018
RCIS Type I PDR	3	2018	3	2018
RCIS Type I CDR	3	2019	3	2019
RCIS Type I TRR	4	2019	4	2019
RCIS Type I MS C	3	2020	3	2020
RCIS Type I Low Rate Initial Production (LRIP)	3	2020	3	2020
RCIS Type I Full Rate Production (FRP) Decision Review	3	2022	3	2022
RCIS Type II initiation	3	2020	3	2020
MTRS	1	2016	3	2017
MTRS Inc II RFP	4	2016	4	2016
MTRS PDR	1	2018	1	2018

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
MTRS Inc II MS B/C	3	2017	3	2017
MTRS Inc II Contract Award	3	2017	3	2017
VOSS	1	2016	1	2016
Geo-location Integration	1	2016	4	2016
Geo-location Qualification	1	2017	4	2017
Geo-location Operation Test	4	2017	4	2017
Infrared Camera Integration	1	2017	4	2017
Infrared Camera Qualification	1	2018	4	2018
MVD	1	2016	4	2022
MVD Operational Testing	4	2017	1	2018
MVD Production Cut-In	1	2018	1	2023
MVD to Incorporate EHP/ Spiral Software Development	1	2017	4	2018
MVD Future Incremental Capability Upgrades/ Spiral Software Development	1	2017	4	2020
RCV & Enablers	1	2016	4	2022
Husky Semi-autonomous Control Demo	1	2018	3	2018
RCV Weight Reduction Study	1	2018	4	2018
RCV Transportability Study	2	2018	4	2019
Interrogation Arm Upgrade Demonstrator MMPV Type II	2	2017	2	2018
Interrogation Arm Upgrade Demonstrator MMPV Type II Cut-In	4	2022	4	2022
EHP Debris Blower Camera Upgrade	2	2016	3	2016
Buffalo RPG Kit reverse engineer	2	2017	4	2017
RPG Defeat Add on Armor Husky LRIP	1	2016	1	2016
RPG Defeat Add on Armor Husky LRIP Testing	3	2017	3	2017
RPG Defeat Add on Armor Husky FRP	4	2017	4	2017
EHP Roller Development	1	2016	2	2017

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
EFP Defeat Add on Armor Research continuation w/ ARL	1	2020	2	2020
EFP Defeat Add on Armor Prototype Development (Buffalo)	2	2017	2	2017
EFP Defeat Add on Armor LRIP (Buffalo)	3	2017	3	2017
EFP Defeat Add on Armor LRIP Testing (Buffalo)	4	2017	4	2017
EFP Defeat Add on Armor FRP (Buffalo)	1	2018	1	2018
EFP Defeat Add on Armor Prototype Development (Husky)	2	2017	2	2017
EFP Defeat Add on Armor LRIP (Husky)	3	2017	3	2017
EFP Defeat Add on Armor LRIP Testing (Husky)	4	2017	4	2017
EFP Defeat Add on Armor FRP (Husky)	1	2018	1	2018
SREHD (Formerly AMDS)	1	2016	3	2018
SREHD (Formerly AMDS) Risk Reduction Testing (RRT)	1	2016	1	2016
SREHD (Formerly AMDS) Critical Design Review (CDR)	2	2016	2	2016
SREHD (Formerly AMDS) Developmental Test (DT)	4	2016	2	2017
SREHD (Formerly AMDS) Logistics Demonstration (Log Demo)	1	2017	1	2017
SREHD (Formerly AMDS) Milestone C Low Rate Initial Production (LRIP)	4	2017	4	2017
SREHD (Formerly AMDS) Initial Operational Test and Evaluation (IOT&E)	3	2018	3	2018
SREHD (Formerly AMDS) Full Rate Production (FRP)	4	2018	4	2018
SREHD (Formerly AMDS) Initial Operational Capability (IOC)	1	2020	1	2020
SREHD (Formerly AMDS) Full Operational Capability (FOC)	3	2021	3	2021

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev			Project (Number/Name) 434 / Anti-Personnel Landmine Alternatives (NSD)				
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
434: Anti-Personnel Landmine Alternatives (NSD)	-	11.739	0.000	4.100	-	4.100	0.000	0.000	0.000	0.000	0.000	15.839
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Spider Increment 1A will build upon the existing M7 Spider system. The M7 Spider system is a hand-emplaced, remotely controlled (Man-In-The-Loop) system that provides highly responsive terrain-shaping and protection capabilities. M7 Spider replaces persistent anti-personnel landmines, is compliant with US National Landmine policy, and has been fielded to US forces in support of Operation Enduring Freedom and currently being fielded to Engineers within Brigade Combat Teams in the Active and Army National Guard components. Additional capabilities will be developed to enhance the Spider Remote Control Station and demonstrate the ability to employ legacy Government-Off-The-Shelf (GOTS) lethal and non-lethal anti-personnel (AP) munitions and counter mobility obstacles. Spider Increment 1A will utilize an open system architecture to facilitate future munition integration.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Spider Increment 1A Contract	6.621	-	-	-	-
Description: Develop Spider Increment 1A Controller with the ability to employ/control and initiate AP & counter mobility obstacle munitions. Supported development efforts of the Spider NLL for use with the Spider Inc 1A system.					
FY 2016 Accomplishments: Extend the period of performance for the Engineering and Manufacturing Development (EMD) Phase to provide enhancement of software changes. Achieved successful Limited User Test (LUT).					
Title: Engineering Support	2.138	-	0.713	-	0.713
Description: Perform engineering support.					
FY 2016 Accomplishments: Continue to support development of Spider Increment 1A system. Support Critical Design Review (CDR) and Post CDR assessment. Support Milestone C and government qualification testing.					
FY 2018 Base Plans: Continue to support development of Spider Increment 1A system. Monitor Initial Operation Test (IOT).					
Title: Test and Evaluation	2.566	-	2.898	-	2.898

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 434 / Anti-Personnel Landmine Alternatives (NSD)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: Provide support to Contractor/Government test activities.</p> <p>FY 2016 Accomplishments: DIACAP/Cooperative Vulnerability and Penetration Assessment (CVPA) Information Assurance (IA)/ Cybersecurity, Electromagnetic Environmental Effects (E3), Environmental, Live Munition Firing Test (LMFT), Interactive Electronic Training Manual (IETM), Validation/Logistics Demo, Force Development Test (FDT), Limited User Test (LUT), and Army Interoperability Certification (AIC).</p> <p>FY 2018 Base Plans: Execute Initial Operational Test (IOT).</p>					
<p>Title: Program Management and Oversight</p> <p>Description: Program Management and support of Spider Increment 1A.</p> <p>FY 2016 Accomplishments: Perform overall program management support for the execution of the Spider Inc 1A development effort and oversee Government Qualification Testing. Conduct all major Program Reviews to include Critical Design Design Review (CDR), oversee Government Qualification Testing. Prepare the Milestone C package to include the Capability Production Document (CPD) and other Acquisition Documents.</p> <p>FY 2018 Base Plans: Perform overall program management support for the execution of the Spider Inc 1A development effort and oversee Government Qualification Testing. Manage the Initial Operational Test (IOT).</p>	0.244	-	0.328	-	0.328
<p>Title: FY 2014-2016 Reductions</p> <p>Description: Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR) and Federally Funded Research & Development Centers (FFRDC) Reductions.</p> <p>FY 2016 Accomplishments: Small Business Innovative Research (SBIR) final costs were \$148,000. Small Business Technology Transfer Program (STTR) final costs were \$22,000.</p> <p>FY 2018 Base Plans: Estimated Small Business Innovative Research (SBIR) costs are \$140,000.</p>	0.170	-	0.161	-	0.161

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 434 / Anti-Personnel Landmine Alternatives (NSD)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Estimated Small Business Technology Transfer Program (STTR) costs are \$21,000.					
Accomplishments/Planned Programs Subtotals	11.739	-	4.100	-	4.100

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• Spider - APLA Remote Control Unit: OPA2 Spider Increment 1 Program B55501	1.683	1.985	0.996	-	0.996	-	-	-	-	0.000	4.664
• Spider Family Of Networked Munition: OPA2 Spider Increment 1A Program B54020	9.199	10.796	4.500	-	4.500	10.635	9.245	8.936	8.728	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Engineering Manufacturing Development (EMD) contract was a competitively awarded Cost Plus Incentive Fee EMD contract with a one year Firm-Fixed Price (FFP) Low Rate Initial Production (LRIP) option. A Government Level 3 Technical Data Package (TDP) will be delivered as part of the EMD contract. The modified TDP at the end of LRIP will be the basis of a Full Rate Production (FFP) contract.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	125.107	205.590	164.409	-	164.409	189.277	144.987	157.093	181.734	Continuing	Continuing
323: Common Hardware Systems	-	4.639	4.771	5.190	-	5.190	5.538	6.246	5.772	4.863	Continuing	Continuing
334: Common Software	-	16.273	3.303	0.842	-	0.842	0.991	0.330	0.165	9.887	Continuing	Continuing
C29: Centralized Technical Support Facility (CTSF)	-	6.203	2.617	4.918	-	4.918	6.618	6.531	6.236	5.728	Continuing	Continuing
C34: Army Tac C2 Sys Eng	-	8.668	8.881	7.767	-	7.767	7.790	7.865	8.071	8.313	Continuing	Continuing
EJ4: COMMAND POST COMPUTING ENVIRONMENT (CPCE)	-	67.690	82.091	61.576	-	61.576	36.512	7.511	1.617	1.630	Continuing	Continuing
EJ5: MOUNTED COMPUTING ENVIRONMENT (MCE)	-	11.970	15.271	16.949	-	16.949	16.824	5.451	2.829	2.190	0.000	71.484
EJ6: TACTICAL ENHANCEMENT	-	8.416	11.864	0.000	-	0.000	8.600	0.319	0.000	0.000	0.000	29.199
EJ7: TACTICAL DIGITAL MEDIA	-	1.248	2.467	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.715
EK9: TACTICAL NETWORK OPERATIONS AND MANAGEMENT	-	0.000	39.264	9.348	-	9.348	40.823	55.417	80.415	84.281	Continuing	Continuing
EQ8: Mobile/Handheld Computing Environment (M/HHCE)	-	0.000	10.563	11.850	-	11.850	11.920	12.089	12.385	12.577	Continuing	Continuing
ER9: Command Post Integrated Infrastructure	-	0.000	0.000	20.000	-	20.000	29.230	15.570	12.600	26.630	Continuing	Continuing
EW3: Unit Task Reorganization (UTR) Development	-	0.000	24.498	25.969	-	25.969	24.431	27.658	27.003	25.635	Continuing	Continuing

A. Mission Description and Budget Item Justification
 The Common Hardware Systems (CHS) program acquires and sustains highly flexible, customized, cost effective, common, and simplified non-developmental C5ISR solutions that improve interoperability and connectivity on the battlefield while garnering efficient competition to integrate the latest commercial technology onto the Army

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	
<p>tactical network. CHS provides technical support, environmental and evaluation testing, and system design / configuration management across Army tactical programs to ensure interoperability and integration of hardware throughout the development of capabilities. CHS hardware evaluations facilitate and simplify the selection of common hardware solutions across the operational battlefield. CHS creates efficiencies through the acquisition of streamlined common hardware configurations across the Common Operating Environments (COE)s, the sustainment community, and tactical programs. CHS also provides logistical services to include worldwide 72-hour turnaround repair through strategically located support centers for tactical military units, manages customizable warranty, maintenance and failure rate reporting, and technical support services to support specific Army program requirements.</p> <p>Common Software (CS) is the suite of systems through which the Army develops, integrates and tests common software products and/or components used for communication between Army Mission Command Systems and Joint and coalition Command and Control (C2) applications. The CS project provides state-of-the-art software technologies and functionality that is used by numerous Mission Command (MC) and joint systems to eliminate the need for service independent development and duplication of effort. The CS project also manages and performs technology demonstrations of emerging technologies for future use by Army C2 systems. The CS program is a cornerstone in the Army's COE modernization efforts.</p> <p>This program element also includes the Central Technical Support Facility (CTSF) which is the Army's single strategic facility responsible for executing Army Interoperability Certification (AIC) system of system verification/validation checkout, testing, and configuration management for the Army's LandWarNet Baseline.</p> <p>The Technical Management Division (TMD) effectively manages the System-of-Systems engineering, Enterprise and Integration efforts for the continuing evolution of the network within the Program Executive Office Command, Control, Communication and Tactical (PEO C3T) portfolio of technology across the capability enhancement packages to deliver efficient and effective cross-domain technical solutions.</p> <p>The MCE is one of the six computing environments (CEs) formalized by the AAE under the Common Operating Environment (COE) initiative. MCE standardizes end-user environments and enables streamlined deployment of new warfighting applications. The JBC-P is the foundational hardware element of the MCE. MCE enables Mission Command capability development to echelons from dismounted command nodes to echelons above corps, providing enhanced interoperability, and simplified end-user interface. Requirements for the MCE are established in the draft Mounted Computing Environment Information System Initial Capabilities Document (MCE IS CDD). FY2018 funding provides the means to continue to manage and develop MCE in concert with CPCE.</p> <p>The Command Post Computing Environment (CPCE), one of the computing environments under the Common Operating Environment (COE), provides a common foundation (Common Infrastructure / Common Services) for Warfighter Capabilities. The CPCE establishes a Common Core Software Baseline and Hardware Configuration upon which future Warfighter capabilities can be built. The CPCE targets Command and Control (C2) capability development at tactical echelons that span from the company to all Army Service Component Commands (ASCC). The CPCE will be the most critical computing environment developed to support the command posts and combat operations.</p> <p>Tactical Digital Media (TDM) is comprised of photo, video and audio recording and editing equipment that will be assembled and issued as variant kits tailored to unit mission requirements. TDM kits address modernization gaps associated with all operational Combat Camera (COMCAM), Public Affairs (PA), and Military Information</p>		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	
<p>Support Operations (MISO) units. TDM provides essential imagery, multimedia products, and live interview capabilities that directly contribute to successful execution of a Commander's strategic engagement and communications strategy across the full range of military operations. No FY18 RDTE funding.</p> <p>Tactical Network Operations (NetOps) Management (TNOM) will support the development and integration of the Tactical NetOps software capabilities in support of Network Operations (NetOps) Convergence, Army Objectives and emerging Cyber Center of Excellence (CCOE) requirements. The end state program is designed to synchronize LandWarNet, Network-enabled Mission Command, and Global Information Grid 2.0 Network Operations (NetOps) efforts in an integrated and interoperable framework, spanning all echelons of command and supporting the full range of military operations for Army, Joint, and Coalition Forces in order to ensure converged NetOps. The initial mission is convergence of DoD Information Network (DoDIN) functions into a single integrated set of Tactical NetOps and Management software. This integrated solution provides NetOps capability to manage Tactical Networks from the Soldier to the Theater network entry point and supports the implementation of integrated NetOps for Unified Network Operations (UNO). UNO will deliver a standardized visualization capability (integrating both Upper and Lower Tactical Internet NetOps) in order to reduce complexity and inform the military decision making processes. UNO will also provide enhanced capability to detect, respond, and restore from cyber incidents.</p> <p>Project ER9 Command Post Integrated Infrastructure (CPI2); Program Executive Office for Command, Control and Communications - Tactical (PEO C3T) fields mobile Command Post Nodes by integrating supporting mission command solutions in accordance with Directed Requirement with a FY20 First Unit Equipped in order to enhance the survivability and mobility of brigade and below command post formations. On order, Command Post Integrated Infrastructure will replace selected elements of the legacy command post to provide improved expeditionary capability, survivability, agility, and scalability for Corps and Division Main and Tactical Command Posts, Brigade Main and Tactical Command Posts, and Battalion Command Posts. It will ensure information and support systems are introduced into the Command Post through physical integration allowing the commander to tailor the Command Post as missions dictate.</p> <p>Project EQ8, Mobile/Handheld Computing Environment supports the Nett Warrior (NW) Program (named in honor of Medal of Honor recipient Colonel Robert C. Nett), also known as the Ground Soldier System (GSS) Program. The program leverages commercial smart devices and secure Army tactical radios to provide the dismounted leader an integrated mission command and situational awareness system for use during combat operations. The NW system provides leaders electronic real-time information on friendly positions; information about enemy activity and movement; navigational data and map imagery; a collaborative planning tool; and other mission related graphics which effectively puts the power of the entire Army tactical network in the hands of the dismounted leader.</p> <p>As the ARMY's tactical network continues to evolve from a loose federation of stove-piped systems to a single, integrated, service-oriented and standards-based environment, Unit Task Reorganization (UTR) development capabilities must also evolve in the same manner. Today, UTR is a complex, manually intensive, and time-consuming process. This is due in part to the large increase in network-enabled nodes within the tactical network. In addition, tools employed by the G/S-6 staff to conduct UTR are designed, developed, and fielded by various program and product managers, each with discrete requirements, developmental schedules, and funding lines. This impedes the G/S-6 Staff's ability to conduct UTR in an integrated manner. To enhance UTR, we will address five fundamental challenges to improve UTR. Efficient data sharing is a fundamental characteristic of modern-day integrated systems. The ability to read, modify, and exchange data in a uniform and efficient manner is essential to achieve an integrated UTR System.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>
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Tactical Enhancement supports the evaluation and testing requirements for Modular Communications Node - Advanced Equipment (MCN-AE), Terrestrial Transmission (TRILOS) and Troposcatter Transmission (TROPO) capabilities procured and fielded under the Signal Modernization (SIGMOD) funding line, B00010. TRILOS and TROPO will provide redundancy communications in a Satellite denied environment by providing improved Line of Site and beyond line of sight radio systems. SIGMOD Capabilities:

MCN-AE: Provides Top Secret/Sensitive Compartmented Information (TS/SCI) communications to Brigades, Divisions, Corps, and Signal Battalions over the WIN-T network.

TRILOS: Enables Mission Command in a Satellite Denied environment at higher throughput than the current High Capacity Line of Sight System (HCLOS). TRILOS will enable Army units to reduce reliance on costly satellite bandwidth. TRILOS will extend the network by utilizing a significantly reduced Size, Weight and Power (SWaP) radio verses the aging HCLOS system.

TROPO: Enables Mission Command in a Satellite Denied environment by providing Beyond Line of Site (BLOS) capability over longer ranges and at higher throughput than the current BLOS System. TROPO extends the network by utilizing a significantly reduced SWaP radio verses the current system. TROPO will enable Army units to reduce reliance on costly satellite bandwidth.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	131.639	205.590	210.427	-	210.427
Current President's Budget	125.107	205.590	164.409	-	164.409
Total Adjustments	-6.532	0.000	-46.018	-	-46.018
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.467	-			
• Adjustments to Budget Years	0.000	0.000	-46.018	-	-46.018
• Other Adjustments 1	-2.065	0.000	0.000	-	0.000

Change Summary Explanation

FY 2018 Overall Base funding decrease of (46.018) million is driven by the following program changes and project funding realignments:

- Project 323 / Common Hardware Systems was increased by .148 million
- Project 334 / Common Software was decreased by (.008) million
- Project C29 / Centralized Technical Support Facility (CTSF) was increased by 3.571 million
- Project C34 / Army Tactical C2 Systems Engineering was decreased by (1.327) million
- Project EJ4 / Command Post Computing Environment (CPCE) was decreased by (36.502) million
- Project EJ5 / Mounted Computing Environment (MCE) was decreased by (1.657) million
- Project EJ6 / Tactical Enhancement had no changes/funding in FY 2018

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	
<ul style="list-style-type: none">- Project EJ7 / Tactical Digital had no changes/funding in FY 2018- Project EK9 / Tactical Network Operations and Management was decreased by (57.240) million- Project EQ8 / Mobile/Handheld Computing Environment (M/HHCE) was increased by 1.028 million- Project ER9 / Expeditionary Army Command Post is a New Start Program with initial funding in the amount of 20.000 million- Project EW3 / Unit Task Reorganization (UTR) Development was increased by 25.969 million		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) 323 / Common Hardware Systems			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
323: Common Hardware Systems	-	4.639	4.771	5.190	-	5.190	5.538	6.246	5.772	4.863	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common Hardware Systems (CHS) program acquires and sustains highly flexible, customized, cost effective, common, and simplified non-developmental C5ISR solutions that improve interoperability and connectivity on the battlefield while garnering efficient competition to integrate the latest commercial technology onto the Army tactical network. CHS provides technical support, environmental and evaluation testing, and system design / configuration management across Army tactical programs to ensure interoperability and integration of hardware throughout the development of capabilities. CHS hardware evaluations facilitate and simplify the selection of common hardware solutions across the operational battlefield. CHS creates efficiencies through the acquisition of streamlined common hardware configurations across the Common Operating Environments (COE)s, the sustainment community, and tactical programs. CHS also provides logistical services to include worldwide 72-hour turnaround repair through strategically located support centers for tactical military units, manages customizable warranty, maintenance and failure rate reporting, and technical support services to support specific Army program requirements.

FY 2018 funds support CHS to continue to manage the acquisition and delivery of CHS equipment and associated services in support of customer requirements. It will also provide technology insertions and the continued support for hardware and systems engineering, and evaluations. CHS will continue CHS-5 contract pre-award activities.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Acquisition Management, System/ Configuration Management, and technical evaluation and testing of CHS equipment and services in support of program requirements	3.804	3.729	-	-	-
Description: Funding is provided for the following effort					
FY 2016 Accomplishments: Managed the acquisition/delivery, System/ Configuration Management, and technical evaluation and testing of CHS equipment in support of customer requirements.					
FY 2017 Plans: Will continue the management of the acquisition/delivery, System/ Configuration Management, implementing Army initiatives, supporting sustainment of items procured, and technical evaluation and testing of CHS equipment in support of customer requirements.					
Title: CHS Technology Insertion in support of program capability requirements	0.603	0.800	-	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) 323 / Common Hardware Systems			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<i>Description:</i> Funding is provided for the following effort. <i>FY 2016 Accomplishments:</i> Provided CHS Technology Insertion in support of program capability requirements. <i>FY 2017 Plans:</i> Continue CHS Technology Insertion in support of program capability requirements.					
<i>Title:</i> Non Recurring Engineering (NRE) Costs for CHS-5 Products <i>Description:</i> Funding is provided for the following effort. <i>FY 2016 Accomplishments:</i> Provided Non Recurring Engineering (NRE) Costs for CHS-5 Products. <i>FY 2017 Plans:</i> Non Recurring Engineering (NRE) Costs for New CHS-5 Products.	0.232	0.242	-	-	-
<i>Title:</i> Program Support and Acquisition Support for CHS and customer programs <i>Description:</i> Funding is provided for the following effort. <i>FY 2018 Base Plans:</i> Will continue CHS program support and acquisition support for CHS and customer programs.	-	-	3.010	-	3.010
<i>Title:</i> Logistical service support for customer programs <i>Description:</i> Funding is provided for the following effort. <i>FY 2018 Base Plans:</i> Will continue CHS Logistical service support for customer programs.	-	-	0.623	-	0.623
<i>Title:</i> Technical and Test Support for customer programs <i>Description:</i> Funding is provided for the following effort. <i>FY 2018 Base Plans:</i> Will continue CHS Technical and Test Support for customer programs.	-	-	1.557	-	1.557
Accomplishments/Planned Programs Subtotals	4.639	4.771	5.190	-	5.190

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) 323 / <i>Common Hardware Systems</i>

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

N/A

Remarks

D. Acquisition Strategy

The overall goal is to improve interoperability, compatibility and sustainability and lower life cycle costs by standardizing battlefield command and control automation and other warfighting systems (net centric, etc) through centralized buys of modified/ruggedized non-developmental items. CHS will provide seamless, rapid, and consolidated procurement of commercial IT, customizable sustainment strategies, non-personal services, and continuous technology upgrades to support tactical programs fielding schedules. CHS provides a coherent migration strategy for acquisition of warfighting systems and new technology through the use of technology insertion. CHS also conducts common environmental testing of hardware items thereby reducing the testing requirements for individual Project Managers. CHS provides contractual tools that enable supported programs to effectively and efficiently establish organic sustainment support for commercial IT and utilizes hardware failure data and logistical analysis to support programs sustainment strategy decisions.

An Indefinite Delivery/Indefinite Quantity firm fixed priced, full and open competition contract was awarded to General Dynamics in May 2003, for ruggedization and production. In August 2011, CHS awarded, on a best value basis, the follow-on CHS-4 contract via full and open competition. CHS-5 is to be awarded in FY18 to provide flexibility for Tactical Programs of Record (PoR)s to meet hardware and associated services requirements through full and open competition and to provide an agile solution to support COE, network integration activities, capability set development, and logistical requirements.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) 334 / Common Software			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
334: Common Software	-	16.273	3.303	0.842	-	0.842	0.991	0.330	0.165	9.887	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 334 Common Software (CS): CS is the suite of systems through which the Army develops, integrates and tests common software products and/or components used for communication between Army Mission Command Systems and the greater C4ISR community. The CS project provides state-of-the-art software technologies and functionality that is used by numerous C4ISR and joint systems to eliminate the need for service independent development and duplication of effort. The CS program is the hub of interoperability for the Army's current C4ISR systems.

FY17 funding supports backwards compatibility with previous versions of Common Software products implementations. Products include Data Dissemination Services (DDS) and C2 Infrastructure Virtual Machine as foundation for machine-to-machine (M2M) messaging, Unit Task Organization, Universal Chat Bridge and Command and Control Registry hosted on Tactical Server Infrastructure (TSI). Simply put, CS provides the "glue" that makes the rest of the C4ISR products interoperate.

FY18 funding supports any remaining adjustments to ensure backwards compatibility with previous versions of Common Software products implementations.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Common Software development in support of the C4ISR community	3.556	1.955	0.613	-	0.613
Description: Interoperability and Backwards Compatibility efforts					
FY 2016 Accomplishments: Common Software development efforts for infrastructure development, messaging standards integration, addressing development, remote configuration, management and widget services					
FY 2017 Plans: Funding is provided for Common Software development efforts for backwards compatibility and design of future efforts with messaging standards integration, addressing development, remote configuration and management and widget services					
FY 2018 Base Plans: Funding is provided for Common Software transition efforts and development of MOA with SEC to ensure all programmatic requirements are accounted for.					
Title: Joint and Coalition interoperability efforts	2.274	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) 334 / Common Software			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Provide software for interoperability of Joint and Coalition efforts					
FY 2016 Accomplishments: Will continue to provide software for interoperability of Joint and Coalition efforts including development, JITC Certification and Assessment, and exercise support					
Title: Integration of previously developed and design of future required mission command software services and common software solutions into the Army CP CE versions					
Description: Funding is provided for the following effort					
FY 2016 Accomplishments: Technical evaluation of previously developed software capabilities for integration with the computing environments of the Army Common Operating Environment (COE) architecture to include appropriate Mounted and Mobile/Handheld computing environments. Efforts will include assessment of software applicability to the core infrastructure, development/modification of software necessary to integrate, integration with common computing environments, and validation					
Title: Software Development - Tactical Server Infrastructure (TSI)					
Description: Tactical Server Infrastructure (TSI) provides an integrated Server hardware and locally hosted Enterprise Service Infrastructure for use in tactical Army command posts. C2 infrastructure and data services hosted on TSI providing a common core infrastructure component to the C4ISR architecture					
FY 2016 Accomplishments: TSI software application and infrastructure development					
FY 2017 Plans: TSI software application and infrastructure development					
Title: Test and Evaluation					
Description: Test and Evaluation efforts include the planning and conduct of Test, Evaluation, and Integration events. This includes participation in Network Integration Exercises (NIEs), User Juries, Assessments, Risk Reduction Events (RREs), vulnerability testing, and Army Interoperability Certification (AIC) testing. Testing can consist of stand-alone capability testing in a lab/sandbox environment or full interoperability testing with multiple systems in an operational environments					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) 334 / Common Software

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p><i>FY 2016 Accomplishments:</i> Test and Evaluation required for Common Software and Battle Command Common Services (BCCS). Software testing documentation and training and AIC</p> <p><i>FY 2017 Plans:</i> Test and Evaluation required for Common Software and Battle Command Common Services (BCCS). Software testing documentation and training and AIC</p> <p><i>FY 2018 Base Plans:</i> Test and Evaluation required for Common Software. Software testing documentation and training and AIC</p>					
<p><i>Title:</i> Program Management</p> <p><i>Description:</i> Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning meetings and IPTs</p> <p><i>FY 2016 Accomplishments:</i> Program Management - Includes Core, Matrix, and Contractor support</p> <p><i>FY 2017 Plans:</i> Program Management - Includes Core, Matrix, and Contractor support</p> <p><i>FY 2018 Base Plans:</i> Program Management - Includes Core, Matrix, and Contractor support</p>	1.700	0.335	0.055	-	0.055
Accomplishments/Planned Programs Subtotals	16.273	3.303	0.842	-	0.842

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

N/A

Remarks

D. Acquisition Strategy

The overall acquisition goal of the CS project is to provide common products that are used horizontally across programs, preventing duplication of effort by Army and Joint programs and facilitating life cycle cost efficiencies. All software development efforts will be competed among Capability Maturity Model Integration (CMMI) certified developers.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) 334 / <i>Common Software</i>
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In accordance with the approved Net-enabled Mission Command Initial Capabilities Document (NeMC ICD), software capability will be developed in 3-year increments to facilitate messaging, mediation and addressing for Army, Joint and Coalition Partners. The product development funded under this R-Form is an integral part of the C4ISR systems, and a core communication component of the virtualized infrastructure and will be accomplished in part under a Project Manager, Mission Command (PM MC) General Services Administration (GSA) engineering services contract approach which will consist of multiple prime contractors competitively bidding on a single development solicitation. This strategy is designed to optimize opportunities for improved interoperability among the systems, to capture the benefits of competition, and to ensure the rapid integration of new capabilities into warfighter systems. This strategy is also designed to reduce the physical footprint, the logistics support requirements, and to increase operational efficiency by integration of additional system interoperability services which reduce duplication of effort and cost; and allows for development of communication standards across the DoD community.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
C29: Centralized Technical Support Facility (CTSF)	-	6.203	2.617	4.918	-	4.918	6.618	6.531	6.236	5.728	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project C29 - Centralized Technical Support Facility: The Central Technical Support Facility (CTSF) is the Army's premier test and certification facility for System of Systems interoperability, functioning as CIO/G6's designated independent test agent. CTSF is the Army's sole strategic facility responsible for conducting engineering support associated with test integration of Army LandWarNet/Mission Command (LWN/MC) architectures and baselines into the Army Interoperability Certification (AIC) system of systems environment, performing AIC testing and conducting configuration management for all operational and tactical level applications (individual systems, System of Systems, and Families of Systems) prior to fielding. The CTSF provides validated test data to the Department of the Army and Joint agencies to accredit interoperability certifications. The distributed test environment of the CTSF is accomplished through the Federation of Net-centric Sites (FaNS) construct. This FaNS construct addresses distributed integration development and testing using the core infrastructure of the CTSF to harness AMC, Army, and Joint expertise/resources. Through these federated resources, the CTSF executes interoperability development and certification testing of the Warfighter mission areas, to include Network Evaluation spinouts, as they digitize and become part of the Army's LandWarNet.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Army Interoperability Certification (AIC) Testing	5.111	0.885	3.494	-	3.494
<p>Description: Conduct Army Interoperability Certification (AIC), planning/coordination/scheduling/ and reporting of Common Operating Environment (COE) and software block testing (local and distributed). Provide stakeholders data collection/data analysis/data dissemination/simulation/stimulation verification/validation. Manage the set-up, configuration, integration, operations and maintenance of the LandWarNet/Mission Command (LWN/MC) systems within the CTSF test environments. Function as the CIO/G-6's Independent Test Agent for Program Managers of LWN/MC systems that have an Acquisition Life Cycle requirement for testing interoperability of software and associated hardware prior to fielding to the Warfighter. Report the results of Army Interoperability Certification Tests to the CIO/G-6, PM, and TRADOC communities to support updates to the G-3/5/7 managed baseline.</p> <p>FY 2016 Accomplishments: Continued SWB11-12, and COE v1.1 and beyond test planning, test case development, test environment architecture set-up, to include information assurance software compliance and software test tools. Conducted interoperability testing for the SWB11-12 systems that comprise the LWN/MC baseline. Supported the ASA(ALT)</p>					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>led Interoperability and Integration Event (I2E) for COE 1.1 baseline. Continued work to define the testing methodology as part of the Army transition to a COE strategy, while working to incrementally implement and utilize distributed Control Point (CP) test processes and test architectures that will comprise the Federated Integration Environment (FIE).</p> <p>FY 2017 Plans: Continue SWB11-12 test planning, test case development, test environment architecture set-up, to include information assurance software compliance, and software test tools. Conduct interoperability testing for the SWB11-12 systems that comprise the LWN/MC baseline. Continue work to define the testing methodology as part of the Army transition to a COE strategy, while working to incrementally implement and utilize distributed CP test processes and test architectures that will comprise the Federated Integration Environment (FIE). Conduct COE v3.0 planning, test case development and architecture set-up incorporating CP testing construct for the Computing Environment (CE).</p> <p>FY 2018 Base Plans: Continue SWB11-12, and COE v3 and beyond test planning, test case development, test environment architecture set-up, to include information assurance software compliance, and software test tools. Conduct interoperability testing for the SWB11-12 systems that comprise the LWN/MC baseline. Support the ASA(ALT) led Interoperability and Integration Event (I2E) for COE v3.0. Conduct COE v3.0 planning, test case development and architecture set-up incorporating CP testing construct for the CE. Continue work to define the testing methodology as part of the Army transition to a COE strategy, while working to incrementally implement and utilize distributed CP test processes and test architectures that will comprise the Federated Integration Environment (FIE).</p>					
<p>Title: Engineering Services</p> <p>Description: Provide network engineering support to establish and maintain tactical architectures on the CTSF test floors and to deploying/fielded units at training centers around the world (NIE, JRTC, NTC, JMRC). System engineering support provides hardware virtualization, advanced Host Based Security System (HBSS) support, system validation and integration support to numerous PMs on the integration and risk reduction labs, and assists Army programs with interoperability assessments and AIC rehearsal. Develop/Maintain Applications for CTSF in-house programs.</p> <p>FY 2016 Accomplishments:</p>	0.145	0.139	0.159	-	0.159

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Supported AIC Integration and Testing. Continued Network Integration Checkout prior to each AIC. Continued support to PMs for integration of future COE insertions and for COE V3.0 integration. Identified and incorporated software tools to monitor performance and assisted in issue resolution. Integrated and implemented HBSS technology. Assisted PMs in the development of HBSS policies. Assisted integration and test architectures to include Program of Record (POR) and non-POR radio communications devices to provide PMs and Materiel Developers testing in realistic environments. Provided CTSF network and systems engineering for validation of end-to-end sensor and platform communications and interoperability. Provided software patch validation; network support for integration and test floors; network support to fielded units upon request; and systems engineering and analysis support to system of systems integration activities. Provided PMs and CTSF Configuration Management (CM) with a Virtualization Suite and assisted in virtualizing software. Planned and conducted engineering evaluations for AIC testing and data collection in the Network Integration Evaluation (NIE)/Capability Integration Evaluation (CIE) to leverage the operational environment and NIE/CIE resources. Supported Army Warfare Assessment (AWA), Joint Users Interoperability Communications Exercise (JUICE), and Bold Quest technology and interoperability demonstrations. Continued development and refinement of Control Point and distributed testing. Assisted Assistant Secretary of the Army (Acquisition, Logistics and Technology) [ASA(ALT)] in developing and refining Control Point Testing for COE v3.0 and distributed testing between the Computing Environments. Assisted the CEs in Federation of Net-Centric Sites (FaNS) accreditation for distributed testing. Assisted ASA(ALT) in defining the COE architectures and services. Assisted in interoperability issues for multiple Combatant Commands. Conducted radio Verification and Validation. Application Programmers maintained and sustained CMTSIII and migrated front-end web based server to the Ft. Hood NEC.</p> <p>FY 2017 Plans: Support AIC Integration and Testing. Continue Network Integration Checkout prior to each AIC. Support to PMs for COE V3.0 and follow-on integration. Identify and incorporate software tools to monitor performance and assist in issue resolution. Integrate and implement HBSS technology. Assist PMs in the development of HBSS policies. Assist integration and test architectures to include POR and non-POR radio communications devices to provide PMs and Materiel Developers testing in realistic environments. Provide CTSF network and systems engineering for validation of end-to-end sensor and platform communications and interoperability. Provide software patch validation; network support for integration and test floors; network support to fielded units upon request; and systems engineering and analysis support to system of systems integration activities. Provide PMs and CTSF Configuration Management (CM) with a Virtualization Suite and assist in virtualizing software. Plan and conduct engineering evaluations for AIC testing and data collection in the NIE/CIE to leverage the</p>					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
operational environment and NIE/CIE resources. Support Army Warfare Assessment (AWA), Joint Users Interoperability Communications Exercise (JUICE), and Bold Quest technology and coalition interoperability demonstrations. Continue development and refinement of Control Point and distributed testing. Assist ASA(ALT) in developing and refining Control Point Testing for COE v3.0 and distributed testing between the Computing Environments (CE). Assist the CEs in FaNS accreditation for distributed testing. Assist ASA(ALT) in defining the COE architectures and services. Assist in coalition partner interoperability issues for multiple Combat Commands. Conduct radio Verification and Validation. Application Programmers develop new cost model in CMTSIII and replace the existing ABC Cost Model that will be shutdown with Army Data Center Consolidation Program.					
FY 2018 Base Plans: Support AIC Integration and Testing. Continue Network Integration Checkout prior to each AIC. Support to PMs for COE V3.0 and follow-on integration. Support to backward compatibility testing between CS11-12/ COE V3.0. Identify and incorporate software tools to monitor performance and assist in issue resolution. Integrate and implement HBSS technology. Assist PMs in the development of HBSS policies. Assist integration and test architectures to include POR and non-POR radio communications devices to provide PMs and Materiel Developers testing in realistic environments. Provide CTSF network and systems engineering for validation of end-to-end sensor and platform communications and interoperability. Provide software patch validation; network support for integration and test floors; network support to fielded units upon request; and systems engineering and analysis support to system of systems integration activities. Provide PMs and CTSF Configuration Management (CM) with a Virtualization Suite and assist in virtualizing software. Plan and conduct engineering evaluations for AIC testing and data collection in the NIE/CIE to leverage the operational environment and NIE/CIE resources. Support Army Warfare Assessment (AWA), Joint Users Interoperability Communications Exercise (JUICE), and Bold Quest technology and coalition interoperability demonstrations. Continue development and refinement of Control Point and distributed testing. Assist ASA(ALT) in developing and refining Control Point Testing for COE v3.0 and distributed testing between the Computing Environments. Assist the CEs in FaNS accreditation for distributed testing. Assist ASA(ALT) in defining the COE architectures and services. Assist in coalition partner interoperability issues for multiple Combat Commands. Conduct radio Verification and Validation. Application Programmers maintain and sustain CMTSIII.					
Title: Configuration Management	0.139	0.358	0.499	-	0.499
Description: As Army Configuration Management Office (ACMO), establish and maintain oversight control of the Army Master Library for the Army Interoperability Certified Fielded Baseline (AICFB). Archive system					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>software and data products, correlated with their associated documentation, for the Army LandWarNet Mission Command Baseline (ALWNMCB), a subset of the AICFB. Establish and maintain the configuration and change management to the AICFB and the ALWNMCB for Lifecycle Software Management (LCSM). Provide support to the Army Staff (ARSTAF), Material Developers (MATDEV), Project Managers (PM), and System Owners (SO) through the orderly management of product configuration information and product change management (ChM), which enables capability revisions, improved reliability and maintainability, extended life, and reduced cost. Maintain and improve the Configuration Management Tracking System version 3 (CMTSIII), the Army's authoritative database management system (DBMS) for configuration management (CM) of the systems comprising Coalition Interoperability Assurance and Validation (CIAV), and the Warfighter Mission and Business Mission Areas of the Army Information Technology (IT) portfolio. Assist the CIO/G6 in conducting accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations.</p> <p>FY 2016 Accomplishments: Provided CM functional and physical configuration management and change management to the AICFB, to include archiving the required system software, data products and documentation, while correlating the relevant data within the CMTSIII DBMS for visibility to users Army wide. Provided baseline reconciliation to the four quarterly CIO/G6 AICFB reports, which identified to commanders and their G-3/G-6 staff the Army's AIC certified Interoperability Capability and Limitations (IC&L) assessed, AIC waived, and AIC exempted system software that is authorized to connect to the Army's network. Assisted the CIO/G6 in conducting accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations. Improved CMTSIII functionality by implementing parent—child relationships within CMTSIII data products and data sets, and developing authoritative reports of relationships. Performed data normalization within CMTSIII and incorporated the Family of Systems (FoS) into submissions and reporting functions. Built separate CMTSIII modules for enhanced traceability of ASA(ALT) Integration and Interoperability Events (I2E), Observation Reporting, and HQDA CIO/ G-6 monitoring and reporting of CMTSIII AIC Events.</p> <p>FY 2017 Plans: Provide CM functional and physical configuration management and change management to the AICFB, to include archiving the required system software, data products and documentation, while correlating the relevant data within the CMTSIII DBMS for visibility to users Army wide. Provide baseline reconciliation to the four quarterly CIO/G6 AICFB reports, identifying to commanders and their G-3/G-6 staff the Army's AIC certified, Interoperability Capability and Limitations assessed, AIC waived, and AIC exempted system software that is authorized to connect to the Army's network. Assist the CIO/G6 in conducting accreditation inspections and</p>					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>training for Federation of Net-centric Sites (FaNS) locations. Continue CMTSIII evolutionary developments: Streamline the Reproduction Distribution Installation Training (RDIT) support from four discrete modules into a single Software Management Module, adding capability and accountability. Automate the ASA (ALT) Configuration Control Board slides and certification requirements into CMTSIII; expand reporting outputs. Collaborate to obtain system accreditation for, and implement, the Configuration Management Tracking System Virtual Console (CMTSVC). Initiate changes to enable CMTSIII to maintain currency/compatibility with Common Operating Environment evolutionary developments. Revise CMTSIII Cybersecurity Security module, incorporating new Network Vulnerability Assessment, Host Based System Security, Information Assurance Vulnerability Assessment, and internal CTSF requirements. Define and establish the CM Continuity of Operations Plan (COOP) requirements.</p> <p>FY 2018 Base Plans: Provide CM functional and physical configuration management and change management to the AICFB, to include archiving the required system software, data products and documentation, while correlating the relevant data within the CMTSIII DBMS for visibility to users Army wide. Provide baseline reconciliation to the four quarterly CIO/G6 AICFB reports, identifying to commanders and their G-3/G-6 staff the Army's AIC certified, Interoperability Capability and Limitations assessed, AIC waived, and AIC exempted system software that is authorized to connect to the Army's network. Assist the CIO/G6 in conducting accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations. Continue CMTSIII evolutionary developments. Initiate changes to enable CMTSIII to maintain currency/compatibility with Common Operating Environment evolutionary developments.</p>					
<p>Title: Management Operations/Program Office</p> <p>Description: Provide management operations consisting of planning, programming and executing funds; planning and programming for required personnel; planning, programming and executing contracts supporting AIC testing processes; identifying reimbursable tests and collecting/allocating appropriate funds; planning and programming logistics activities, managing/controlling/documenting physical assets and inventories; and perform oversight and coordination of physical security with hosting installation.</p> <p>FY 2016 Accomplishments: Continued assisting development of CMTSIII Resource Management Module and Reporting in programming and execution of funds/manpower/contracting requirements. Tracked testing schedules, prepared/coordinated/tracked reimbursements for tests [e.g. COE V1.1 and Beyond tests and Bi-Annual Army Interoperability Certification (AIC) test events, CS 11-12 Tri-Annual AIC test events, SWB2 AIC test events, Joint, Coalition],</p>	0.808	1.235	0.766	-	0.766

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and future systems test events; developed and implemented new cost model for FY17. Provided field support coordination for unit training and exercises. Maintained facility and test infrastructure; began planning for transition to permanent facility on installation. Continued exemplary physical security and access control programs; developed and implemented force protection program for CTSF. Instituted re-energized Continuity of Operations Program (COOP) and implemented Emergency Action Program (EAP). Implemented human resources development programs to strengthen core leadership.					
FY 2017 Plans: Assist development and implementation of CMTSIII Resource Management Module and Reporting; use in documenting/programming/executing funds and personnel levels of effort associated with mission activities. Program and execute funding; plan and program manpower requirements and coordinate with CECOM G8 for implementation; identify contracting requirements and develop strategy for implementation in conjunction with CECOM Acquisition Center. Track testing schedule, prepare/coordinate/track customer funding for AIC testing activities (e.g. COE v3.0 tests, CS 11-12 Bi-Annual testing, Joint, Coalition), and infrastructure support. Continue to provide field support coordination for unit training and exercises upon request. Maintain existing infrastructure while continuing to develop coordinate planning/engineering activities associated with transition to permanent facility; continue to enhance physical security, access control, force protection, COOP and EAP activities and exercises. Continue inventory accountability programs and asset control.					
FY 2018 Base Plans: Assist development and implementation of CMTSIII Resource Management Module and Reporting; use in documenting/programming/executing funds and personnel levels of effort associated with mission activities. Program and execute funding; plan and program manpower requirements and coordinate with CECOM G8 for implementation; identify contracting requirements and develop strategy for implementation in conjunction with CECOM Acquisition Center. Track testing schedule, prepare/coordinate/track customer funding for AIC testing activities (e.g. COE v3.0 tests, CS 11-12 Bi-Annual testing, Joint, Coalition), and infrastructure support. Continue to provide field support coordination for unit training and exercises upon request. Maintain existing infrastructure while continuing to develop coordinate planning/engineering activities associated with transition to permanent facility; continue to enhance physical security, access control, force protection, COOP and EAP activities and exercises. Continue inventory accountability programs and asset control.					
Accomplishments/Planned Programs Subtotals	6.203	2.617	4.918	-	4.918

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

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)

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

Remarks

D. Acquisition Strategy

Execute system of systems interoperability testing and certification through the use of Government and Systems Engineering and Technical Analysis (SETA) contract personnel experienced in product development and interoperability testing. Testing and certification occurs in a cyclical fashion, with an expectation of an annual Software Block/Capability Set test followed with cyclical test events (Bi-Annual Tests) to ensure integrity of software baselines to the Warfighter. Engineering Services provides strategic integration of software into a system of systems/family of systems environment to support interoperability testing. Establish and maintain Configuration Management and version control of the Army's Interoperable Battle Command LandWarNet Baseline. Distributed testing capability uses local assets and leverages other federated test facilities to create synergy and realize efficiencies, to include system of system test efforts, where possible at 2/1 AD/WSMR (NIE/AWA).

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) C34 / Army Tac C2 Sys Eng			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
C34: Army Tac C2 Sys Eng	-	8.668	8.881	7.767	-	7.767	7.790	7.865	8.071	8.313	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

Project C34, Army Tactical Command and Control Systems Engineering: This project funds the PEO Command, Control, Communications-Tactical (PEO C3T) Technical Management Division (TMD) systems engineering and integration, experimentation, acquisition management, testing, fielding and sustainment support to ensure interoperability and affordability among the PEO C3T suite for Army Capability Sets (CS). The TMD focuses on System-of-Systems (SoS) Engineering and Integration for the C3T network with increased emphasis on immediate Warfighter needs as well as leveraging emerging technologies. Fiscal Year 2017 will focus on the continued development, implementation and integration of the Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, and Reconnaissance (C5ISR) network architectures. This will include development of a technology enhancement roadmap for SoS capability evolution across the PEO C3T portfolio; network integration support and design products for CS validation at Network Integration Evaluations (NIE); integration of tactical Networked capabilities for all CS, initiative fieldings, and integration events; integration of tactical information assurance solutions and security measures for consistent cyber protection; and execution of SoS developmental testing across the PEO portfolio in support of capability set fieldings.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Continue Army Tactical Battle Command and Network Synchronization and Integration Support	0.133	0.137	0.120	-	0.120
Description: .					
FY 2016 Accomplishments: Supported current force and the development of future force C5ISR across the tactical network to ensure all Assistant Secretary of the Army (Acquisition, Logistics & Technology) (ASA(ALT)) programs are synchronized and redundancies and overlapping capabilities are reduced across the network and in synchronization with Common Operating Environment.					
FY 2017 Plans: Continue the support of current force and the development of future force C5ISR across the tactical network to ensure all Assistant Secretary of the Army (Acquisition, Logistics & Technology) (ASA(ALT)) programs					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
are synchronized and redundancies and overlapping capabilities are reduced across the network and in synchronization with Common Operating Environment. FY 2018 Base Plans: Continue the support of current force and the development of future force C5ISR across the tactical network to ensure all Assistant Secretary of the Army (Acquisition, Logistics & Technology) (ASA(ALT)) programs are synchronized and redundancies and overlapping capabilities are reduced across the network and in synchronization with Common Operating Environment.					
Title: Continue Developmental Testing & Integration Testing between Programs of Record (PORs) and platforms / Command Posts (CPs) to execute System-of-Systems (SoS) and Interoperability Description: . FY 2016 Accomplishments: Conducted integration testing and systems engineering for C3T non-program of record and program of record systems, products, technical insertions, and systems under evaluation to ensure integration of capabilities across the network. Provided training and continued development of current engineers. FY 2017 Plans: Continue to conduct integration testing and systems engineering for C3T non-program of record and program of record systems, products, technical insertions, and systems under evaluation to ensure integration of capabilities across the network. Provide training and continued development of current engineers. FY 2018 Base Plans: Continue to conduct integration testing and systems engineering for C3T non-program of record and program of record systems, products, technical insertions, and systems under evaluation to ensure integration of capabilities across the network. Provide training and continued development of current engineers.	1.298	1.329	1.163	-	1.163
Title: Continue Tactical Network Engineering Description: . FY 2016 Accomplishments:	0.744	0.762	0.666	-	0.666

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng				
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Developed effective engineering strategies to integrate tactical applications for use across the C3T enterprise network. Continued to perform network planning and integration activities across all cross-domain system-of-systems future capabilities and technologies.</p> <p>FY 2017 Plans: Develop effective engineering strategies to integrate tactical applications for use across the C3T enterprise network. Continue to perform network planning and integration activities across all cross-domain system-of-systems future capabilities and technologies.</p> <p>FY 2018 Base Plans: Develop effective engineering strategies to integrate tactical applications for use across the C3T enterprise network. Continue to perform network planning and integration activities across all cross-domain system-of-systems future capabilities and technologies.</p>						
<p>Title: Conduct and Support System Interoperability Engineering and Development of System-of-Systems (SoS) Architectural Products</p> <p>Description: .</p> <p>FY 2016 Accomplishments: Within the PEO C3T portfolio, continued to assess Emerging Technologies, identified critical integrated test points, conducted developmental testing at integration points, developed architectural data process/tool kits, and facilitated the transition of Network capabilities to the warfighter.</p> <p>FY 2017 Plans: Within the PEO C3T portfolio, continue to assess Emerging Technologies, identify critical integrated test points, conduct developmental testing at integration points, develop architectural data process/tool kits, and facilitate the transition of Network capabilities to the warfighter.</p> <p>FY 2018 Base Plans: Within the PEO C3T portfolio, continue to assess Emerging Technologies, identify critical integrated test points, conduct developmental testing at integration points, develop architectural data process/tool kits, and facilitate the transition of Network capabilities to the warfighter.</p>		1.670	1.711	1.497	-	1.497
<p>Title: Continue Development and Implementation of Tactical Information Assurance (IA)</p> <p>Description: .</p>		0.252	0.259	0.226	-	0.226

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p><i>FY 2016 Accomplishments:</i> Implemented CIO/G6 and CYBERCOM guidance for execution of Information Assurance policies and procedures at the tactical level. Continued to document the current tactical IA network architecture with the goal of developing recommendations to eliminate inconsistencies/duplications, increasing the security posture, decreasing complexity of operations, and decreasing costs. Continued to plan and design security measures and IA requirements across the tactical network for future capabilities.</p> <p><i>FY 2017 Plans:</i> Implement CIO/G6 and CYBERCOM guidance for execution of Information Assurance policies and procedures at the tactical level. Continue to document the current tactical IA network architecture with the goal of developing recommendations to eliminate inconsistencies/duplications, increasing the security posture, decreasing complexity of operations, and decreasing costs. Continue to plan and design security measures and IA requirements across the tactical network for future capabilities.</p> <p><i>FY 2018 Base Plans:</i> Implement CIO/G6 and CYBERCOM guidance for execution of Information Assurance policies and procedures at the tactical level. Continue to document the current tactical IA network architecture with the goal of developing recommendations to eliminate inconsistencies/duplications, increasing the security posture, decreasing complexity of operations, and decreasing costs. Continue to plan and design security measures and IA requirements across the tactical network for future capabilities.</p>					
<p><i>Title:</i> Continue System of Systems Development</p> <p><i>Description:</i> .</p> <p><i>FY 2016 Accomplishments:</i> Continued to effectively manage overall System-of-Systems Engineering, Enterprise, and Integration efforts for the PEO C3T portfolio of technology and capability enhancement programs.</p> <p><i>FY 2017 Plans:</i> Continue to effectively manage overall System-of-Systems Engineering, Enterprise, and Integration efforts for the PEO C3T portfolio of technology and capability enhancement programs.</p> <p><i>FY 2018 Base Plans:</i></p>					
	2.974	3.047	2.665	-	2.665

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to effectively manage overall System-of-Systems Engineering, Enterprise, and Integration efforts for the PEO C3T portfolio of technology and capability enhancement programs.					
Title: System of Systems (SoS) Engineering and Integration Evolution of the Network	1.597	1.636	1.430	-	1.430
Description: .					
FY 2016 Accomplishments: Continued to develop streamlined processes to support ASA(ALT) SoSE&I and implement Value Engineering (VE) and Lean Six Sigma initiatives across all PEO C3T capabilities to include the Joint Coalition partners. Also continued to implement cross PEO System of Systems Engineering and Integration processes to ensure successful development Engineering and Testing.					
FY 2017 Plans: Continue to develop streamlined processes to support ASA(ALT) SoSE&I and implement Value Engineering (VE) and Lean Six Sigma initiatives across all PEO C3T capabilities to include the Joint Coalition partners. Also continue to implement cross PEO System of Systems Engineering and Integration processes to ensure successful development Engineering and Testing.					
FY 2018 Base Plans: Continue to develop streamlined processes to support ASA(ALT) SoSE&I and implement Value Engineering (VE) and Lean Six Sigma initiatives across all PEO C3T capabilities to include the Joint Coalition partners. Also continue to implement cross PEO System of Systems Engineering and Integration processes to ensure successful development Engineering and Testing.					
Accomplishments/Planned Programs Subtotals	8.668	8.881	7.767	-	7.767
C. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					
Not applicable for this item.					
D. Acquisition Strategy					
This project provides the technical and programmatic disciplines required for systems engineering and integration, experimentation, acquisition management, testing, interoperability, support to fielding and sustainment. It will focus on System-of-Systems (SoS) Systems Engineering and Integration for the tactical network with increased emphasis on immediate Warfighter needs as well as leveraging emerging technologies, through the G3 LandWarNet Capability Set Development and					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	C34 / <i>Army Tac C2 Sys Eng</i>

Integration. The Technical Management Division (TMD) will ensure that the Program Executive Office Command, Control, Communications-Tactical (PEO C3T) capability portfolio is effectively SoS engineered and integrated to meet the tactical Warfighter's evolving mission needs.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EJ4: COMMAND POST COMPUTING ENVIRONMENT (CPCE)	-	67.690	82.091	61.576	-	61.576	36.512	7.511	1.617	1.630	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The goal of the Command Post Computing Environment (CPCE), one of the six computing environments under the Army's Common Operating Environment (COE) initiative, is to eliminate "stove-piped" legacy systems and provide an integrated, interoperable, cyber-secure, cost-effective computing infrastructure framework to serve as the basis for multiple warfighting functions. CPCE will provide Programs of Record a core infrastructure, including a common operating picture (COP) tool, common data strategy, common applications, common hardware configurations, and common look and feel (user interface) that allows rapid development of future capabilities within that construct. This effort eliminates duplicative or redundant implementations, simplifies future development efforts, and enhances interoperability and data sharing across multiple echelons. CPCE enables Mission Command capability development at echelons from dismounted command nodes to echelons above corps and thus, is the most employed and critical computing environment developed to support the command posts and combat operations. Acquisition Goals of the CPCE include: Acquisition Agility, Open System Architectures, Reduced Life Cycle Costs, and a Cyber-Hardened Foundation for applications and services.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: System Requirements Engineering	10.841	7.789	3.000	-	3.000
Description: Requirements analysis of multiple JCIDS documents and other sources to determine Minimal Essential Capabilities (MECs) and full capability requirements for CPCE. Requirements configuration management and adjudication, and overall management and conduct of the Requirements CCB process. Translation of requirements into lower-level (L2, L3) subrequirements and development of a System / Subsystem Specification (SSS).					
FY 2016 Accomplishments: In FY16, CPCE ingested over 36 requirements sources including draft JCIDS documents, PoR Requirements documents, working group findings, cyber policies, and distilled to approximately 1600 level 1 common requirements. Developed database tracking system for all requirements and began decomposition of all requirements into lower level, development tasks.					
FY 2017 Plans: In FY17, developed Minimal Essential Capabilities recommendations and provided to TRADOC for staffing to support FY18 Test measures of performance and measures of effectiveness (MOPs/MOE). Developed					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Mission Command Requirements Management Plan, began development of Information Support Plan (ISP), and developed use cases, epics, and user stories for software developers. Supported the establishment and provided guidance for the Capability Assessment Package (CAP) SW development process. Developed draft System Requirements Specification (SRS) with Level 2 requirements. FY 2018 Base Plans: For FY18, will continue to ingest infrastructure requirements for incorporation into later versions of CPCE software. Will assist Programs of Record with determining overlapping requirements that are already satisfied by the CPCE core utilities. Maintain the MC SSS Requirements Verification Traceability Matrix (RVTM) and SSS/SRS.					
Title: SW Dev - Core Infrastructure Description: Provides an integrated mission command capability across Command Post and Platforms, through all echelons, that provides simplicity, intuitiveness, core services and applications, common look and feel, and warfighter functionality in the areas of Fires, Logistics, Intelligence, Airspace Management and Maneuver. Primary software development efforts include development of a simple Common Operating Picture (COP), a Common Geospatial solution (map), a user interface with "common Look and Feel", and common Data Services, including an extensible database and data persistence. Software development efforts focus on designing the system to reduce the training burden on the Soldier, and the creation of an Integrated Software Development Kit (ISDK) that allows external Programs of Record the ability to integrate new capabilities without rebuilding common components. FY 2016 Accomplishments: FY16 efforts included the initial development of Command and Control Interoperability Ultralight (C2IUL), the SW component that brings backwards compatibility to CPCE, establishment of the DI2E Dev Ops environment, and development of Engineering Release 1.1, the first major (internal) release of CPCE. Initial design efforts for the Standard and Shareable Geospatial Foundation (SSGF) infrastructure were begun. Completed design and initial implementation of infrastructure components necessary to provide for the COE-directed Cross-Cutting Capabilities (CCC) and Control Points. FY 2017 Plans: FY17 efforts in support of the Core Infrastructure software development include the integration of multiple software components with a Commercial off the Shelf battle management system which serves as the underlying framework of CPCE, allowing for rapid integration of new warfighting function applications. Efforts continue in the	41.508	56.407	35.106	-	35.106

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017							
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)								
B. Accomplishments/Planned Programs (\$ in Millions)										
<p>areas of backwards compatibility (C2IUL), Di2E development environment, Integrated SDK (released for external stakeholders), development of the Reference Implementation (Prototype system), the hybrid operating system that powers the mounted Smart Client component, and core utilities and apps development. Of note, the army is leveraging a COTS based infrastructure solution to insulate the government from the burden of ownership and maintenance of developed software.</p> <p>FY 2018 Base Plans: Final integration of the CPCE v3 COTS underlying infrastructure, Core Utilities, backwards compatibility, and Warfighter Function (WfF) Applications into a holistic System of Systems and ensuring that those subsystems function together in accordance to Program requirements and specifications. These responsibilities include software engineering and development of DevOps, test engineering, and release management, C2I Ultra Light, Open Routing, Data Flows, Hybrid Operating System, EMP Renderer, Map Based Planning, Joint and Coalition Interoperability, and Tactical Server Infrastructure.</p>						FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Title: Hardware/Software Integration</p> <p>Description: Hardware / Software Integration within the Command Post Computing Environment consists of research, development, and engineering efforts required to select, engineer, and field a Commercial off the Shelf hardware server and related components. The CPCE software will reside on converged Tactical Server Infrastructure (TSI) v2 server stacks, which host multiple software infrastructure components including Microsoft Exchange, SharePoint, Defensive Cyber Operations (DCO) tools, SQL databases, Active Directory, and others. This enterprise software is tightly-coupled with, and engineered for, specific TSI hardware using virtual machine (VM) technology and must serve as the basis for all other warfighting functions and mission command system software loaded on the server.</p> <p>FY 2016 Accomplishments: Conducted planning and engineering of Tactical Server Infrastructure (TSI) virtual machine strategy and analysis of server stack requirements. Development of TSI v1 to replace legacy Battle Command Common Services (BCCS) stacks was primary effort.</p> <p>FY 2017 Plans: For FY17, the CPCE hardware/software integration team focused efforts on technical analysis, engineering, and scalability determinations for the TSI v1, v1.1, and v2, which will host the first version of CPCE v3 in FY19. Development of TSI v2 included reconfiguring virtual machine allotments and resources to allow physical downsizing of the actual server footprint. The TSI v2 will weigh less than 300lbs whereas the previous TSIv1.1</p>						4.920	4.728	4.800	-	4.800

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>stack weighed approximately 1200lbs, with no loss of computing power. Reductions in size, weight, and power will allow a more expeditious Army force.</p> <p>FY 2018 Base Plans: For FY18, primary effort includes continued development of VM structure of the TSI server architecture to incorporate more processing power and functionality in a reduced footprint. Potential switch from current VM vendor product to a different vendor hypervisor product, to save cost, will be investigated. Ongoing efforts to migrate Program of Record functionality to the CPCE will require TSI server stack accommodations and reengineering.</p>					
<p>Title: Joint & Coalition Interop</p> <p>Description: Consists of efforts in support of Joint Interoperability and Coalition Partner Interoperability. (One of the goals of CPCE v3 is to improve the sharing of mission command capabilities among the US Armed Services and our Coalition partners in the Mission Partner Environment (MPE).)</p> <p>FY 2016 Accomplishments: FY16 CPCE efforts included the architecture design of the initial Joint Interoperability strategy. CPCE participated in the Joint Program Manager - Chief Engineer Working Group (PM-CEWG), a DISA-led effort that coordinates the information sharing amongst the services and sets the roadmap that serves as guidance to developers working on future Mission Command systems. In FY16 CPCE funded a successful Joint experiment, led by the Navy, that test specific cross-service data sharing.</p> <p>FY 2017 Plans: FY17 efforts included a formal analysis of Multi-Lateral Interoperability Programme (MIP) standards to the proposed CPCE technical solution to identify gaps and further refine data sharing. CPCE continues to participate in the Joint Program Manager - Chief Engineer Working Group (PM-CEWG), and briefed the Army's Joint and Coalition roadmap at the Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics (USD AT&L) convened Senior Steering Group for Acquisition (SSG-A) for the Joint C2 Capability Area.</p> <p>FY 2018 Base Plans: CPCE Joint and Coalition Interoperability plans for FY18 include continued participation in the PM-CEWG and SSG-A events. In addition, CPCE will provide DISA with engineering requirements for integration and interfaces with the Global Command and Control System - Joint Enterprise (GCCS-JE) and specific requirements for Disconnected, Intermittent, or Limited (DIL) communications in a Denied Operational Environment. This</p>	0.126	0.100	0.250	-	0.250

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
effort will support the DISA's mission to release an RFP for the Global Command and Control System - Joint Enterprise (GCCS-JE) in FY18.					
<p>Title: Test and Evaluation</p> <p>Description: Test and evaluation efforts include the planning and conduct of Command Post Computing Environment (CPCE) / Mounted Computing Environment (MCE) T&E events including Developmental Test, Software Acceptance Testing, Integration Events, Risk Reduction Events, and Initial Operational Test and Evaluation (IOT&E).</p> <p>FY 2016 Accomplishments: In FY16 CPCE testing included Software Acceptance Testing of Engineering Release 1 and 1.1, and a formal lab-based Integration Event to evaluate the performance and interoperability of ER 1.1. with other Mission Command systems. The CPCE T&E team also participated in the planning and conduct of User Juries, Vulnerability testing, and Army Interoperability Certification (AIC) testing. Additionally, CPCE funded an Independent Assessment task conducted by the Johns Hopkins University on the feasibility of the technical approach.</p> <p>FY 2017 Plans: Efforts are being done in coordination with MCE. Test events during FY17 include Software Acceptance Testing of Engineering Release 2 (ER2) and ER3, and formal lab-based Integration Events to evaluate the performance and interoperability of each ER with other Mission Command systems. FY17 efforts also include formal Developmental Test events including DT1 and DT2, and the Interoperability Integration Event (I2E). Planning and conduct of a Limited Objective Experiment (LOE) at the Mission Command Battle Lab is also in progress to gain user feedback from the initial system prototype. Cyber vulnerability testing is ongoing at the National Cyber Range (NCR). FY17 will conclude with planning for Operational Test and planning for Joint Warfighting Activity (JWA). CPCE/MCE has also begun the development of a Test Instrumentation application that will reside on the developed end-state system of record data during test events, saving future formal Test Instrumentation costs. Additionally, development of the Test and Evaluation Master Plan (TEMP) is a major FY17 effort.</p> <p>FY 2018 Base Plans: In FY18, Efforts are being done in coordination with MCE. CPCE/MCE will finalize planning and conduct the formal Initial Operational Test & Evaluation (IOTE) event. Leading up to IOTE, CPCE/MCE will conduct multiple Operational Test Readiness Reviews (OTRRs) and Lab-Based Risk Reduction events (LBRRs). Following OT,</p>	2.116	4.619	9.920	-	9.920

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
CPCE/MCE will participate in Army Interoperability Certification (AIC) testing for certification of IERs via Army Mission Threads.					
<p>Title: Program Management</p> <p>Description: Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning meetings and IPTs.</p> <p>FY 2016 Accomplishments: Provide overall management and oversight of the implementation of CPCE. Technical Area support of this effort includes System Development (Hardware, Software, and Network), System Analysis of Program of Record (PoR) systems and Future Systems, Technical Readiness Assessments, and Stakeholder Technical Interchange Meetings/Events. This support includes the creation and implementation of Functional Support Agreements between PM Mission Command and various Government support agencies such as the CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO IEW&S). Program Management efforts in the FY16 timeframe will also include business area support to ensure funding and contracts are planned and available for all SW development, system engineering, and T&E efforts.</p> <p>FY 2017 Plans: During this timeframe, will provide overall management and oversight of the implementation of CPCE. Technical Area support of this effort includes System Development (Hardware, Software, and Network), System Analysis of Program of Record (PoR) systems and Future Systems, Technical Readiness Assessments, and Stakeholder Technical Interchange Meetings/Events. This support includes the creation and implementation of Functional Support Agreements between PM Mission Command and various Government support agencies such as the CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO IEW&S). Program Management efforts in the FY17 timeframe will also include business area support to ensure funding and contracts are planned and available for all SW development, system engineering, and T&E efforts.</p> <p>FY 2018 Base Plans: Provide overall management and oversight of the implementation of CPCE. Technical Area support of this effort includes System Development and engineering changes to hardware, software, and network), System Analysis of Program of Record (PoR) systems and future systems, Technical Readiness Assessments, and Stakeholder Technical Interchange Meetings/Events. This support includes the creation and implementation of Functional Support Agreements between PM Mission Command and various Government support agencies such as</p>	8.179	8.448	8.500	-	8.500

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
the Army Research and Development Center (ARDEC) CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO IEW&S). Program Management efforts in the FY18 timeframe will also include business area support to ensure funding and contracts are planned and available for all SW development, system engineering, and T&E efforts.					
Accomplishments/Planned Programs Subtotals	67.690	82.091	61.576	-	61.576

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

N/A

Remarks

D. Acquisition Strategy

CPCE is not a Program of Record (PoR).

CPCE is being developed over time, with the initial set of v3 Minimum Essential Capabilities (MECs) being delivered in 4QFY19. Subsequent deliveries of capabilities are expected on a 3 year cycle (FY22, FY25, FY28), in accordance with the draft CPCE IS CDD. This cycle may be adjusted depending on many factors, including fielding priorities, effectiveness of backwards compatibility, and time required to develop and test new capabilities. The CPCE is a capability integration effort, based on a Commercial-Off-The-Shelf / Non-Developmental Item (COTS/NDI) software infrastructure package that allows for immediate third party development of warfighting capability applications in support of integrated Command Post, Mounted and Dismounted tactical computing capabilities.

Efforts are being accomplished through a Commercial-of-the-Shelf/based product that will provide the infrastructure foundation, along with a mixture of organic Government and industry partners whose services will enhance the capabilities to meet DoD requirements and security standards. Govt partners to include the U.S. Army Armament Research, Development and Engineering Center (ARDEC) Weapons Software Engineering Center (WSEC), Communications-Electronics Command (CECOM) Software Engineering Center (SEC), Aviation and Missiles Research and Development Center (AMRDEC) Software Engineering Directorate (SED) and Communications-Electronics Research, Development and Engineering Center (CERDEC). Commercial suppliers are assigned efforts through GSA Mission Command Engineering Services vehicles and Multiple Award Task Order (MATO) contracts. Hardware, core software and associated licenses to support converged system architecture is Commercial-off-the-Shelf (COTS) and procured through existing vehicles from GSA, Common Hardware Systems (CHS) and the Army Computer Hardware Enterprise Software and Solutions (CHESS).

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Support (Gov't-Core)	Sub Allot	PM Mission Command : APG, MD	0.000	2.500	Oct 2015	2.250	Oct 2016	2.250	Oct 2017	-		2.250	0.000	7.000	0.000
PM Support (Gov't-Matrix)	IA	Various Matrix Orgs incl CECOM SEC, LRC, G8, G2, PRD, et al) : APG, MD	0.000	2.679	Oct 2015	1.400	Oct 2016	1.400	Oct 2017	-		1.400	0.000	5.479	0.000
PM Support (SETA Contractor)	C/CPFF	Multiple incl CSC and others : APG, MD	0.000	3.000	Dec 2015	4.798	Dec 2016	4.850	Dec 2017	-		4.850	0.000	12.648	0.000
Subtotal			0.000	8.179		8.448		8.500		-		8.500	0.000	25.127	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Requirements Engineering	Various	SW Dev Contractors and Multiple Matrix Orgs : Various Locations	0.000	10.841	Dec 2015	7.789	Dec 2016	3.000	Dec 2017	-		3.000	0.000	21.630	0.000
Software Development - Core Infrastructure	Option/ Various	ARDEC, CERDEC, Systematic : Picatinny, NJ APG, MD Centerville, VA	0.000	41.508	Dec 2015	56.407	Dec 2016	35.106	Dec 2017	-		35.106	0.000	133.021	0.000
Joint and Coalition Interoperability	Various	TBD : Various	0.000	0.126	Dec 2015	0.100	Dec 2016	0.250	Feb 2018	-		0.250	0.000	0.476	0.000
Hardware / Software Integration	Various	multiple : APG Md	0.000	4.920	Jan 2016	4.728	Feb 2017	4.800	Jan 2018	-		4.800	0.000	14.448	0.000
Subtotal			0.000	57.395		69.024		43.156		-		43.156	0.000	169.575	0.000

Remarks
 Software Development efforts will be managed through a combination of COTS Procurement, PM Mission Command technical staff, Matrix Organizations (CERDEC, AMRDEC) and software development contractor firms (contracts and task orders to be determined and competed as necessary).

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software					Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)							
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Develop and Conduct Tests and Assessments	MIPR	Multiple Test Agencies : Multiple Locations (Primary APG)	0.000	2.116	Dec 2015	4.619	Dec 2016	9.920	Dec 2017	-		9.920	0.000	16.655	0.000	
Subtotal			0.000	2.116		4.619		9.920		-		9.920	0.000	16.655	0.000	
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			0.000	67.690		82.091		61.576		-		61.576	0.000	211.357	0.000	
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
COE V3 Arch, System Engr & Dev																												
COE V3 Test & Integration																												
V3 Operational Assessment																												
(1) Fielding Decision																												
(2) First Unit Equipped																												
(3) SW Updates (1)																												
(4) SW Updates (2)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
COE V3 Arch, System Engr & Dev	1	2018	4	2022
COE V3 Test & Integration	3	2017	1	2019
V3 Operational Assessment	4	2018	1	2019
Fielding Decision	3	2019	3	2019
First Unit Equipped	4	2019	4	2019
SW Updates (1)	4	2020	4	2020
SW Updates (2)	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EJ5: MOUNTED COMPUTING ENVIRONMENT (MCE)	-	11.970	15.271	16.949	-	16.949	16.824	5.451	2.829	2.190	0.000	71.484
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

PM Mission Command (MC), under PEO C3T, manages both the Command Post Computing Environment (CPCE) and Mounted Computing Environment (MCE) efforts associated to the Army's Common Operating Environment (COE) initiative. In an attempt to streamline work on the COE, at the end of 1QFY2017, PM MC assigned the CPCE team to lead the COE effort and reassigned the MCE's management of engineering efforts from JBC-P to CPCE. The two CEs under PM MC are now working in concert with one another, developing their related capabilities in the same environment, with the common goal of ensuring a successful roll out of COE in 4QFY19.

Mounted Computing Environment (MCE) efforts began under Proj/PE 0604805A/593 – Joint Battle Command – Platform (JBC-P), in support of the platform aspect of the Common Operating Environment (COE) directive. Effective FY2016, the Army established MCE, Proj/PE 604818.EJ5 as a separate funding line to segregate the costs of MCE from JBC-P.

A. Mission Description and Budget Item Justification

The MCE is one of the six computing environments (CEs) formalized by the AAE under the Common Operating Environment (COE) initiative. MCE standardizes end-user environments and enables streamlined deployment of new warfighting applications. The MFoCS is the foundational hardware element of the MCE. MCE enables Mission Command capability development to echelons from mounted command posts nodes, providing enhanced interoperability, and simplified end-user interface. Requirements for the MCE are established in the draft Mounted Computing Environment Information System Initial Capabilities Document (MCE IS CDD). FY2018 funding provides the means to continue to manage and develop MCE in concert with CPCE.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Software Development	4.945	4.373	4.125	-	4.125
Description: Provides an integrated mission command capability across Platforms, through all echelons, that provides simplicity, intuitiveness, core services and applications, common look and feel, and warfighter functionality in the areas of Fires, Logistics, Intelligence, and Maneuver. Primary software development efforts include development of S/A functions and MC applications on a Common Geospatial solution [map], a user interface with "common look and feel", and common Data Services.					
FY 2016 Accomplishments: Follow-on efforts, begun under the Joint Battle Command-Platform (JBC-P), were successful in maturing the MCE infrastructure in concert with the CPCE which included development of software architecture constructs					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)			
B. Accomplishments/Planned Programs (\$ in Millions)					
to sustain and integrate existing capability and enable new capability development. Further refined the design for MCE specific common components to ensure seamless data sharing between CEs. Developed Simplified Battalion Command Post Development. Developed the MCE foundational 'plug-in' framework, inherently interoperable with the CPCE 'plug-in' framework, providing an extended development environment for other mounted environment Program of Records PoRs to easily develop and integrate their capabilities on top of an infrastructure that inherits the cyber-hardened mission command on-the-move enhancements. Continued the development and integration of approved Cross Cutting Capabilities (CCC) [Common Geospatial, Email, and Chat]; specific efforts included initial development of the Smart Client, single sign on capability, and the Hybrid Operating System.					
FY 2017 Plans: Begin the application of integrating mission command capabilities on the platform using the Hybrid Application Operating system. Mature the MCE infrastructure based on emerging standards including continued development of automated tools to support compliance with COE standards, development of MCE COE services and bridging services to other CEs. Develop and integrate approved Cross Cutting Capabilities (CCC) (i.e.: Common Geospatial, Service Discovery over Networks, and Security Services). Continue design efforts, to include integration and lab based developmental and system of system testing of collaboration, specifically, Network Operations Center development integration, smart client development support, and Command and Control Interoperability UltraLight (C2IUL) design.					
FY 2018 Base Plans: Focus is on integrating existing capability and enabling new capability development in preparation for 4QFY19 fielding of the COE. These responsibilities include continued development of software architecture in conjunction with CPCE, Hybrid Operating System, test engineering, Map Based Planning, and Joint and Coalition Interoperability.					
Title: Software/Systems Engineering					
Description: Perform Software/Systems Engineering in support of the development of MCE capabilities, applications, and services, to include, but not limited to, conducting engineering studies, software architecture development, system analyses, technical readiness assessments, technical interchange meetings/events, and development of related reports and other deliverables. Coordinate the development of common infrastructure components with the CPCE.					
FY 2016 Accomplishments:					
	4.754	8.885	7.624	-	7.624

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Conducted systems engineering efforts in support of the core software platform (infrastructure), MCE, specifically in support of COE baselines, focusing on hardware/software integration, engineering, and development of common services across platforms. Included planning and engineering of future MCE capabilities using Commercial Off The Shelf (COTS) items, i.e.: Common Authentication; performance characterization on different Hardware/Software configurations using Mounted Family of Computer Systems (MFoCS) hardware, and coordination of interoperability between external CEs. Specific efforts included work on remote maintenance, adaptive and responsive user interface, wireless integration, initial integration of the smart client, Vehicular Integration for Command, Control, Communication, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR) / Electronic Warfare (EW) Interoperability, sensor integration and data engineering. Of note, they Army is leveraging COTS solutions to insulate the US Government from the burden of ownership and maintenance of developed software.</p> <p>FY 2017 Plans: Development of software architecture constructs to sustain and integrate existing capability and enable new capability development in conjunction with CPCE. System engineering expertise in support of COE baselines, focusing on hardware/ software integration, engineering, and development of common services across platforms. Includes planning and engineering of future MCE capabilities continuing to use COTS, i.e.: Common Authentication; performance characterization on different Hardware/Software configurations using Mounted Family of Computer Systems (MFoCS); and coordination of interoperability between external CEs.</p> <p>Continue design efforts, to include integration and lab based developmental and system of systems testing, specifically, GPS updates for platform, platform/sensor integration for platform, Risk Management Framework (RMF)/Information Assurance (IA) certification, Command and Control Interoperability UltraLight (C2IUL) integration, wireless integration into platform, and the Hybrid Operating System.</p> <p>FY 2018 Base Plans: Development of software architecture constructs to sustain and integrate existing capability and enable new capability development. System engineering expertise in support of COE baselines, focusing on hardware/ software integration, engineering, and development of common services across platforms. Includes planning and engineering of future MCE capabilities using COTS, i.e.: Common Authentication; performance characterization on different HW/SW configurations using Mounted Family of Computer Systems (MFoCS); and coordination of interoperability between external CEs.</p>					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue design efforts, to include integration and lab based developmental and system of systems testing, specifically, GPS updates for platform, platform/sensor integration for platform, Risk Management Framework (RMF)/Information Assurance (IA) certification, C2IUL integration, wireless integration into platform, and the Hybrid Operating System.					
<p>Title: Test and Evaluation</p> <p>Description: Test and evaluation efforts include the planning and conduct of combined Command Post/Mounted Computing Environment T&E events including Developmental Test, Software Acceptance Testing, Integration Events, Risk Reduction Events, and Initial Operational Test and Evaluation (IOT&E).</p> <p>FY 2016 Accomplishments: Tested software capability of the core MCE infrastructure, as well as established tools and processes for 3rd party application testing and accreditation. Test and Evaluation efforts included the planning of Test, Evaluation, including User Jurys and Integration events in support of MCE development.</p> <p>FY 2017 Plans: Test events in coordination with CPCE during FY17 include Software Acceptance Testing of Engineering Release 2 (ER2) and ER3, and formal lab-based Integration Events to evaluate the performance and interoperability of each ER with other Mission Command systems. FY17 efforts also include DT and the Interoperability Integration Event (I2E). Planning and conduct of a Limited Objective Experiment (LOE) at the Mission Command Battle Lab is also in progress to gain user feedback from the initial system prototype. Cyber vulnerability testing is ongoing at the National Cyber Range (NCR). FY17 will conclude with planning for Operational Test and planning for Joint Warfighting Activity (JWA). MCE has also begun the development of a Test Instrumentation application that will reside on the developed end-state system to record data during test events, saving future formal Test Instrumentation costs. Additionally, development of the Test and Evaluation Master Plan (TEMP) is a major FY17 effort.</p> <p>FY 2018 Base Plans: In FY18, MCE, in coordination with CPCE, will finalize planning and conduct the formal Initial Operational Test & Evaluation (IOTE) event. Leading up to IOTE, CPCE/MCE will conduct multiple Operational Test Readiness Reviews (OTRRs) and Lab-Based Risk Reduction events (LBRRs). Following the Operational Test, CPCE/MCE will participate in Army Interoperability Certification (AIC) testing for certification of Information Exchange Requirements (IERs) via Army Mission Threads.</p>	1.280	0.992	4.000	-	4.000
Title: Program Management	0.991	1.021	1.200	-	1.200

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning meetings and Integrated Project Teams.</p> <p>FY 2016 Accomplishments: Provided overall management and oversight of the implementation of MCE. This support included the creation and implementation of Functional Support Agreements between PM Mission Command (MC) and various Government support agencies such as the CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO Soldier). Program Management efforts in the FY16 timeframe included business area support to ensure funding and contracts were planned and available for all SW development, system engineering, and T&E efforts.</p> <p>FY 2017 Plans: Providing overall management and oversight of the implementation of MCE. This support includes the creation and implementation of Functional Support Agreements between PM MC and various Government support agencies such as the CERDEC, and other PEOs, (e.g. PEO Soldier). Program Management efforts in the FY17 timeframe will also include business area support to ensure funding and contracts are planned and available for all SW development, system engineering, and T&E efforts.</p> <p>FY 2018 Base Plans: Will continue to provide overall management and oversight of the implementation of MCE. This support includes the creation and implementation of Functional Support Agreements between PM Mission Command and various Government support agencies such as the CERDEC, and other PEOs, (e.g. PEO Soldier). Program Management efforts in the FY18 timeframe will also include business area support to ensure funding and contracts are planned and available for all SW development, system engineering, and T&E efforts.</p>					
Accomplishments/Planned Programs Subtotals	11.970	15.271	16.949	-	16.949

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)

D. Acquisition Strategy

MCE is not a Program of Record (PoR), it is executed by PM Mission Command (PM MC) which coordinates requirements and efforts with all stakeholders for associated capabilities that are part of this CE. MCE is being developed over time, with the initial set of v3 Minimum Essential Capabilities (MECs) being delivered in 4QFY19. Subsequent deliveries of capabilities are expected on a 3 year cycle (FY22, FY25, FY28), in accordance with the draft MCE IS CDD. This cycle may be adjusted depending on many factors, including fielding priorities, effectiveness of backwards compatibility, and time required to develop and test new capabilities.

To accomplish the goals of the MCE, PEO C3T PM MC architects, designs, and develops the hardware, software, network solutions and capabilities required to achieve compliance with the COE. Primary systems architecture engineering is conducted by in-house Government engineering staff with support from CACI/Agile matrix elements and MITRE Corp, a Fully Funded Research and Development Centers. Test and Evaluation support is provided by in-house PM MC TMD staff, with support from contractor firms, for preparation and conduct of specific risk reduction events and test events. Developmental testing is being conducted by the software development teams with Government oversight and coordination. Hardware to support system architecture and software development is comprised of standardized equipment and is procured using existing contract vehicles such as Mounted Family of Computer Systems (MFoCS).

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Support(Mixed support: Gov't-Core and Matrix; SETA Contractor)	Various	PM Mission Command : Aberdeen Proving Ground, MD	0.000	1.084		1.021		1.200		-		1.200	Continuing	Continuing	0.000
Subtotal			0.000	1.084		1.021		1.200		-		1.200	-	-	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development	Various	PM Mission Cmd, Multiple Matrix Orgs and SW Dev Contractors : Aberdeen Proving Ground, MD	0.000	3.711		4.373		4.125		-		4.125	Continuing	Continuing	0.000
Software/Systems Engineering	Various	PM Mission Cmd, Multiple Matrix Orgs and SW Dev Contractors : Aberdeen Proving Ground, MD	0.000	4.701		8.885		7.624		-		7.624	Continuing	Continuing	0.000
Subtotal			0.000	8.412		13.258		11.749		-		11.749	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 and Integration	MIPR	Multiple Test Agencies; Multiple Locations : Aberdeen Proving Ground, MD	0.000	2.474		0.992		4.000		-		4.000	Continuing	Continuing	0.000
Subtotal			0.000	2.474		0.992		4.000		-		4.000	-	-	0.000

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
COE V3 Arch, System Engr & Dev																												
COE V3 Test & Integration																												
V3 Operational Assessment																												
(1) Fielding Decision																												
(2) First Unit Equipped																												
(3) SW Drop (1)																												
(4) SW Drop (2)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) EJ5 / <i>MOUNTED COMPUTING ENVIRONMENT (MCE)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
COE V3 Arch, System Engr & Dev	1	2018	4	2022
COE V3 Test & Integration	3	2017	1	2019
V3 Operational Assessment	4	2018	1	2019
Fielding Decision	3	2019	3	2019
First Unit Equipped	4	2019	4	2019
SW Drop (1)	4	2020	4	2020
SW Drop (2)	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EJ6: TACTICAL ENHANCEMENT	-	8.416	11.864	0.000	-	0.000	8.600	0.319	0.000	0.000	0.000	29.199
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Tactical Enhancement supports the evaluation and testing requirements for Modular Communications Node - Advanced Equipment (MCN-AE), Terrestrial Transmission (TRILOS) and Troposcatter Transmission (TROPO) capabilities procured and fielded under the Signal Modernization (SIGMOD) funding line, B00010. TRILOS and TROPO will provide redundancy communications in a Satellite denied environment by providing improved Line of Site and beyond line of sight radio systems.

SIGMOD Capabilities:

MCN-AE: Provides Top Secret/Sensitive Compartmented Information (TS/SCI) communications to Brigades, Divisions, Corps, and Signal Battalions over the WIN-T network.

TRILOS: Enables Mission Command in a Satellite Denied environment at higher throughput than the current High Capacity Line of Sight System (HCLOS). TRILOS will enable Army units to reduce reliance on costly satellite bandwidth. TRILOS will extend the network by utilizing a significantly reduced Size, Weight and Power (SWaP) radio verses the aging HCLOS system.

TROPO: Enables Mission Command in a Satellite Denied environment by providing Beyond Line of Site (BLOS) capability over longer ranges and at higher throughput than the current BLOS System. TROPO extends the network by utilizing a significantly reduced SWaP radio verses the current system. TROPO will enable Army units to reduce reliance on costly satellite bandwidth.

No FY18 funding: Testing requirements for TROPO moved from FY18 to FY19/20 due to a delay in requirements definition and availability of COTS products to meet the requirement.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: System Under Evaluation (SUE) for TS-SCI Security Enclave (MCN-AE)	8.416	-	-	-	-
Description: Testing requirement					
FY 2016 Accomplishments: SUE for TS-SCI (MCN-AE) during NIE16.2					
Title: IOT&E for TRILOS systems	-	11.864	-	-	-
Description: IOT&E for terrestrial communications TRILOS Systems					
FY 2017 Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
IOT&E for terrestrial communications TRILOS Systems; BCT SUT for MCN-AE					
Accomplishments/Planned Programs Subtotals	8.416	11.864	-	-	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• B00010: <i>Signal Modernization</i>	47.024	58.250	92.718	4.900	97.618	127.074	160.681	137.475	122.153	0.000	750.275

Remarks

D. Acquisition Strategy

These funds will be used to conduct System Evaluation and Formal Testing of the various Signal Mod capabilities, specifically the MCN-AE, TROPO and Terrestrial Transmission (TRILOS) systems. This is in order to facilitate integration into the WIN-T tactical ground networks. Testing and evaluation efforts will leverage the Network Integration Evaluation (NIE) events, specifically NIE 16. 2 (MCN-AE), and NIE 17.2 (TRILOS) events. TROPO test is anticipated in 3QFY19. These test events will meet all mandatory testing requirements with full ATEC oversight. This Acquisition Strategy will integrate proven Commercial-Off-The-Shelf (COTS) capabilities into existing WIN-T nodes to expand and enhance network capacity and user access. The TROPO and TRILOS capabilities will be acquired as ACAT III programs to replace legacy equipment in the field while utilizing DoDI 5000.02 standard acquisition approaches, starting with Milestone C Determination for TRILOS (2QFY17) and TROPO (2QFY18).

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ7 / TACTICAL DIGITAL MEDIA
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EJ7: TACTICAL DIGITAL MEDIA	-	1.248	2.467	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.715
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Tactical Digital Media (TDM) is comprised of photo, video and audio recording and editing equipment that will be assembled and issued as variant kits tailored to unit mission requirements. TDM kits address modernization gaps associated with all operational Combat Camera (COMCAM), Public Affairs (PA), and Military Information Support Operations (MISO) units. TDM provides essential imagery, multimedia products, and live interview capabilities that directly contribute to successful execution of a Commander's strategic engagement and communications strategy across the full range of military operations. TDM also provides specific imagery, video, and multimedia support to commanders through the National Command Authority (NCA) level to assist with operational planning, decision-making, combat adversary misinformation/disinformation, alter perceptions regarding coalition efforts, and provide accurate and timely information to national and international audiences. Proposed TDM equipment is entirely commercial off the shelf (COTS) which is currently in use by military organizations and commercial industry.

FY17 Base funding in the amount of \$2.467 million will be used to procure and evaluate representative candidate commercial off the shelf (COTS) camera and video equipment for effectiveness, suitability, and reliability. FY17 efforts will include planning for full rate production decision, type classification, and award of a production delivery order to support future procurements.

No FY18 RDTE funding.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Program Management	0.121	0.295	-	-	-
Description: Program Management comprises overall management of program execution, major events, reporting, funds execution, and contract management. Includes participation in program planning meetings and IPTs.					
FY 2016 Accomplishments: Provided Program Management, technical, logistics, and business oversight for TDM evaluation and testing activities to support Milestone C.					
FY 2017 Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army				Date: May 2017	
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software		Project (Number/Name) EJ7 / TACTICAL DIGITAL MEDIA	
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Provide technical, logistics, and business oversight for TDM evaluation and testing activities. Program management functions include oversight, planning, funds execution and contract management support to TDM RDT&E activities.					
<p>Title: Test and Evaluation</p> <p>Description: Test and evaluation of COTS technologies to assess their ability to meet the TDM Capability Production Document (CPD) requirements.</p> <p>FY 2016 Accomplishments: Partnered with the Aberdeen Proving Ground (APG), Electronics Proving Ground (EPG) to develop the TDM Product Prove-out Test (PPT) plan, where COTS components will be evaluated for effectiveness, suitability, and reliability.</p> <p>FY 2017 Plans: Photo, video, audio recording and editing equipment will be evaluated and tested in order to assess components of variant kits that support multiple mission requirements across multiple visual information (VI) disciplines.</p>	0.930	1.431	-	-	-
<p>Title: Procurement of Test Articles</p> <p>Description: Photo, video, audio recording, and editing equipment necessary for purposes of evaluation, and testing against the TDM CPD requirements.</p> <p>FY 2016 Accomplishments: TDM procured representative Kit components from various COTS manufactures for PPT evaluation against the CPD requirements. TDM partnered with Communications-Electronics Research, Development and Engineering Center (CERDEC), Space and Terrestrial Communications Directorate (S&TCD) to conduct a Feasibility Study analyzing various COTS methods of securing digital media in order to process and transmit on NIPRnet and SIPRnet. The results of this study will inform the procurement of additional test articles necessary for evaluation to meet the Net Ready Key Performance Parameter.</p> <p>FY 2017 Plans: Test article procurement (limited quantities to support evaluation and testing).</p>	0.197	0.741	-	-	-
Accomplishments/Planned Programs Subtotals	1.248	2.467	-	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ7 / TACTICAL DIGITAL MEDIA
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• B68501 Tactical Digital Media (OPA): B68501 Tactical Digital Media (OPA)	-	1.191	4.441	-	4.441	4.958	5.500	5.592	5.874	0.000	27.556

Remarks

D. Acquisition Strategy

In accordance with the approved TDM Capabilities Production Document (CPD), the Army will be purchasing state-of-the-art COTS equipment to field media variant kits tailored to unit mission requirements. The equipment will be purchased on the Common Hardware Systems (CHS) contract, and will include warranties.

The program strategy for reaching full capability is to identify, and field a modern standardized set of digital media capabilities that enables the Army user community to acquire, and process digital media/visual information products able to be disseminated within a fully integrated Army tactical network operations environment, which includes commercial networks, and interfaces. The TDM program will replace legacy analog devices by providing state-of-the art COTS equipment supporting acquire and process operations that is centrally managed and resourced. New technologies and improvements of COTS equipment will be inserted as part of unit reset, New Equipment Fielding's or upgrades as necessary to provide users with state-of-art capabilities.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EK9: TACTICAL NETWORK OPERATIONS AND MANAGEMENT	-	0.000	39.264	9.348	-	9.348	40.823	55.417	80.415	84.281	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Tactical Network Operations (NetOps) Management (TNOM) will support the development and integration of the Tactical NetOps software capabilities in support of NetOps Convergence, Army Objectives and emerging Cyber Center of Excellence (CCOE) requirements. The end state program is designed to synchronize LandWarNet, Network-enabled Mission Command, and Global Information Grid 2.0 Network Operations (NetOps) efforts in an integrated and interoperable framework, spanning all echelons of command and supporting the full range of military operations for Army, Joint, and Coalition Forces in order to ensure converged NetOps. The initial mission is convergence of DoD Information Network (DoDIN) functions into a single integrated set of Tactical NetOps and Management software. This integrated solution provides NetOps capability to manage Tactical Networks from the Soldier to the Theater network entry point and supports the implementation of integrated NetOps for Unified Network Operations (UNO). UNO will deliver a standardized visualization capability (integrating both Upper and Lower Tactical Internet NetOps) in order to reduce complexity and inform the military decision making processes. UNO will also provide enhanced capability to detect, respond, and restore from cyber incidents.

FY18 funding will support the Analysis of Alternatives (AoA) to include supporting efforts for the development of Network Operations software, enhancing Network Visualization and Monitoring of the tactical network, standardizing data definition and storage to support Common Operational Picture, and simplify planning and configuration process for multiple network devices and radios. FY18 funding will support Program Office Management and subsequent efforts for capability development documentation.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	-	30.895	7.348	-	7.348
Description: Network Operations Development					
FY 2017 Plans:					
FY17 planned to initiates the Engineering Design and Development of Network Operations software in support of the Integrated Tactical Network Operations (ITNO) Increment 1 Capability Production Document which enhances Network Visualization and Monitoring of the tactical network, standardizes the data definitions and storage to support Common Operational Picture, and simplifies the planning and configuration process for multiple network devices and radios, delivering high level design and specification documents that guide					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>subsequent development and test planning. An Analysis of Alternatives (AoA) is replacing the ITNO Capability Production Document (CPD) strategy to align with Army priorities and Materiel Development Decision to support AoA initiation is planned for 1QFY18.</p> <p>FY 2018 Base Plans: FY18 funding will support the Analysis of Alternatives (AoA) to include supporting efforts for the development of Network Operations software, enhancing Network Visualization and Monitoring of the tactical network, standardizing data definition and storage to support Common Operational Picture, and simplify planning and configuration process for multiple network devices and radios.</p>					
<p>Title: Test and Evaluation</p> <p>Description: Testing and Evaluating NetOps</p> <p>FY 2017 Plans: FY17 planned to fund T&E planning, updates to Test and Evaluation Master Plan, and integration and oversight by Government Test Organization with ongoing Contractor test events. An Analysis of Alternatives (AoA) is replacing the Integrated Tactical Network Operations (ITNO) Capability Production Document (CPD) strategy to align with Army priorities and a Materiel Development Decision to support AoA initiation is planned for 1QFY17. No testing efforts in FY17 to conduct.</p>	-	4.442	-	-	-
<p>Title: Management Services</p> <p>Description: Program Management Support</p> <p>FY 2017 Plans: Program Management Support and System Engineering for NetOps</p> <p>FY 2018 Base Plans: FY18 funding will support Program Office Management, AoA development and supporting System Engineering for NetOps with subsequent efforts for capability development documentation.</p>	-	3.927	2.000	-	2.000
Accomplishments/Planned Programs Subtotals	-	39.264	9.348	-	9.348

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

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT

D. Acquisition Strategy

Tactical Network Operations (NetOps) Management (TNOM) is built to deliver the capabilities described in the LandWarNet, Network-enabled Mission Command, and Global Information Grid 2.0 Initial Capabilities Documents (ICD) as refined by the Analysis of Alternatives (AoA). The AoA is replacing the ITNO Capability Production Document (CPD) strategy to align with Army priorities. A Materiel Development Decision is anticipated in 1st Quarter 2018 to initiate the AoA. FY18 will lead AoA development to include supporting efforts for the development of Network Operations software, enhancing Network Visualization and Monitoring of the tactical network, standardizing data definition and storage to support Common Operational Picture, and simplify planning and configuration process for multiple network devices and radios. FY18 will also include Program Office Management support and subsequent efforts for capability development documentation.

The AoA will scope an integrated solution which provides NetOps capabilities to manage Tactical Networks from the Soldier to the Theater network entry point and supports the implementation of integrated NetOps for Unified Network Operations (UNO). After AoA completion, anticipate a UNO Information Systems Capability Development Document (IS CDD) to support a Milestone B decision anticipated for 2nd Quarter FY20 with a contract award immediately following approval to enter Engineering and Manufacturing Development Phase. The program plans to develop and deliver software, and conduct developmental and operational tests. A Limited Fielding Decision will follow testing.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EQ8: <i>Mobile/Handheld Computing Environment (M/HHCE)</i>	-	0.000	10.563	11.850	-	11.850	11.920	12.089	12.385	12.577	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Nett Warrior (NW) Program (named in honor of Medal of Honor recipient Colonel Robert C. Nett), also known as the Ground Soldier System (GSS) Program, leverages commercial smart devices and secure Army tactical radios to provide the dismounted leader an integrated mission command and situational awareness system for use during combat operations. The NW system provides leaders electronic real-time information on friendly positions; information about enemy activity and movement; navigational data and map imagery; a collaborative planning tool; and other mission related graphics which effectively puts the power of the entire Army tactical network in the hands of the dismounted leader. The NW system also provides the same integrated mission command capability to the tactical vehicle-mounted leaders so that when dismounted, the leader still maintains the common operating picture (COP) and has continuous situational awareness. This capability provides unparalleled situational awareness and enhanced communications to the dismounted leader allowing for faster, more accurate decisions and reduced fratricide in the tactical fight. Includes integration and interface of products on Soldiers.

The continued development and integration of the NW program also integrates applications from other programs aimed at considerably reducing the weight and bulk of the dismounted Soldier's load by using a single End User Device. The NW program harnesses Soldiers' experience in combat operations and employs combat veterans for Soldier feedback enhancing human factors design and fightability of the system. This project funds the following: 1) Incorporation of additional new hardware applications and capabilities into Nett Warrior, 2) Yearly developmental and operational tests of the NW with continually advancing commercial smart device technology inserted, 3) Software development for planned updates, 4) Integration of new End User Devices with the existing and re-competed Army Tactical Radios, including vehicle power integration, 5) Government led integration and system engineering and program management, and 6) Conduct NW Operational Test and Evaluation with Mechanized and Infantry units in FY16/17.

Note: FY16 and prior funding for Nett Warrior resided in 0604827A (Soldier Systems - Warrior Dem/Val) Project S75 (Ground Soldier Ensemble).

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Test and Evaluation	-	2.119	2.139	-	2.139
Description: Test and Evaluation including annual Network Integration Evaluation (NIE) and Army Warfighting Assessment (AWA) to gain Soldier feedback.					
FY 2017 Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)				
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Conduct NW test and 3rd party applications evaluation for technical verification at developmental test events and user verification through a planned Follow-on Test and Evaluation (FOT&E) operational assessment to support FY17 Full Rate Production (FRP) decision. Support NW as a baseline NIE and AWA system including: Brigade level support, equipping, training, and spares for NW; conduct yearly Army Interoperability Certification; environmental testing; and Information Assurance penetration prevention testing for new commercial smart devices, software and accessories.</p> <p>FY 2018 Base Plans: Continue NW test and 3rd party applications evaluation for technical verification at developmental test events and user verification through a planned Follow-on Test and Evaluation (FOT&E) operational assessment. Support NW as a baseline NIE and AWA system including: Brigade level support, equipping, training, and spares for NW; conduct yearly Army Interoperability Certification; environmental testing; and Information Assurance penetration prevention testing for new commercial smart devices, software and accessories.</p>						
<p>Title: Hardware and Software Integration and Evaluation for Capability Improvements</p> <p>Description: Hardware and Software Integration and Evaluation for Capability Improvements</p> <p>FY 2017 Plans: Evolve the NW system architecture and evaluate next End User Devices (EUD) and associated hardware components to stay aligned with commercial and Army evolving requirements. Provide NW software / hardware updates to support incorporation of 3rd party applications onto NW EUD platform, Army Interoperability Certification (AIC) and cyber security testing.</p> <p>FY 2018 Base Plans: Continue to evaluate next End User Devices (EUD) and associated hardware components to stay aligned with commercial and Army evolving requirements. Provide NW software / hardware updates to support incorporation of 3rd party applications onto NW EUD platform, Army Interoperability Certification (AIC) and cyber security testing.</p>		-	4.323	3.496	-	3.496
<p>Title: Software Development & Integration</p> <p>Description: Funding is provided for the following efforts.</p> <p>FY 2017 Plans: Add additional Variable Message Format (VMF) messages to NW software. Evaluate next generation NW map engine and Operating System (OS) trade studies. Initiate assured Position, Navigation and Timing (PNT)</p>		-	1.333	2.744	-	2.744

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
software development efforts with NW. Update NW Software Development Kit (SDK) with new functionality. Establish a full/open competitive source for NW software development and integration support team. Start incorporating the Army's Common Operating Environment (COE) 3.0 Cross-Cutting Capabilities into NW software. FY 2018 Base Plans: Continue to evaluate next generation NW map engine and Operating System (OS) trade studies and initiate assured Position, Navigation and Timing (PNT) software development efforts with NW. Update NW Software Development Kit (SDK) with new functionality. Continue to incorporate the Army's Common Operating Environment (COE) 3.0 Cross-Cutting Capabilities into NW software.					
Title: Conduct SEPM Support to NW Description: Conduct Systems Engineering and Program Management Support to Nett Warrior FY 2017 Plans: Conduct government systems engineering and program management support for NW program including documentation preparation for a planned Full Rate Production decision in FY17. Manage the integration of the latest commercial smart devices, software applications and technology for test and evaluation. Collect input from Soldiers at semi-annual NIE events that improve NW size, weight, power, fightability, safety and effectiveness via surveys and electronic data monitoring from Developmental and Operational Testing (DT/OT) events. Facilitates NW compliance to M/HH CE standards. FY 2018 Base Plans: Continue to conduct government systems / software engineering and program management support for NW program. Will collect input from Soldiers to improve NW size, weight, power, fightability, safety and effectiveness via surveys. Will manage system configuration, and execute test, development and integration planning including investigation and analysis of emerging innovative commercial technologies to lower the size, weight, power, cost and increase Nett Warrior functionality.	-	2.788	2.699	-	2.699
Title: MHHCE Governance FY 2018 Base Plans: Provide Mobile Handheld Computing Environment (MHH/CE) governance and standards development for external program integration to eliminate separate handheld devices and reduce Soldier load.	-	-	0.772	-	0.772
Accomplishments/Planned Programs Subtotals	-	10.563	11.850	-	11.850

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDT&E, PE 0604827A S75,: <i>Ground Soldier Ensemble</i>	11.963	-	-	-	-	-	-	-	-	0	11.963
• OPA 3, R80501: OPA 3, <i>R80501, Ground Soldier System</i>	49.798	32.419	38.219	-	38.219	38.642	39.171	37.926	41.739	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Nett Warrior (NW) program provides unparalleled situational awareness and mission command to dismounted combat leaders through a secure commercial smart device, power source, cables and tactical radio. The NW is focused on Team Leader and higher echelons and provides an integrated secure information-centric Commercial-Off-The Shelf (COTS) mobile application-based computation platform with data collection, enhanced SA, mission planning, and navigational aid functions overlaid on geo-referenced maps and high resolution imagery throughout a brigade. The NW enables real-time ground tactical-level knowledge sharing and command and control (C2), directly impacting combat effectiveness and decision-making. The NW also improves lower echelon intelligence production and analysis capabilities which are central to efficient and effective counter-insurgency warfare. NW program completed LRIP/MS C in 2012 followed by two LRIP decisions in 2013-14 in preparation for IOT&E under DOT&E oversight in 4QFY14-1QFY15. This IOT&E event led to an additional NW Low Rate Initial Production (LRIP) decision in 2015 and a Full Rate Production Decision is planned for early FY18. From this decision NW will complete annual production and fielding events based on yearly development, integration and testing of emerging advanced smart devices to lower cost, weigh and power. To capitalize on commercial industry's investment in advanced smart device technology as well as innovation and changes within Army, NW requires annual RDT&E funding for integration and evaluation. Through this process and at low cost, the Army is able to integrate and evaluate for combat utility the hundreds of millions spent in product development by the major commercial device manufactures.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Support	Various	Various : Various	0.000	-		2.787		2.699		-		2.699	Continuing	Continuing	0.000
MHHCE Governance	MIPR	Multiple : Multiple	0.000	-		-		0.772		-		0.772	Continuing	Continuing	0.000
Subtotal			0.000	-		2.787		3.471		-		3.471	-	-	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hardware/Software Integration & Evaluation	Various	Various : Various	0.000	-		4.323		3.496		-		3.496	Continuing	Continuing	0
Subtotal			0.000	-		4.323		3.496		-		3.496	-	-	0.000

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development and Integration	Various	Various : Various	0.000	-		1.334		2.744		-		2.744	Continuing	Continuing	0
Subtotal			0.000	-		1.334		2.744		-		2.744	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Testing Organizations	Various	Various : Various	0.000	-		2.119		2.139		-		2.139	Continuing	Continuing	0
Subtotal			0.000	-		2.119		2.139		-		2.139	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army								Date: May 2017					
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)						
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		10.563		11.850		-		11.850	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	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 EUD test and evaluation + LTE (DT) FY17																												
PFED Inc 2 integration and evaluation FY17																												
New Hardware capability testing (environmental/CRBRNE intelligence) F																												
New EUD test and evaluation + LTE (OT) FY17																												
Software Update Testing (CS-18/19) FY17																												
Mobile Hand Held Compliance Testing (FY17)																												
Robotics and Mobile Sensor Integration FY18																												
Software Update Integration FY18																												
New Hardware capability testing (environmental/CRBRNE intelligence) F																												
PFED Inc 2 integration and evaluation FY18																												
TCAPS Integration FY18																												
New EUD test and evaluation + LTE (DT) FY18																												
Robotics and Mobile Sensor Testing FY18																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022										
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4							
Mobile Hand Held Compliance Testing FY18																																			
New EUD test and evaluation + LTE (OT) FY19																																			
DARPA Squad X transition Phase 1 FY19																																			
Mech Unit with Nett Warrior DT FY19																																			
Software Update Testing (CS-18/19) FY19																																			
New Hardware capability testing (environmental/CRBRNE intelligence) F																																			
Robotics and Mobile Sensor Integration FY19																																			
TCAPS Integration FY19																																			
Mobile Hand Held Compliance Testing (FY19)																																			
Robotics and Mobile Sensor Testing FY19																																			
New EUD test and evaluation + LTE (DT) FY20																																			
DARPA Squad X transition Phase 2 FY20																																			
New Hardware capability testing (environmental/CRBRNE intelligence) F																																			

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army Date: May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) EQ8 / <i>Mobile/Handheld Computing Environment (M/HHCE)</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Mobile Hand Held Compliance Testing (FY20)																																				
Mech Unit with Nett Warrior DT FY20																																				
Robotics and Mobile Sensor Testing FY20																																				
Software Update Integration FY20																																				
Robotics and Mobile Sensor Integration FY20																																				
TCAPS Integration FY20																																				
DARPA Squad X transition formal Testing FY21																																				
Robotics and Mobile Sensor Testing FY21																																				
New EUD test and evaluation + LTE (OT) FY21																																				
New Hardware capability testing (environmental/CRBRNE intelligence) F																																				
Software Update Testing (CS-18/19) FY21																																				
Mobile Hand Held Compliance Testing (FY21)																																				
Mech Unit with Nett Warrior OT FY21																																				

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DARPA Squad X transition Phase 2 FY21																												
Software Update Integration FY21																												
Mobile Hand Held Compliance Testing (FY22)																												
Software Update Integration FY22																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
New EUD test and evaluation + LTE (DT) FY17	1	2017	1	2017
PFED Inc 2 integration and evaluation FY17	2	2017	4	2017
New Hardware capability testing (environmental/CRBRNE intelligence) FY17	3	2017	3	2017
New EUD test and evaluation + LTE (OT) FY17	3	2017	3	2017
Software Update Testing (CS-18/19) FY17	3	2017	3	2017
Mobile Hand Held Compliance Testing (FY17)	3	2017	4	2017
Robotics and Mobile Sensor Integration FY18	1	2018	2	2018
Software Update Integration FY18	2	2018	2	2018
New Hardware capability testing (environmental/CRBRNE intelligence) FY18	3	2018	3	2018
PFED Inc 2 integration and evaluation FY18	3	2018	4	2018
TCAPS Integration FY18	3	2018	3	2018
New EUD test and evaluation + LTE (DT) FY18	3	2018	4	2018
Robotics and Mobile Sensor Testing FY18	4	2018	4	2018
Mobile Hand Held Compliance Testing FY18	4	2018	4	2018
New EUD test and evaluation + LTE (OT) FY19	1	2019	2	2019
DARPA Squad X transition Phase 1 FY19	1	2019	4	2019
Mech Unit with Nett Warrior DT FY19	2	2019	2	2019
Software Update Testing (CS-18/19) FY19	2	2019	3	2019
New Hardware capability testing (environmental/CRBRNE intelligence) FY19	3	2019	3	2019
Robotics and Mobile Sensor Integration FY19	3	2019	3	2019
TCAPS Integration FY19	4	2019	4	2019
Mobile Hand Held Compliance Testing (FY19)	4	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)
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Events	Start		End	
	Quarter	Year	Quarter	Year
Robotics and Mobile Sensor Testing FY19	4	2019	4	2019
New EUD test and evaluation + LTE (DT) FY20	1	2020	1	2020
DARPA Squad X transition Phase 2 FY20	1	2020	4	2020
New Hardware capability testing (environmental/CRBRNE intelligence) FY20	2	2020	3	2020
Mobile Hand Held Compliance Testing (FY20)	4	2020	4	2020
Mech Unit with Nett Warrior DT FY20	2	2020	2	2020
Robotics and Mobile Sensor Testing FY20	4	2020	4	2020
Software Update Integration FY20	2	2020	2	2020
Robotics and Mobile Sensor Integration FY20	3	2020	4	2020
TCAPS Integration FY20	3	2020	3	2020
DARPA Squad X transition formal Testing FY21	1	2021	4	2021
Robotics and Mobile Sensor Testing FY21	1	2021	3	2021
New EUD test and evaluation + LTE (OT) FY21	2	2021	3	2021
New Hardware capability testing (environmental/CRBRNE intelligence) FY21	2	2021	3	2021
Software Update Testing (CS-18/19) FY21	2	2021	3	2021
Mobile Hand Held Compliance Testing (FY21)	4	2021	4	2021
Mech Unit with Nett Warrior OT FY21	3	2021	3	2021
DARPA Squad X transition Phase 2 FY21	2	2021	3	2021
Software Update Integration FY21	4	2021	4	2021
Mobile Hand Held Compliance Testing (FY22)	3	2022	3	2022
Software Update Integration FY22	4	2022	4	2022

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) ER9 / Command Post Integrated Infrastructure			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
ER9: <i>Command Post Integrated Infrastructure</i>	-	0.000	0.000	20.000	-	20.000	29.230	15.570	12.600	26.630	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Program Executive Office for Command, Control and Communications - Tactical (PEO C3T) fields mobile Command Post Nodes by integrating supporting mission command solutions in accordance with Directed Requirement with a FY20 First Unit Equipped in order to enhance the survivability and mobility of brigade and below command post formations. On order, Command Post Integrated Infrastructure will replace selected elements of the legacy command post to provide improved expeditionary capability, survivability, agility, and scalability for Corps and Division Main and Tactical Command Posts, Brigade Main and Tactical Command Posts, and Battalion Command Posts. It will ensure information and support systems are introduced into the Command Post through physical integration allowing the commander to tailor the Command Post as missions dictate.

FY18 funding initiates System Design and Prototyping of the MTV M1087 Mission Command Platform (MCP), Joint Light Tactical Vehicle (JLTV) Command Post Support Vehicle (CPSV), and Light Medium Tactical Vehicle (LMTV) M1079 CPSV. FY18 funding supports the development of the developmental test plan.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	-	-	16.885	-	16.885
FY 2018 Base Plans: Product Development supports Directed Requirement for System Design and Prototyping, Platform Integration, Assembly, Test and Checkout of M1087 Mission Command Platform and M1079 and JLTV variants of the Command Post Support Vehicle, and required certifications for safety and transportability.					
Title: Program Office Management	-	-	2.000	-	2.000
FY 2018 Base Plans: Program Office Management and Support					
Title: Systems Test and Evaluation	-	-	1.115	-	1.115
FY 2018 Base Plans: Supports development of the Developmental Test plan					
Accomplishments/Planned Programs Subtotals	-	-	20.000	-	20.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) ER9 / <i>Command Post Integrated Infrastructure</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy <p>Command Post Integrated Infrastructure (CPI2) is predominantly a systems integration effort and leverages improvements in technology to reduce the current CP footprint and improve its agility. It consists of the integration of approved and fielded mission command information systems (INFOSYS), Government-Off-The-Shelf (GOTS) and Commercial Off-The-Shelf (COTS) technology. The centerpiece of CPI2 is the Mission Command Platform (MCP) and the Command Post Support Vehicle (CPSV).</p> <p>FY18-FY22 Directed Requirement for CPI2 will leverage existing contracts managed by Project Manager (PM) Joint Light Tactical Vehicle (JLTV), Project Manager (PM) Stryker Brigade Combat Team (SBCT), and Project Manager (PM) Armored Multi-Purpose Vehicle (AMPV) for integration efforts associated with JLTV, Stryker, and AMPV. CPI2 will use a Functional Support Agreement for the prototype development of the M1079 CPSV and M1087 MCP variants. A Request For Proposal (RFP) will be released for a production contract for the M1079 CPSV and M0187 MCP in 1QFY20 with a projected award in 4QFY20 to produce four brigade sets.</p> <p>The CPI2 Capability Development Document (CDD) is projected for Army Requirements Oversight Council (AROC) approval in 4QFY17 with a Milestone B projected for 1QFY20. Competitive contract award planned for 1QFY21 based on Request For Proposal (RFP) responses and source selection process. This contract will be a 3-year Firm Fixed Priced/Cost Plus Fixed Fee (FFP/CPFF) contract for the design, engineering, prototyping, Developmental Test (DT), new equipment training, and Limited User Test (LUT) for the M1079 CPSV, M1087 MCP, and ISC Container MCP. A second anticipated contract is projected to be awarded in 4QFY23 following Milestone C in 4QFY22. This will be a competitive award for follow-on Low Rate Initial Production (LRIP), Initial Operational Test and Evaluation (IOT&E) support with Option Years for production. CPI2 will leverage existing contracts managed by PM JLTV, PM SBCT, and PM AMPV for integration efforts associated with JLTV, Stryker, and AMPV.</p>		
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604818A / Army Tactical Command & Control Hardware & Software				ER9 / Command Post Integrated Infrastructure							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Office Management	C/TBD	Various : Various	0.000	-		-		2.000		-		2.000	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		2.000		-		2.000	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/TBD	TBD : TBD	0.000	-		-		16.885		-		16.885	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		16.885		-		16.885	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Test and Evaluation	C/TBD	TBD : TBD	0.000	-		-		1.115		-		1.115	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		1.115		-		1.115	-	-	-
Project Cost Totals			0.000	-		0.000		20.000		-		20.000	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Command Post Integrated Infrastructure
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Directed Requirement AROC Approval					▲ DR AROC Approval																							
(2) Program of Record CPI2 AROC Approval					▲ CPI2 AROC Approval																							
(3) Program of Record CPI2 MDD					▲ CPI2 MDD																							
Directed Requirement Design, Prototype, and Developmental Test									■ DR Design, Prototype & DT																			
Directed Requirement New Equipment Training													■ DR NET															
Directed Requirement Unit Assessments																	■ DR Unit Assess											
Directed Requirement CMR																	■ DR CMR											
Directed Requirement Fieldings																	■ DR Fieldings											
(4) CPI2 Milestone B													▲ CPI2 MS B															
(5) CPI2 Contract Award																	▲ CPI2 Contract Award											
CPI2 Limited User Test																					■ CPI2 LUT							
(6) CPI2 Milestone C																									▲ CPI2			

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Command Post Integrated Infrastructure

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Directed Requirement AROC Approval	3	2017	3	2017
Program of Record CPI2 AROC Approval	4	2017	4	2017
Program of Record CPI2 MDD	4	2017	4	2017
Directed Requirement Design, Prototype, and Developmental Test	1	2018	4	2020
Directed Requirement New Equipment Training	1	2020	1	2020
Directed Requirement Unit Assessments	1	2020	1	2021
Directed Requirement CMR	4	2020	4	2020
Directed Requirement Fieldings	4	2020	1	2022
CPI2 Milestone B	1	2020	1	2020
CPI2 Contract Award	1	2021	1	2021
CPI2 Limited User Test	2	2022	3	2022
CPI2 Milestone C	4	2022	4	2022

Note

Directed Requirement FY18-FY22. RDTE activities FY18-FY20/Procurement activities FY20-FY22
 Program of Record to begin FY20. RDTE activities FY20-FY24/Procurement activities to begin in FY23

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EW3: Unit Task Reorganization (UTR) Development	-	0.000	24.498	25.969	-	25.969	24.431	27.658	27.003	25.635	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Unit Task Reorganization (UTR) effort leverages and integrates existing PEO C3T capabilities to create a drag and drop capability for the S3 and Signal Soldiers that enables them to visualize their current network, make adjustments to support the mission, determine what and how changes need to be made, and then, make the changes to the network over the air. The UTR program will address the intent of FES 3.0 – MC adaptability and utility through a simplified and more secure network – and reduce individual program LCM costs by reducing the need for FSEs and Help Desk support by standardizing and automating processes. The program sub-divides UTR into Network Sustainment, Network Planning, and Network Establishment, and further divides them into 35 distinct System of Systems capabilities.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Title: UTR Common Data Model</p> <p>Description: Design and develop a UTR Common Data Model (CDM) capable of representing tactical C4ISR systems and their runtime and planned initialization data. The UTR CDM shall provide a common, structured, machine-readable, and self-describing format. It shall be an extensible and object-oriented data model facilitating data sharing among existing and future tactical C4ISR systems and UTR tools.</p> <p>FY 2017 Plans: Design and develop a UTR Common Data Model (CDM) capable of representing tactical C4ISR systems and their runtime and planned initialization data. The UTR CDM shall provide a common, structured, machine-readable, and self-describing format. It shall be an extensible and object-oriented data model facilitating data sharing among existing and future tactical C4ISR systems and UTR tools.</p>	-	11.731	-	-	-
<p>Title: UTR Data Repositories</p> <p>Description: UTR Data Repository is that of a distributed, authoritative database architecture capable of storing, synchronizing, and presenting existing, planned, and archived initialization data. The repositories shall be distributed and connected across each echelon of the tactical network.</p> <p>FY 2017 Plans:</p>	-	6.285	-	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
UTR Data Repository is that of a distributed, authoritative database architecture capable of storing, synchronizing, and presenting existing, planned, and archived initialization data. The repositories shall be distributed and connected across each echelon of the tactical network.					
<p>Title: UTR Data Dissemination Service</p> <p>Description: Design and develop a UTR Data Dissemination Service (UTR DDS). It is a data distribution methodology for disseminating existing and planned initialization data through the tactical network (both within and between tactical echelons), as required.</p> <p>FY 2017 Plans: Design and develop a UTR Data Dissemination Service (UTR DDS). It is a data distribution methodology for disseminating existing and planned initialization data through the tactical network (both within and between tactical echelons), as required.</p>	-	3.897	-	-	-
<p>Title: UTR Automated Initialization Service</p> <p>Description: Design and develop the UTR Automated Initialization Service (AIS). It is envisioned as a mechanism that automates the manual workflows for initializing tactical C4ISR systems. In addition, it aims to decouple the planning and initialization functions, so that each function can be performed at the appropriate tactical echelon.</p> <p>FY 2017 Plans: Design and develop the UTR Automated Initialization Service (AIS). It is envisioned as a mechanism that automates the manual workflows for initializing tactical C4ISR systems. In addition, it aims to decouple the planning and initialization functions, so that each function can be performed at the appropriate tactical echelon.</p>	-	1.115	-	-	-
<p>Title: PMO</p> <p>Description: The PMO cost is oversight and management of the design and development efforts. These people will lead, manage, and provide direction to the development teams.</p> <p>FY 2017 Plans: The PMO cost is oversight and management of the design and development efforts. These people will lead, manage, and provide direction to the development teams.</p>	-	1.470	-	-	-
<p>Title: IP Address Management</p>	-	-	0.675	-	0.675

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: A SoS capability to dynamically track Internet Protocol address space used in a network. IPAM automatically assigns IP addresses to communications assets authenticating with the network, tracks IP block allocations to subordinates, assignments to communications assets, changes to assignments, multicast groups and assignments, etc. It enables and tracks requests to HHQ for more IP space when required.</p> <p>FY 2018 Base Plans: A SoS capability to dynamically track Internet Protocol address space used in a network. IPAM automatically assigns IP addresses to communications assets authenticating with the network, tracks IP block allocations to subordinates, assignments to communications assets, changes to assignments, multicast groups and assignments, etc. It enables and tracks requests to HHQ for more IP space when required.</p>					
<p>Title: Tactical Radio Management</p> <p>Description: A dynamic SoS capability that tracks the status of operational nets (i.e. Command, Fires, Ops and Intel, Admin and Log, aviation nets, etc.)</p> <p>FY 2018 Base Plans: A dynamic SoS capability that tracks the status of operational nets (i.e. Command, Fires, Ops and Intel, Admin and Log, aviation nets, etc.)</p>	-	-	3.544	-	3.544
<p>Title: Cryptographic Management</p> <p>Description: SoS capability to create a COMSEC plan that meets the mission requirements using the COMSEC assets assigned</p> <p>FY 2018 Base Plans: SoS capability to create a COMSEC plan that meets the mission requirements using the COMSEC assets assigned</p>	-	-	1.802	-	1.802
<p>Title: Network Configuration Management</p> <p>Description: SoS capability that dynamically tracks which devices are on the network, how they're configured, how they are connected, provides authoritative and accurate data at each echelon, provides its data as a service to Enterprise systems, and maintains multiple last known good baseline configurations for all communications assets.</p> <p>FY 2018 Base Plans:</p>	-	-	0.621	-	0.621

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
SoS capability that dynamically tracks which devices are on the network, how they're configured, how they are connected, provides authoritative and accurate data at each echelon, provides its data as a service to Enterprise systems, and maintains multiple last known good baseline configurations for all communications assets.					
<p>Title: Signal Running Estimate</p> <p>Description: Capability that provides one of the Mission Command Essential Capabilities (MCEC) for the BDE and BN S6s, integrated with other dynamic Network Sustainment capabilities to enable the S6s to more effectively support MDMP, and to enable the MDMP process to more effectively drive changes to the network.</p> <p>FY 2018 Base Plans: Capability that provides one of the Mission Command Essential Capabilities (MCEC) for the BDE and BN S6s, integrated with other dynamic Network Sustainment capabilities to enable the S6s to more effectively support MDMP, and to enable the MDMP process to more effectively drive changes to the network.</p>	-	-	0.808	-	0.808
<p>Title: Cryptographic Planning</p> <p>FY 2018 Base Plans: This is required to execute workflows involving KEYMAT. KMI funding only addresses delivery of KEYMAT from a central repository to the BDE. While OTNK and the KMI-Aware specification provide mechanisms for further dissemination, funding for adoption of those specifications is not covered by KMI. TNOM funding is not planned for prior to FY19. Engineering work is being performed under the KM WG tracing back to the UTR IPT.</p>	-	-	5.488	-	5.488
<p>Title: Load and Activate Network</p> <p>Description: A SoS capability used to 'seamlessly' and 'remotely' load and activate configurations of communications assets over-the-network (OTN), including over-the-air (OTA). This is the first release extending ODIN to other waveforms and parameters and integrating with JENM, extending eOTAM, and extending RPS. Manual loaders will still be part of this capability, but only as a contingency.</p> <p>FY 2018 Base Plans: A SoS capability used to 'seamlessly' and 'remotely' load and activate configurations of communications assets over-the-network (OTN), including over-the-air (OTA). This is the first release extending ODIN to other waveforms and parameters and integrating with JENM, extending eOTAM, and extending RPS. Manual loaders will still be part of this capability, but only as a contingency.</p>	-	-	6.669	-	6.669
<p>Title: Common Data Exchange Framework</p>	-	-	1.191	-	1.191

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Development of visualization services, data dissemination and synchronization services, repository services, initialization services, and data standards FY 2018 Base Plans: Development of visualization services, data dissemination and synchronization services, repository services, initialization services, and data standards					
Title: System of Systems Engineering Description: Architecture, Systems Engineering Plan, Risk Management Plan, Rapid Prototyping, IPT Management, Requirements Engineering FY 2018 Base Plans: Architecture, Systems Engineering Plan, Risk Management Plan, Rapid Prototyping, IPT Management, Requirements Engineering	-	-	3.078	-	3.078
Title: System of Systems Program Management Description: Work Breakdown Structures, Schedules, Project Plans, Project Budgets, Quality Management Plans FY 2018 Base Plans: Work Breakdown Structures, Schedules, Project Plans, Project Budgets, Quality Management Plans	-	-	1.107	-	1.107
Title: System of Systems Test and Evaluation Description: Lab based risk reduction. FY 2018 Base Plans: Lab based risk reduction.	-	-	0.675	-	0.675
Title: System of Systems Training Description: Development of Systems of Systems training plans. FY 2018 Base Plans: Development of Systems of Systems training plans.	-	-	0.311	-	0.311
Accomplishments/Planned Programs Subtotals	-	24.498	25.969	-	25.969

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) EW3 / <i>Unit Task Reorganization (UTR) Development</i>

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

N/A

Remarks

D. Acquisition Strategy

As the Army's tactical network continues to evolve from a loose federation of stove-piped systems, to a single, integrated, service-oriented, and standards-based environment, UTR capabilities must also evolve in the same manner. Today, UTR is a complex, manually intensive, and time-consuming process. This is due in part, to the large increase in network-enabled nodes within the tactical network. In addition, tools employed by the G/S-6 staff to conduct UTR are designed, developed, and fielded by various program and product managers each with discrete requirements, development schedules, and funding lines. This impedes the G/S-6 staffs' ability to conduct UTR in an integrated manner. To enhance UTR, we will address five fundamental challenges to improve UTR. Efficient data sharing is a fundamental characteristic of modern-day integrated systems. The ability to read, modify, and exchange data in a uniform and efficient manner is essential to achieving an integrated UTR solution.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
UTR Common Data Model	TBD	TBD : TBD	0.000	-		11.731		-		-		-	0.000	11.731	0.000
UTR Data Repositories	TBD	TBD : TBD	0.000	-		6.285		-		-		-	0.000	6.285	0.000
UTR Data Dissemination Service	TBD	TBD : TBD	0.000	-		3.897		-		-		-	0.000	3.897	0.000
UTR Automated Initialization Service	TBD	TBD : TBD	0.000	-		1.115		-		-		-	0.000	1.115	0.000
System of Systems Engineering	TBD	TBD : APG	0.000	-		-		3.078		-		3.078	Continuing	Continuing	Continuing
System of Systems Program Management	TBD	TBD : APG	0.000	-		-		1.107		-		1.107	Continuing	Continuing	Continuing
System of Systems Training	TBD	TBD : APG	0.000	-		-		0.311		-		0.311	Continuing	Continuing	Continuing
IP address Management	TBD	TBD : APG	0.000	-		-		0.675		-		0.675	Continuing	Continuing	Continuing
Tactical Radio Management	TBD	TBD : APG	0.000	-		-		3.544		-		3.544	Continuing	Continuing	Continuing
Cryptographic Management	TBD	TBD : APG	0.000	-		-		1.802		-		1.802	Continuing	Continuing	Continuing
Network Configuration Management	TBD	TBD : APG	0.000	-		-		0.621		-		0.621	Continuing	Continuing	Continuing
Signal Running Estimate	TBD	TBD : APG	0.000	-		-		0.808		-		0.808	Continuing	Continuing	Continuing
Cryptographic Planning	TBD	TBD : APG	0.000	-		-		5.488		-		5.488	Continuing	Continuing	Continuing
Load and Activate Network	TBD	TBD : APG	0.000	-		-		6.669		-		6.669	Continuing	Continuing	Continuing
Common Data Exchange Framework	TBD	APG : APG	0.000	-		-		1.191		-		1.191	Continuing	Continuing	Continuing
Subtotal			0.000	-		23.028		25.294		-		25.294	-	-	-

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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	TBD	TBD : TBD	0.000	-		1.470	Sep 2022	-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development							
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	-		1.470		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems of Systems Test and Evaluation	TBD	TBD : APG	0.000	-		-		0.675		-		0.675	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.675		-		0.675	-	-	-
Project Cost Totals			0.000	-		24.498		25.969		-		25.969	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Network Sustainment: Cryptographic Management																												
Network Sustainment: IP Address Management																												
Network Sustainment: Tactical Radio Management																												
Network Planning: Cryptographic Planning																												
Network Sustainment: Network Configuration Management																												
Network Sustainment: Signal Running Estimate																												
Network Planning: LTI Concept of Signal Support																												
Network Planning: Tactical Radio Planning																												
Network Planning: LTI Planning																												
Network Planning: Network Planning																												
Network Planning: Wargaming / Simulation																												
Network Establishment: Load and Activate Network																												
Common Data Exchange Framework																												

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Network Establishment: Troubleshooting and Auto Correction																												
Configuration Management, SoS Systems Engineering, Program Man																												
(1) NIE 19.2													▲ 1															
(2) NIE 21.2																					▲ 2							
(3) Cryptographic Management R1 Load and Activate R1 integrated for F									▲ 3																			
(4) Cryptographic Management R2 integrated for FY20 Fielding																	▲ 4											
(5) IP Address Management, Tactical Radio Mgmt, and Cryptographic P																	▲ 5											
(6) Network Configuration Management integrated for FY22 Fielding																					▲ 6							
SoS Training																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Network Sustainment: Cryptographic Management	1	2017	4	2019
Network Sustainment: IP Address Management	1	2018	4	2020
Network Sustainment: Tactical Radio Management	1	2017	4	2020
Network Planning: Cryptographic Planning	1	2017	4	2020
Network Sustainment: Network Configuration Management	1	2018	4	2021
Network Sustainment: Signal Running Estimate	1	2018	4	2022
Network Planning: LTI Concept of Signal Support	1	2019	4	2022
Network Planning: Tactical Radio Planning	1	2019	4	2022
Network Planning: LTI Planning	1	2019	4	2023
Network Planning: Network Planning	1	2019	4	2023
Network Planning: Wargaming / Simulation	1	2020	4	2023
Network Establishment: Load and Activate Network	1	2017	4	2023
Common Data Exchange Framework	3	2017	4	2020
Network Establishment: Troubleshooting and Auto Correction	1	2021	4	2023
Configuration Management, SoS Systems Engineering, Program Management	1	2017	4	2022
NIE 19.2	4	2019	4	2019
NIE 21.2	4	2021	4	2021
Cryptographic Management R1 Load and Activate R1 integrated for FY19 Fielding	1	2019	1	2019
Cryptographic Management R2 integrated for FY20 Fielding	1	2020	1	2020
IP Address Management, Tactical Radio Mgmt, and Cryptographic Planning FY19	1	2021	1	2021
Network Configuration Management integrated for FY22 Fielding	1	2022	1	2022
SoS Training	4	2017	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604820A / <i>Radar Development</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	11.821	15.983	32.968	-	32.968	31.761	51.897	72.562	81.351	Continuing	Continuing
E10: <i>Sentinel</i>	-	11.821	15.983	32.968	-	32.968	31.761	51.897	72.562	81.351	Continuing	Continuing

A. Mission Description and Budget Item Justification

This system is a component of the overall Air and Missile Defense (AMD) architecture and will provide for an incrementally fielded Integrated Air and Missile Defense Fire Control System/capability for the composite Army Air and Missile Defense Brigades. The Sentinel system is used with the Forward Area Air Defense Command and Control (FAAD C2) element and is a key component to the Integrated Air and Missile Defense (IAMD) architecture via the IAMD Battle Command System (IBCS) to provide critical air surveillance of the forward areas.

The Sentinel currently consists of two primary variants: the AN/MPQ-64A1 system mounted on a High Mobility Multi-purpose Wheeled Vehicle (HMMWV), and an enhanced radar variant, the AN/MPQ-64A3 mounted on a 2.5 ton trailer and towed by an armored Family of Medium Tactical Vehicle (FMTV) platform. A pure fleet of FMTV configuration AN/MPQ-64A3 assets will be complete in FY19. Sentinel also consists of Identification Friend or Foe (IFF), and Forward Area Air Defense (FAAD) Command, Control and Intelligence (C2I) interfaces. The radar is deployed in both an air defense role and a force protection role for Counter-Rocket, Artillery, and Mortar (C-RAM) missions. The sensor is an advanced three-dimensional battlefield X-Band air defense phased-array radar with an instrumented range of 75 kilometers. Sentinel is capable of operating day or night, in adverse weather conditions, in the battlefield environments of dust, smoke, aerosols and enemy countermeasures. It provides 360-degree azimuth coverage for acquisition tracking. Sentinel contributes to the digital battlefield by automatically detecting, classifying, identifying and reporting targets (cruise missiles, unmanned aerial systems, rotary wing and fixed wing aircraft). Sentinel acquires targets sufficiently forward of the battle area to allow weapons reaction time and engagement at optimum ranges. Sentinel's integrated IFF reduces the potential for fratricide of US and Coalition aircraft.

The Research and Development funding supports Sentinel modernization/upgrades, hardware/software issue resolution, resolution of obsolescence issues, engineering studies, and cost reduction initiatives. The funding for Fiscal Year (FY) 2016 through FY 2022 development activities addresses the following Sentinel system capability gaps and obsolescence issues identified by the User: 1) Target Detection gap; 2) Target Tracking gap; 3) Net Readiness gap; 4) Electronic Counter Measures (ECM) gap; 5) Unmanned Aerial Systems (UAS) Defense gap; and 5) Rockets, Artillery & Mortars (RAM) gap.

Cross Domain Solution (CDS) Network Interface addresses net readiness and system security concerns. This effort develops a CDS interface to isolate the Sentinel radar from connected networks of lower classification levels. Allows for ongoing cyber security initiatives to be reviewed and addressed as they arise. Ensures that Information Assurance/Cyber security is part of Sentinel operations, missions and functions. Makes certain that practices necessary to ensure the protection of information and personnel are instituted.

Electronic Attack/Electronic Protect (EA/EP) addresses the electronic countermeasures (ECM) gap. This effort conducts additional design and testing to verify initial EA/EP results and updates the database and associated software and hardware with more extensive EA/EP signatures to address evolving threats. Addresses further EP modifications and methods to be determined based on analysis of results.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604820A / <i>Radar Development</i>	
<p>Signal Data Processor (SDP)/North Finding Module (NFM) addresses the Target Detection, Target Tracking, and Electronic Countermeasures (ECM) capability gaps and funds the mitigation of the SDP and NFM obsolescence issues. SDP cards are estimated to go obsolete every four to six years. Provides for new SDP kit to address obsolescence issues and allow for additional Electronic Protect capability.</p> <p>Medium Bandwidth Waveform upgrade will address latent tracking issues that currently exist with Sentinel in certain applications. This development effort modifies firmware as well as software in the Sentinel radar. This effort will provide better target resolution and more accurate tracking in the slant range coordinate. This improved target resolution and tracking accuracy will provide improved retention of target identification and more robust tracking that addresses the latent tracking issues.</p> <p>Mode S upgrade to existing Sentinel Identification Friend or Foe (IFF) will address Sentinel's objective requirement to interrogate IFF mode S which is currently not being met. Mode S transmissions are a key component of the Automatic Dependent Surveillance-Broadcast (ADS-B) surveillance technology being used by the Federal Aviation Administration for tracking aircraft as part of the Next Generation Air Transportation System (NextGen). In the United States, all aircraft required to have transponders (most aircraft) must transition to Mode S capable units by 2020. Without the Mode S upgrade, Sentinel will have to rely on these aircraft transponders responding to the legacy mode 3/A interrogations. The data available in the Mode S response will be valuable in identifying the aircraft and correlating Sentinel tracks with civil aviation tracks/data and other track data sources. Addresses Mode M Global Positioning System (GPS) capability requirement with the new interrogator.</p> <p>The Active Electronically Scanned Array (AESA) (Sentinel A4) is the next generation of radar technology to replace the current phase and frequency scanned array used by Sentinel today. The AESA Antenna will provide increased capability including extended range for ground-based surveillance and situational awareness, faster and more accurate Non-Cooperative Target Recognition (NCTR) for clearing fires and preventing fratricide, improved Fire Control (FC) quality track accuracy, and management of larger track loads. The AESA will also provide improved operation in severe/urban clutter. The system will detect and track small targets, such as Unmanned Aerial Systems (UAS) and Cruise Missiles, in clutter and will detect and track slow targets, such as UAS and Rotary Wing (RW) aircraft, at low altitudes in clutter. The system will detect, track, and classify Rocket, Artillery, and Mortar (RAM) threats and will support Integrated Air and Missile Defense Battle Command System (IBCS) requirements and can contribute sensor support for mitigating current and future Indirect Fire Protection Capability Increment 2 mission requirements.</p> <p>Sentinel System of Systems: Software Development in support of a system of systems architecture (IAMD and IFPC Inc 2-I) for a required simulation capability. The simulation capability will add a high fidelity representation of Sentinel to IAMD to allow for optimum engagement management and mission planning. Supports Sentinel Digital Simulation Software (SDS/SENTSIM) development efforts for testing of future capabilities. Includes software development for Low Slow Small in a test fix test environment as well as integration and testing of the IAMD B kit on board the Sentinel FMTV platform.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0604820A / <i>Radar Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	12.309	15.983	20.844	-	20.844
Current President's Budget	11.821	15.983	32.968	-	32.968
Total Adjustments	-0.488	0.000	12.124	-	12.124
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.488	-			
• Adjustments to Budget Years	0.000	0.000	12.124	-	12.124

Change Summary Explanation

FY 2018 funding adjustment to allow for analysis and development of the follow on Active Electronically Scanned Array (AESA) technology and to address electronic protect. Supports Sentinel Digital Simulation Software (SDS/SENTSIM) development efforts to add a high fidelity representation of Sentinel to IAMD to allow for optimum engagement management and mission planning. Includes software development for Low Slow Small in a test fix test environment as well as integration and testing of the IAMD B kit on board the Sentinel FMTV platform.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604820A / <i>Radar Development</i>				Project (Number/Name) E10 / <i>Sentinel</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
E10: <i>Sentinel</i>	-	11.821	15.983	32.968	-	32.968	31.761	51.897	72.562	81.351	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604820A / <i>Radar Development</i>	Project (Number/Name) E10 / <i>Sentinel</i>
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Signal Data Processor (SDP)/North Finding Module (NFM) addresses the Target Detection, Target Tracking, and Electronic Countermeasures (ECM) capability gaps and funds the mitigation of the SDP and NFM obsolescence issues. SDP cards are estimated to go obsolete every four to six years. Provides for new SDP kit to address obsolescence issues and allow for additional Electronic Protect capability.

Medium Bandwidth Waveform upgrade will address latent tracking issues that currently exist with Sentinel in certain applications. This development effort modifies firmware as well as software in the Sentinel radar. This effort will provide better target resolution and more accurate tracking in the slant range coordinate. This improved target resolution and tracking accuracy will provide improved retention of target identification and more robust tracking that addresses the latent tracking issues.

Mode S upgrade to existing Sentinel Identification Friend or Foe (IFF) will address Sentinel's objective requirement to interrogate IFF mode S which is currently not being met. Mode S transmissions are a key component of the Automatic Dependent Surveillance-Broadcast (ADS-B) surveillance technology being used by the Federal Aviation Administration for tracking aircraft as part of the Next Generation Air Transportation System (NextGen). In the United States, all aircraft required to have transponders (most aircraft) must transition to Mode S capable units by 2020. Without the Mode S upgrade, Sentinel will have to rely on these aircraft transponders responding to the legacy mode 3/A interrogations. The data available in the Mode S response will be valuable in identifying the aircraft and correlating Sentinel tracks with civil aviation tracks/data and other track data sources. Addresses Mode M Global Positioning System (GPS) capability requirement with the new interrogator.

The Active Electronically Scanned Array (AESA) (Sentinel A4) is the next generation of radar technology to replace the current phase and frequency scanned array used by Sentinel today. The AESA Antenna will provide increased capability including extended range for ground-based surveillance and situational awareness, faster and more accurate Non-Cooperative Target Recognition (NCTR) for clearing fires and preventing fratricide, improved Fire Control (FC) quality track accuracy, and management of larger track loads. The AESA will also provide improved operation in severe/urban clutter. The system will detect and track small targets, such as Unmanned Aerial Systems (UAS) and Cruise Missiles, in clutter and will detect and track slow targets, such as UAS and Rotary Wing (RW) aircraft, at low altitudes in clutter. The system will detect, track, and classify Rocket, Artillery, and Mortar (RAM) threats and will support Integrated Air and Missile Defense Battle Command System (IBCS) requirements and can contribute sensor support for mitigating current and future Indirect Fire Protection Capability Increment 2 mission requirements.

Sentinel System of Systems: Software Development in support of a system of systems architecture (IAMD and IFPC Inc 2-I) for a required simulation capability. The simulation capability will add a high fidelity representation of Sentinel to IAMD to allow for optimum engagement management and mission planning. Supports Sentinel Digital Simulation Software (SDS/SENTSIM) development efforts for testing of future capabilities. Includes software development for Low Slow Small in a test fix test environment as well as integration and testing of the IAMD B kit on board the Sentinel FMTV platform.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	8.582	13.047	28.182	-	28.182
Description: Funding is provided for the following efforts:					
FY 2016 Accomplishments:					

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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604820A / Radar Development	Project (Number/Name) E10 / Sentinel
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Integrated firmware, software and hardware. Designed and built prototype subsystems/components for testing. Completed software code coding and modification of the system search and track logic, clutter mapping, and waveforms. Characterized performance, design & replaced firmware, software and hardware. Performed technical assessments, concept studies, cost reduction, risk reduction, threat analysis, and required documentation for modifications to address evolving threats.</p> <p>FY 2017 Plans: Integrate firmware, software and hardware. Design and build prototype subsystems/components for testing. Complete software code coding and modification of the system search and track logic, clutter mapping, and waveforms. Characterize performance, design & replace firmware, software and hardware. Perform technical assessments, concept studies, cost reduction, risk reduction, threat analysis, and required documentation. Initiate analysis of technology, program documentation and development of contract requirement packages in support of follow on sensor technology.</p> <p>FY 2018 Base Plans: Integrate firmware, software and hardware. Design and build prototype subsystems/components for testing. Complete software code coding and modification of the system search and track logic, clutter mapping, and waveforms. Characterize performance, design & replace firmware, software and hardware. Perform technical assessments, concept studies, cost reduction, risk reduction, threat analysis, and required documentation. Continue analysis of technology, program milestone documentation, development of contract requirement packages and proposal evaluation activities in support of Active Electronically Scanned Array (AESA) technology. Support University Affiliated Research Centers (UARC) modeling and analysis as well as lab development efforts in preparation for evaluating AESA. Support Sentinel Digital Simulation Software (SDS/ SENTSIM) development efforts for testing of future capabilities. Software development for Low Slow Small in a test fix test environment as well as integration and testing of the IAMD B kit on board the Sentinel FMTV platform.</p>					
<p>Title: Test & Evaluation</p> <p>Description: Funding is provided for the following efforts:</p> <p>FY 2016 Accomplishments: Conducted software qualification test and hardware verification testing as well as field testing against representative targets. Prepared logistics products and required documentation for materiel release of software and hardware upgrades.</p> <p>FY 2017 Plans:</p>	2.191	1.576	4.786	-	4.786

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conduct software qualification test and hardware verification testing, field testing against representative targets. Prepare logistics products and required documentation for materiel release of software and hardware upgrades. FY 2018 Base Plans: Conduct software qualification test and hardware verification testing, field testing against representative targets. Prepare logistics products and required documentation for materiel release of software and hardware upgrades. Final integration and testing of IAMD B kits on Sentinel Platform.					
Title: Management Support Description: This funds Government and technical support. Beginning in FY2018 these costs are included in the accomplishments and plans for Product Development and Test and Evaluation.	1.048	1.360	-	-	-
FY 2016 Accomplishments: Provided government management, technical and administrative support in FY 2016.					
FY 2017 Plans: Provides government management, technical and administrative support in FY 2017.					
Accomplishments/Planned Programs Subtotals	11.821	15.983	32.968	-	32.968

C. Other Program Funding Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PE 0605456A: Proj PA3, PAC-3/MSE MISSILE	2.201	-	-	-	-	-	-	-	-	0	2.201
• SSN C53101: MSE Missile	514.946	702.201	459.040	-	459.040	499.915	540.669	523.413	524.934	Continuing	Continuing
• PE 0205456: Proj EF9, System Integration and Test	61.653	73.417	78.926	-	78.926	80.314	109.222	112.614	123.007	Continuing	Continuing
• PE 0604114A: Proj EX2; Lower Tier Air Missile Defense (LTAMD) Capability	-	35.132	76.728	-	76.728	67.088	83.195	114.185	142.000	Continuing	Continuing
• SSN C50016: Lower Tier Air and Missile Defense (AMD)	130.275	126.470	140.826	-	140.826	125.161	144.243	119.282	121.825	Continuing	Continuing
• PE 0604319A: Proj DU3, IFPC2 (FY12 PE0603305A IFPC II - Intercept)	149.222	-	31.303	-	31.303	52.604	239.305	259.804	316.104	Continuing	Continuing

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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604820A / Radar Development	Project (Number/Name) E10 / Sentinel
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PE 0605052A: Proj EY7; IFPC Increment 2 - Block 1	-	83.995	175.069	-	175.069	149.506	52.300	24.700	-	0	485.570
• SSN C62001: INDIRECT FIRE PROTECTION CAPABILITY, INC 2-1 Block 1 Missile 1	-	-	57.742	-	57.742	157.406	144.740	100.400	14.600	Continuing	Continuing
• SSN C62002: INDIRECT FIRE PROTECTION CAPABILITY, INC 2-1 Block 1 System	-	19.319	-	-	-	31.641	191.830	315.025	277.500	Continuing	Continuing
• SSN C62004: IFPC Inc 2-1 Block 2 Missile	-	-	-	-	-	-	-	-	12.300	Continuing	Continuing
• PE 0605457A: Proj S40, Army Integrated Air and Missile Defense (AIAMD)	222.074	272.811	336.420	-	336.420	290.250	190.600	117.470	64.510	Continuing	Continuing
• SSN BZ5075: IAMD Battle Command System	20.917	204.969	-	-	-	-	326.928	387.026	513.464	Continuing	Continuing
• PE 0604741A: Proj 126, 146, 149; Air Defense C2I Eng Dev	33.619	61.532	28.726	-	28.726	28.320	14.638	8.674	-	0	175.509
• SSN AD5070: Air & MSL Defense Planning & Control Sys	28.176	126.539	26.635	9.100	35.735	17.960	6.366	32.397	-	0	247.173

Remarks

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

D. Acquisition Strategy

Sentinel was procured from Raytheon Command and Control Solutions, LLC, formerly known as Thales Raytheon Systems (TRS), as a non-developmental item. Raytheon Command and Control Solutions owns the Technical Data Package (TDP) for the Sentinel A3 and its predecessors and therefore no other contractor has the technical ability to modify the Sentinel radar or Sentinel software. The modifications planned for the Sentinel that fall into this category are: Cross Domain Solution, Electronic Attack/Electronic Protect, Signal Data Processor/North Finding Module, Medium Bandwidth, and Mode S. For the Active Electronically Scanned Array, the product office will issue a new contract to develop a modified Sentinel with a new Active Electronically Scanned Array (AESA) antenna.

Cross Domain Solution Interface (Sentinel A3): The Sentinel Product Office will contract with Raytheon Command and Control Solutions to develop an interface solution to isolate Sentinel transmission from connected networks of lower classifications.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604820A / <i>Radar Development</i>	Project (Number/Name) E10 / <i>Sentinel</i>
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Electronic Attack/Electronic Protect (EA/EP) (Sentinel A3): The Sentinel Product Office will contract with Raytheon Command and Control Solutions to verify the initial EA/EP Database and update the database, software and hardware with more extensive EA/EP signatures to address evolving threats. The updated database will be tested, documented and released for installation.

Signal Data Processor (SDP)/North Finding Module (NFM) Obsolescence (Sentinel A3): The Sentinel Product Office will contract with Raytheon Command and Control Solutions to upgrade and mitigate the Signal Data Processor and North Finding Module issues. The updated SDP and NFM hardware will be tested, documented and released for installation in the field.

Medium Bandwidth Waveform (Sentinel A3): The Sentinel Product Office will contract with Raytheon Command and Control Solutions to address latent tracking issues that currently exist with Sentinel in certain applications. The effort modifies firmware as well as software in the Sentinel radar. The updated medium bandwidth waveform software and firmware will be tested, documented and released for installation in the field.

Mode S (Sentinel A3): The Sentinel Product Office will contract with Raytheon Command and Control Solutions to address Sentinel's objective requirement to interrogate Identification Friend or Foe (IFF) mode S on board commercial aircraft. The updated software will be tested, documented and released for installation in the field.

Active Electronically Scanned Array (AESA) (Sentinel A4): The Sentinel Product Office will award a new contract to develop the new AESA antenna to be integrated with the existing Sentinel A3 hardware and software. The CMDS Product Office will support requirement documentation and conduct design analysis to include analysis of technology, decision review preparation, and contract package development for acquisition of the AESA antenna to upgrade the current Sentinel A3. The software and hardware will be tested, documented and released for installation in the field.

Sentinel System of Systems (Sentinel A3): The Sentinel Product Office will contract with Raytheon Command and Control Solutions for risk reduction efforts in the development of the software package to support the identification and engagement of Low Slow Small target sets. The Sentinel Product Office will work with Other Government Agencies to finalize integration and test of the IAMD B Kit on board the Sentinel platform and to add simulation capability to allow a high fidelity representation of Sentinel to IAMD.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604820A / Radar Development	Project (Number/Name) E10 / Sentinel
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Electronic Attack/ Electronic Protect	Various	Cruise Missile Defense Systems Project Office : Huntsville, AL	0.000	-		0.427	Nov 2016	-		-		-	0.000	0.427	0.000
Signal Data Processor North Finding Module	Various	Cruise Missile Defense Systems Project Office : Huntsville, AL	0.000	-		0.127	Nov 2016	-		-		-	0.000	0.127	0.000
Medium Bandwidth Waveform	Various	Cruise Missile Defense Systems Project Office : Huntsville, AL	0.000	-		0.215	Nov 2016	-		-		-	0.000	0.215	0.000
Active Electronically Scanned Array (A4)	Various	Cruise Missile Defense Systems Project Office : Huntsville, AL	0.000	-		0.591	Nov 2016	-		-		-	0.000	0.591	0.000
Management Support	Various	Cruise Missile Defense Systems Project Office : Huntsville, AL	0.450	1.048	Nov 2015	-		2.841	Nov 2017	-		2.841	Continuing	Continuing	0.000
Subtotal			0.450	1.048		1.360		2.841		-		2.841	-	-	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Cross Domain Solution Network Interface / Cyber Security	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA / Various	0.210	2.401	Jan 2016	-		-		-		-	0.000	2.611	0.000
Electronic Attack/ Electronic Protect	Various	Raytheon Command and Control Solutions, LLC &	1.994	2.885	Jan 2016	4.179	Jan 2017	7.777	Jan 2018	-		7.777	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604820A / Radar Development	Project (Number/Name) E10 / Sentinel
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : Fullerton, CA / Various													
Signal Data Processor/ North Finding Module	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA / Various	1.245	2.353	Jan 2016	1.071	Jan 2017	-		-		-	0.000	4.669	0.000
Medium Bandwidth Waveform	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA	0.000	0.943	Jan 2016	0.702	Jan 2017	0.222	Jan 2018	-		0.222	0.000	1.867	0.000
Active Electronically Scanned Array (A4)	Various	Cruise Missile Defense Systems : TBD and Huntsville, AL	0.000	-		7.095	Jan 2017	12.024	Jan 2018	-		12.024	Continuing	Continuing	0.000
Mode S	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA / Various	0.000	-		-		1.838	Jan 2018	-		1.838	Continuing	Continuing	0.000
System of Systems	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA / Various	0.000	-		-		4.900	Jan 2018	-		4.900	0.000	4.900	0.000
Subtotal			3.449	8.582		13.047		26.761		-		26.761	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Cross Domain Solution Network Interface / Cyber Security	Various	Raytheon Command and Control Solutions, LLC &	0.000	0.832	Jan 2016	-		-		-		-	0.000	0.832	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604820A / Radar Development	Project (Number/Name) E10 / Sentinel
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Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : Fullerton, CA / Various													
Electronic Attack/ Electronic Protect	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA / Various	0.163	0.300	Jan 2016	0.907	Jan 2017	1.138	Jan 2018	-		1.138	Continuing	Continuing	0.000
Signal Data Processor North Finding Module	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA / Various	0.000	0.781	Jan 2016	0.324	Jan 2017	-		-		-	0.000	1.105	0.000
Medium Bandwidth Waveform	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA / Various	0.000	0.278	Jan 2016	0.345	Jan 2017	0.151	Jan 2018	-		0.151	0.000	0.774	0.000
Mode S	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA / Various	0.000	-		-		0.516	Jan 2018	-		0.516	Continuing	Continuing	0.000
System of Systems	Various	Raytheon Command and Control Solutions, LLC & Various : Fullerton, CA / Various	0.000	-		-		1.561	Jan 2018	-		1.561	0.000	1.561	0.000
Subtotal			0.163	2.191		1.576		3.366		-		3.366	-	-	0.000
Project Cost Totals			4.062	11.821		15.983		32.968		-		32.968	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604820A / <i>Radar Development</i>	Project (Number/Name) E10 / <i>Sentinel</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cross Domain Solution (CDS) Network Interface / Cyber Security	CDS																											
Electronic Attack/Electronic Protect (EA/EP)	EA/EP																											
Signal Data Processor (SDP) / North Finding Module (NFM)	SDP/NFM																											
Medium Bandwidth					Med Bdwth																							
Mode S									Mode S																			
Active Electronically Scanned Array (AESA) (A4)					AESA																							
System of Systems									System of Systems																			

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604820A / <i>Radar Development</i>	Project (Number/Name) E10 / <i>Sentinel</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Cross Domain Solution (CDS) Network Interface / Cyber Security	2	2015	4	2016
Electronic Attack/Electronic Protect (EA/EP)	2	2015	4	2022
Signal Data Processor (SDP) / North Finding Module (NFM)	2	2015	4	2017
Medium Bandwidth	2	2016	4	2018
Mode S	2	2018	4	2020
Active Electronically Scanned Array (AESA) (A4)	1	2017	4	2023
System of Systems	2	2018	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>					PE 0604822A / <i>General Fund Enterprise Business System (GFEBS)</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	20.533	6.805	49.554	-	49.554	36.931	42.002	22.460	18.967	Continuing	Continuing
DV6: <i>General Fund Enterprise Business System</i>	-	6.415	0.000	39.554	-	39.554	32.631	32.657	17.808	3.328	Continuing	Continuing
EV4: <i>General Fund Enterprise Business System Inc 2</i>	-	0.000	6.805	0.000	-	0.000	1.728	6.723	1.980	12.889	0.000	30.125
GF5: <i>General Fund Enterprise Business System</i>	-	14.118	0.000	10.000	-	10.000	2.572	2.622	2.672	2.750	0.000	34.734

A. Mission Description and Budget Item Justification

The General Fund Business Enterprise System (GFEBS) is a Major Automated Information System program and is currently in the sustainment phase. It followed the DoD Business Enterprise Architecture which is aligned to the mandated Federal Enterprise Architecture. GFEBS was implemented to fulfill the needs and comply with the Federal Financial Management Improvement Act, The Chief Financial Officers Act of 1990, the Government Performance and Results Act of 1993, the Government Management Reform Act of 1994, and the Clinger-Cohen Act of 1996 and to fulfill the stated mission of the Assistant Secretary of the Army for Financial Management and Comptroller. GFEBS replaced subsumed the capabilities of, in full or in part, financial systems operating in excess of 40 years including the Standard Finance System and other costly feeder systems which do not allow the Department of Defense or the U.S. government to achieve an unqualified audit opinion on its financial statements. GFEBS is used to administer the Army's General Fund. GFEBS was developed using a commercial off-the-shelf Enterprise Resource Planning system that is certified by the Chief, Financial Officer Council and provides six core financial functions. GFEBS allows tactical commanders to make informed decisions on a virtually real time information. On 1 October 2008, GFEBS deployed to Wave 1 end users at Fort Jackson Garrison, Defense Finance Accounting Service (DFAS) Indianapolis, Indiana and several other organizations. The Full Deployment Decision was received by the Milestone Decision Authority on 24 June 2011 and Full Deployment was achieved on 1 July 2012. Today, GFEBS continues in sustainment. Efforts include sustaining the system and infrastructure, making modifications needed for audit readiness, compliancy, and upgrades required to maintain the system and meet SAP standards. Additionally, GFEBS continues to make changes as requested by the user community through the Process Owners Group, an SES and General Officers level board that prioritizes user needs. Some of these changes require developmental funding.

GFEBS-Sensitive Activities (SA): GFEBS-Sensitive Activities (SA): GFEBS-SA leverages the GFEBS base system, and is a commercial off-the-shelf Enterprise Resource Planning System certified by the Chief Financial Officers Council. Army still has classified and sensitive financial activity remaining in legacy systems that cannot be processed in our new, fully-fielded GFEBS. To protect sensitive information and enable auditability, Army needs a separate instance of GFEBS operated on a secure network for processing sensitive and classified financial transactions. GFEBS-SA will be implemented to 3,000 users across 100 locations worldwide. GFEBS-SA will integrate seamlessly with GFEBS to provide secure, web-based financial execution and reporting capabilities to the Army's classified and sensitive activities. SA is envisioned as a fully functional GFEBS application operated on a secure network leveraging off of the sustained system design.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0604822A / <i>General Fund Enterprise Business System (GFEBS)</i>
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GFEBS Increment II: GFEBS Increment II delivers new capabilities implemented in the GFEBS baseline. GFEBS Increment II will provide an extensive risk reduction per wave as required throughout the increment. Each wave will increase operational capabilities to enhance financial management, further audit readiness, allow integrated manning and budgeting, enable standardize labor tracking, allow end-to-end integration, enable legacy system retirement (~ 19+), and improve business analytics. The new Increment II requirements have been categorized by the functional community as Integrated Resource Management (IRM), Standard Labor Time Tracking (SLTT), and Expanded Financial Integration (EFI).

B. Program Change Summary (\$ in Millions)	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	21.155	6.805	24.809	-	24.809
Current President's Budget	20.533	6.805	49.554	-	49.554
Total Adjustments	-0.622	0.000	24.745	-	24.745
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.622	-			
• Other Adjustments 1	0.000	0.000	24.745	-	24.745

Change Summary Explanation

FY18 funds realigned to GFEBS-SA (DV6) project in alignment with Army priorities. The GFEBS SA program was revamped and on a steady stream for contract execution.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604822A / General Fund Enterprise Business System (GFEBS)				Project (Number/Name) DV6 / General Fund Enterprise Business System			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
DV6: General Fund Enterprise Business System	-	6.415	0.000	39.554	-	39.554	32.631	32.657	17.808	3.328	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
Project DV6 is General Fund Enterprise Business System - Sensitive Activities (GFEBS-SA).

A. Mission Description and Budget Item Justification

GFEBS-SA will be a fully functional GFEBS application operated on a secure network (SIPRNET), including additional performance requirements designed to protect sensitive intelligence operations and special operations missions. It will process Secret Collateral and below information while providing the GFEBS capabilities such as distribution and execution of appropriated funds, cost management, financial reporting, and asset management. GFEBS-SA will support the information exchanges with outside organizations that support the Army's sensitive activities mission including cross-security domain integration between SIPRNet and NIPRNet with GFEBS and other system partners. Services will be capable of being upgraded throughout the life of the program in order to incorporate advances in best business practices. GFEBS-SA is an essential financial program to comply with the Chief Financial Officers (CFO) Act and the Federal Financial Management Improvement Act (FFMIA) and prevent compromise of data that could cause grave harm to U.S. forces.

Initial implementation of the GFEBS SA project did not require development funds beyond FY16. Through Army analysis of the System Integrator, the project was reset on 9 September 2016 after an Army determination was made that the awarded System Integrator could not deliver a solution to meet the GFEBS-SA requirement. With this reset and Army strategic direction, GFEBS-SA is on track. A new System Integrator contract was awarded on 24 April 2017.

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

	FY 2016	FY 2017	FY 2018
Title: Product Development	6.415	-	39.554
Description: Funds provide development efforts for GFEBS-SA.			
FY 2016 Accomplishments: Funds provide development efforts for GFEBS-SA.			
FY 2018 Plans: Funds in FY18 are required to support system development including completion of build 1 consisting of 213 objects and design of build 2 consisting of 320 objects. Additionally, FY18 funding supports Program Office costs including System Engineering tools, Support Contract Labor, RMF/Cyber Security support, and DISA Data Center.			
Accomplishments/Planned Programs Subtotals	6.415	-	39.554

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604822A / <i>General Fund Enterprise Business System (GFEBS)</i>	Project (Number/Name) DV6 / <i>General Fund Enterprise Business System</i>

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

Remarks

D. Acquisition Strategy

Plan, develop, and manage GFEBS-SA as a separate instance from GFEBS base program to support evolutionary delivery of capabilities. The GFEBS-SA solution will be acquired as one Increment. Software will be incrementally developed through a set of builds to achieve full capability.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604822A / General Fund Enterprise Business System (GFEBS)	Project (Number/Name) DV6 / General Fund Enterprise Business System
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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	SS/ Various	Accenture Federal LLC : Alexandria, VA	0.000	-		-		29.577	Oct 2017	-		29.577	0.000	29.577	0.000
Subtotal			0.000	-		-		29.577		-		29.577	0.000	29.577	0.000

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support Costs	Various	PdM GFEBS SA : Arlington, VA	8.226	6.415		-		9.137	Oct 2017	-		9.137	0.000	23.778	0.000
Subtotal			8.226	6.415		-		9.137		-		9.137	0.000	23.778	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Testing	IA	JITC/A TEC : Alexandria, VA	4.960	-		-		0.840	Jan 2018	-		0.840	0.000	5.800	0.000
Subtotal			4.960	-		-		0.840		-		0.840	0.000	5.800	0.000

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		13.186	6.415	0.000	39.554	-	39.554	0.000	59.155	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604822A / General Fund Enterprise Business System (GFEBS)	Project (Number/Name) DV6 / General Fund Enterprise Business System
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Program Management																												
(1) Milestone B (ATP 3)																												
Development System Build 1																												
Development System Build 2																												
Development System Build 3																												
(2) Initial Operating Capability (IOC)																												
(3) Full Deployment (FD)																												

Program Support																												
Milestone B (ATP 3)																												
Build 1																												
Build 2																												
Build 3																												
IOC																												
FD																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604822A / <i>General Fund Enterprise Business System (GFEBS)</i>	Project (Number/Name) DV6 / <i>General Fund Enterprise Business System</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Program Management	1	2015	1	2022
Milestone B (ATP 3)	3	2017	3	2017
Development System Build 1	4	2017	3	2018
Development System Build 2	3	2018	3	2019
Development System Build 3	3	2019	4	2019
Initial Operating Capabiity (IOC)	2	2020	2	2020
Full Deployment (FD)	1	2021	1	2021

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604822A / <i>General Fund Enterprise Business System (GFEBS)</i>				Project (Number/Name) EV4 / <i>General Fund Enterprise Business System Inc 2</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EV4: <i>General Fund Enterprise Business System Inc 2</i>	-	0.000	6.805	0.000	-	0.000	1.728	6.723	1.980	12.889	0.000	30.125
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

GFEBS Increment II: Delivers new capabilities to the GFEBS baseline. GFEBS Increment II will provide an extensive risk reduction per wave, as required throughout the increment. Each wave will increase operational capabilities to enhance financial management, further audit readiness, allow integrated manning and budgeting, enable standardize labor tracking, allow end-to-end integration, enable legacy system retirement (~ 19+), and improve business analytics. The new Increment II requirements have been categorized by the functional community as Integrated Resource Management (IRM), Standard Labor Time Tracking (SLTT), and Enhanced Financial Integration (EFI). The Army is pursuing an IRM capability that focuses on programmed manning, program and budget planning and reporting processes across the Army. The capability will enable the Army to efficiently reconcile budget execution against program & strategic plans, create forward looking predictive cost analytics, and efficiently manage its organizational structures. The capability will provide full visibility into programmed manning and budget execution planning & programming processes and data across Army Commands. Until an enterprise solution is provided, the Army's IRM business process will lack enterprise level visibility and will be unable to author and manage Command TDA force structures that satisfy Global Force Management (GFM) requirements for an Army in motion. SLTT will be able to track labor hours for Civilian, Military and Contractors and map them to the Army authoritative outputs (products and services) which they support. This effort will eliminate redundant labor tracking systems, increase efficiencies, ensure the workforce is the right size and mix, and will be financially auditable. These labor hours will be accurate and the costs associated with this labor will be mapped in a timely manner (especially since some Army organizations are fully reimbursable). By doing this, the Army can terminate other time tracking systems or processes currently being used. Furthermore, it will support the audibility of reimbursable intra-Army work. Enhanced Financial Integration (EFI), an enterprise financial solution to improve capabilities and provide force modernization. This will be achieved by subsuming legacy and obsolete technology, which replaces Funds Control Module (FCM) functionality with a direct interface to the various logistics systems, and streamlines the requisition process for material essential for Soldiers, Army readiness, and sustainment of current operations. In addition, to enhancements in Gift Funds (Investments), consumption of PRIDE (Planning Resource Infrastructure Development and Evaluation) Data, GFEBS Business Intelligence Legacy data consolidation, MILPERS Phase 2, and other capabilities which provide audit readiness, statutory and regulatory compliance, and financial business process improvements.

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

	FY 2016	FY 2017	FY 2018
Title: GFEBS Increment II	-	6.805	-
Description: GFEBS Increment II will increase operational capabilities to enhance financial management, further audit readiness, allow integrated manning and budgeting, enable standardize labor tracking, allow end-to-end integration, enable legacy system retirement (~ 19+), and improve business analytics. The new Increment II requirements have been categorized by the functional community as Integrated Resource Management (IRM), Standard Labor Time Tracking (SLTT), and Expanded Financial Integration (EFI).			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604822A / <i>General Fund Enterprise Business System (GFEBS)</i>	Project (Number/Name) EV4 / <i>General Fund Enterprise Business System Inc 2</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<i>FY 2017 Plans:</i> Acquisition planning and pre-award documentation for development contract.			
Accomplishments/Planned Programs Subtotals	-	6.805	-

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

N/A

Remarks

N/A

D. Acquisition Strategy

The PMO will participate in a robust requirements definition, comprehensive analyses of alternative, an initial business process design activities with the functional community, and will prepare the required acquisition documentation to achieve authorization to proceed with acquiring the required capability. These efforts require PMO expertise across all areas: acquisition, technical, functional, testing, management, and programmatic (e.g. contracts, budget).

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604822A / General Fund Enterprise Business System (GFEBs)				Project (Number/Name) GF5 / General Fund Enterprise Business System			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
GF5: General Fund Enterprise Business System	-	14.118	0.000	10.000	-	10.000	2.572	2.622	2.672	2.750	0.000	34.734
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The General Fund Business Enterprise System (GFEBs) is a Major Automated Information System program and is currently in the sustainment phase. GFEBs continues to refine system capabilities/enhancements prioritized by the GFEBs Process Owners Group (POG), an SES and General Officer level board representing the needs of GFEBs functional community. Additionally, GFEBs continues to focus on infrastructure updates as required to meet SAP requirements and best practices. Some of these changes require developmental funding. GFEBs followed the DoD Business Enterprise Architecture which is aligned to the mandated Federal Enterprise Architecture. GFEBs was implemented to fulfill the needs and comply with the Federal Financial Management Improvement Act, The Chief Financial Officers Act of 1990, the Government Performance and Results Act of 1993, the Government Management Reform Act of 1994, and the Clinger-Cohen Act of 1996 and to fulfill the stated mission of the Assistant Secretary of the Army for Financial Management and Comptroller. GFEBs replaced, in full or in part, financial systems operating in excess of 40 years including the Standard Finance Systems and other costly feeder systems which do not allow the Department of Defense or the U.S. government to achieve an unqualified audit opinion on its financial statements. GFEBs is used to administering the Army's General Fund. GFEBs was developed using a commercial off-the-shelf Enterprise Resource Planning system that is certified by the Chief, Financial Officer Council and provides six core financial functions. GFEBs allows tactical commanders to make informed decisions on a virtually real time system.

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

	FY 2016	FY 2017	FY 2018
Title: Capability Enhancement	14.118	-	10.000
Description: Major changes to the system needed to update the infrastructure as required to meet SAP requirements and best practices and capability enhancement initiatives needed to increase GFEBs current capability and performance of major system enhancements required to maintain compliance with Federal Financial Management Improvement Act (FFMIA), Business Enterprise Agency (BEA), and Standard Financial Information Structure (SFIS) requirements and auditability.			
FY 2016 Accomplishments: Funding provided infrastructure support, with the establishment of a portfolio Prototype & Integration Environment (PIE), continued expansion of a GFEBs pilot program Supplier Self-Service (SuS), and the support of Integrated Resource Management (IRM) and Standard Labor Time Tracking (SLTT) Analysis of Alternatives (AoA) activities.			
FY 2018 Plans: FY18 funding supports Financial Integration Process Owners Group requested enhancements and enhancement/new capability related to audit and compliance.			
Accomplishments/Planned Programs Subtotals	14.118	-	10.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604822A / General Fund Enterprise Business System (GFEBS)	Project (Number/Name) GF5 / General Fund Enterprise Business System

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• BE4168, GFEBS: <i>Other Procurement, Army</i>	13.540	6.416	4.465	-	4.465	4.608	4.610	4.453	4.571	0.000	42.663

Remarks

D. Acquisition Strategy

NA

E. Performance Metrics

N/A

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604822A / General Fund Enterprise Business System (GFEBS)	Project (Number/Name) GF5 / General Fund Enterprise Business System
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
(1) Sustainment Development Task Order Award									▲																							
Capability Enhancements 2018																	■															
Capability Enhancements 2019																					■											

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604822A / <i>General Fund Enterprise Business System (GFEBS)</i>	Project (Number/Name) GF5 / <i>General Fund Enterprise Business System</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Sustainment Development Task Order Award	3	2018	3	2018
Capability Enhancements 2018	1	2018	4	2018
Capability Enhancements 2019	1	2019	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604823A / Firefinder
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	2.850	9.235	45.605	-	45.605	47.023	49.485	50.638	48.922	Continuing	Continuing
L86: LIGHTWEIGHT COUNTER MORTAR RADAR (LCMR)	-	2.850	3.187	2.136	-	2.136	4.239	4.970	5.442	3.500	Continuing	Continuing
L87: Hypervelocity Projectile System	-	0.000	0.000	36.000	-	36.000	36.000	36.000	36.000	36.000	0.000	180.000
L88: Enhanced AN/TPQ 36	-	0.000	6.048	7.469	-	7.469	6.784	8.515	9.196	9.422	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program funds design, development and test of primary target acquisition and counterfire radars to automatically detect, locate and classify hostile indirect fire weapons (mortars, artillery, and rockets). The program directly supports the prioritization, tracking and locating of targets, and dissemination of that information for simultaneous attack of multiple threats. It provides the Warfighter with continuous and responsive counterfire target acquisition systems for all types and phases of military operations. Project L86, Lightweight Counter Mortar Radar (LCMR), version AN/TPQ-50 provides 360 degrees of azimuth coverage from ranges of 500 meters to 10 kilometers. The AN/TPQ-50 and AN/TPQ-53 radars are currently fielded to multiple Continental United States (CONUS) and Outside Continental United States (OCONUS) locations to include operational support to Operation Inherent Resolve (OIR) and Operation Freedom's Sentinel (OFS).

This program line also funds the Hypervelocity Projectile System (HVP) a next-generation, common, low drag, guided cannon artillery projectile capable of completing multiple missions across different gun systems. HVP's low drag aerodynamic design enables high-velocity, maneuverability and decreased time-to-target. These attributes coupled with accurate guidance electronics provide low-cost mission effectiveness against current threats and the ability to adapt to air and surface threats of the future. Integration with a fire control radar and sensor array will allow targeting of moving and relocatable surface targets beyond the range of conventional artillery as well as live fire intercepts of cruise and ballistic targets. Current estimates for a follow on development effort achieve an integrated system solution by FY22.

Fiscal Year (FY) 2018 Base funding in the amount of \$36.000 million will support the initiation of contract requirements package development, system evaluation, requirements/specification work, integration development and test plans for the Hypervelocity Projectile system. The Army will leverage Strategic Capabilities Office (SCO) prototypes to transition this new start capability into a program of record.

The Fiscal Year (FY) 2018 Base funding in the amount of \$9.605 million will support ongoing AN/TPQ-53 test efforts and Army interoperability certifications (AICs), AN/TPQ-50 and AN/TPQ-53 development and testing of modernization efforts for electronic protection and new and emerging threats, and the performance of technical assessments, concept studies, risk reduction and required documentation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	2.967	9.235	10.814	-	10.814
Current President's Budget	2.850	9.235	45.605	-	45.605
Total Adjustments	-0.117	0.000	34.791	-	34.791
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.117	-			
• Adjustments to Budget Years	0.000	0.000	-1.209	-	-1.209
• HPV	0.000	0.000	36.000	-	36.000

Change Summary Explanation

FY 2018 Base funding was decreased by \$1.209 million in support higher Army priorities.

FY 2018 Base funding in the amount of \$36.000 million was added to support New Start Project 87- Hypervelocity Projectile System.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604823A / Firefinder				Project (Number/Name) L86 / LIGHTWEIGHT COUNTER MORTAR RADAR (LCMR)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
L86: LIGHTWEIGHT COUNTER MORTAR RADAR (LCMR)	-	2.850	3.187	2.136	-	2.136	4.239	4.970	5.442	3.500	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The AN/TPQ-50 Lightweight Counter Mortar Radar (LCMR) is a highly mobile radar that automatically detects, classifies, tracks, and locates the point of origin of projectiles fired from mortar, artillery, and rocket systems with sufficient accuracy for first round fire for effect. It mitigates close combat radar coverage gaps by providing 360 degrees of azimuth coverage from ranges of 500 meters to 10 kilometers and is capable of being deployed in two configurations, standalone or vehicle mounted. The AN/TPQ-50 system interoperates with battle command systems (BCSs) to provide the maneuver commander increased counterfire radar flexibility. The AN/TPQ-50 is deployed as part of the Counter-Rocket, Artillery, Mortar (C-RAM) system of systems. It provides data to the Forward Area Air Defense Command and Control (FAAD C2) node for the sense and warn force protection capability. The AN/TPQ-50 is currently fielded to multiple Continental United States (CONUS) and Outside Continental United States (OCONUS) locations to include support to Operation Inherent Resolve (OIR) and Operation Freedom's Sentinel (OFS).

The Fiscal Year (FY) 2018 Research, Development, Test and Evaluation (RDTE) funds of \$2.136 million will support the work required to enhance the AN/TPQ-50's capability to address electronic protection against CEMA and other known, new, emerging and evolving threats identified in the System Threat Assessment Report (STAR). This effort also continues to improve detection, tracking and location accuracy as well as reduce false location rate against new threats to the warfighter. Funding also supports the performance of technical assessments, concept studies, risk reduction efforts and required documentation as well as associated testing costs and program support.

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

	FY 2016	FY 2017	FY 2018
Title: Electronic Protection	2.162	0.797	-
Description: The effort develops spectrum management techniques, mitigates electromagnetic interference (EMI) from commercial and military bands in addition to hostile EMI, and improves signal processor protection algorithms to defeat radar targeting armaments.			
FY 2016 Accomplishments: Contract was awarded in July 2016 for developmental efforts to improve spectrum management techniques, mitigate EMI from commercial and military bands, and associated testing costs and program support.			
FY 2017 Plans: Funding will continue the developmental efforts to improve spectrum management, mitigate EMI from commercial and military bands, and includes associated testing costs.			
Title: Modernization & New and Emerging Threats	0.688	2.390	2.136

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>	Project (Number/Name) L86 / <i>LIGHTWEIGHT COUNTER MORTAR RADAR (LCMR)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>Description: Program modernization effort which completes the development of hardware (HW) kits and develops advanced electronic protection techniques via software to combat Cyber Electromagnetic Activity (CEMA). This effort funds the development of capabilities to address vulnerabilities identified in the bi-annual release of the System Threat Assessment Report (STAR) and changes on the battlefield due to new tactics, techniques, procedures (TTPs) and/or areas of operation. Increases capability for use as a sensor in the Counter-Unmanned Aerial Systems System of Systems (C-UAS SoS).</p> <p>FY 2016 Accomplishments: Contract was awarded in July 2016 to initiate work required to enhance the AN/TPQ-50's capability to accurately detect, track and locate new threats to the warfighter and includes associated testing costs and program support.</p> <p>FY 2017 Plans: This will continue the work required to enhance the AN/TPQ-50's capability to accurately detect, track and locate new threats to the warfighter and includes associated testing costs.</p> <p>FY 2018 Plans: This will continue the work required to enhance the AN/TPQ-50's capability to address electronic protection against CEMA and other known, new, emerging and evolving threats identified in the System Threat Assessment Report (STAR). This effort also continues to improve detection, tracking and location accuracy as well as reduce false location rate against new threats to the warfighter. Funding also supports the performance of technical assessments, concept studies, risk reduction efforts and required documentation as well as associated testing costs and program support.</p>			
Accomplishments/Planned Programs Subtotals	2.850	3.187	2.136

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• B05201: SSN: B05201 <i>Lightweight Counter Mortar Radar</i>	63.472	130.730	20.459	-	20.459	9.618	-	-	8.427	0	232.706

Remarks

D. Acquisition Strategy
The AN/TPQ-50 Lightweight Counter Mortar Radar was developed in 2009 to meet Training and Doctrine Command (TRADOC) Capabilities Production Document (CPD) requirements. A favorable full rate production (FRP) decision was achieved on 21 June 2013. The AN/TPQ-50 is now in full rate production; 325 systems have been procured to date against the AAO of 400. A three year extension to the FRP contract was awarded 12 July 2016.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>	Project (Number/Name) L86 / <i>LIGHTWEIGHT COUNTER MORTAR RADAR (LCMR)</i>

The Fiscal Year (FY) 2018 Research, Development, Test and Evaluation (RDTE) funds of \$2.136 million will support the work required to enhance the AN/TPQ-50's capability to address electronic protection against CEMA and other known, new, emerging and evolving threats identified in the System Threat Assessment Report (STAR). This effort also continues to improve detection, tracking and location accuracy as well as reduce false location rate against new threats to the warfighter. Funding also supports the performance of technical assessments, concept studies, risk reduction efforts and required documentation as well as associated testing costs and program support.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>				Project (Number/Name) L87 / <i>Hypervelocity Projectile System</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
L87: <i>Hypervelocity Projectile System</i>	-	0.000	0.000	36.000	-	36.000	36.000	36.000	36.000	36.000	0.000	180.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project L87 The Hypervelocity Projectile System (HVP) is a next-generation, common, low drag, guided cannon artillery projectile capable of completing multiple missions across different gun systems. HVP's low drag aerodynamic design enables high-velocity, maneuverability and decreased time-to-target. These attributes coupled with accurate guidance electronics provide low-cost mission effectiveness against current threats and the ability to adapt to air and surface threats of the future. Integration with a fire control radar and sensor array will allow targeting of moving and relocatable surface targets beyond the range of conventional artillery as well as live fire intercepts of cruise and ballistic targets. Current estimates for a follow on development effort achieve an integrated system solution by FY22.

Justification: FY2018 Base funding in the amount of \$36.000 million supports the initiation of contract requirements package development, system evaluation, requirements/specification work, integration development and test plans. The Army will leverage Strategic Capabilities Office (SCO) prototypes to transition this new start capability into a program of record. This is a New Start.

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

	FY 2016	FY 2017	FY 2018
Title: Hypervelocity Projectile System (HVP)	-	-	36.000
Description: The Hypervelocity Projectile System (HVP) will integrate HVP sensor arrays with a closed loop fire control tracking radar to enable HVP artillery projectiles to engage high value moving surface targets beyond common artillery ranges and cruise and ballistic target intercepts.			
FY 2018 Plans: Supports the initiation of contract requirements package development, system evaluation, and requirements /specification work, integration development and test plans.			
Accomplishments/Planned Programs Subtotals	-	-	36.000

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

N/A

Remarks

D. Acquisition Strategy

Strategic Capabilities Office's (SCO) demonstration transition to a new start program of record.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0604823A / <i>Firefinder</i>	L87 / <i>Hypervelocity Projectile System</i>

The Army is transitioning prototype articles from the SCO demonstration to develop a fire control target tracking radar capable of intercepting ballistic targets and engaging tactical range surface targets with hypervelocity projectile artillery rounds. Emerging requirements include communication suite changes, munitions updates, and introduction of new munitions require software and/or hardware updates to ensure full compatibility and maintain operational viability.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>	Project (Number/Name) L87 / <i>Hypervelocity Projectile System</i>
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HPV Product Development	C/Various	TBD : TBD	0.000	-		-		36.000		-		36.000	0.000	36.000	0.000
Subtotal			0.000	-		-		36.000		-		36.000	0.000	36.000	0.000
Project Cost Totals			0.000	-		0.000		36.000		-		36.000	0.000	36.000	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>	Project (Number/Name) L87 / <i>Hypervelocity Projectile System</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Hypervelocity Projectile System Development																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>	Project (Number/Name) L87 / <i>Hypervelocity Projectile System</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Hypervelocity Projectile System Development	1	2018	4	2022

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>				Project (Number/Name) L88 / <i>Enhanced AN/TPQ 36</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
L88: <i>Enhanced AN/TPQ 36</i>	-	0.000	6.048	7.469	-	7.469	6.784	8.515	9.196	9.422	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The AN/TPQ-53 Counterfire Target Acquisition Radar System is a highly mobile radar set that automatically detects, classifies, tracks, and locates the point of origin of projectiles fired from mortar, artillery, and rocket systems with sufficient accuracy for first round fire for effect. It mitigates close combat radar coverage gaps by providing a 90 degree search sector (stare mode) as well as 360 degree coverage (rotating) and will ultimately replace the current AN/TPQ-36 and AN/TPQ-37 Firefinder Radars. The AN/TPQ-53 system interoperates with battle command systems (BCSs) to provide the maneuver commander increased counterfire radar flexibility. The AN/TPQ-53 is deployed as part of the Counter-Rocket, Artillery, Mortar (C-RAM) system of systems. It provides data to the Forward Area Air Defense Command and Control (FAAD C2) node for the sense and warn force protection capability. The AN/TPQ-53 is fielded to multiple Continental United States (CONUS) and Outside Continental United States (OCONUS) locations to include support to Operation Inherent Resolve (OIR).

The Fiscal Year (FY) 2018 funds of \$7.469 million will support ongoing test efforts, Army interoperability certifications (AICs), development and testing of modernization efforts for electronic protection and new and emerging threats, and the performance of technical assessments, concept studies, risk reduction and required documentation.

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

	FY 2016	FY 2017	FY 2018
<p>Title: Test support</p> <p>Description: Funding is provided to support testing efforts</p> <p>FY 2017 Plans: Test activities to include engineering and customer tests, an adversarial assessment, and associated Program Management Office (PMO) and test support costs.</p> <p>FY 2018 Plans: Test activities to include a Tropical Regions test, AIC testing, engineering and customer tests, an adversarial assessment, and associated Program Management Office (PMO) and test support costs. Additional test support in Fiscal Year (FY) 2018 due to new Electronic Protection techniques and data analysis support.</p>	-	2.335	3.783
<p>Title: Electronic Protection / Worldwide Interoperability for Microwave Access (WiMAX)</p> <p>Description: This effort funds the development of radio frequency (RF) management tactical decision aids that improve operational frequency band selection, radar emplacement, and signal processor protection algorithms to defeat radar targeting armaments. The effort also improves spectrum management and mitigates electromagnetic interference (EMI) from commercial and military bands in addition to hostile EMI.</p>	-	2.413	2.396

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>	Project (Number/Name) L88 / <i>Enhanced AN/TPQ 36</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p><i>FY 2017 Plans:</i> Continue to mitigate EMI from military bands, hostile EMI, and the Worldwide Interoperability for Microwave Access (WiMAX) commercial spectrum; this includes associated Program Management Office (PMO) and test support costs</p> <p><i>FY 2018 Plans:</i> Develop additional electronic protection techniques and continue to mitigate Cyber Electromagnetic Activity (CEMA) and the Worldwide Interoperability for Microwave Access (WiMAX) commercial spectrum; this includes associated Program Management Office (PMO) and test support costs.</p>			
<p><i>Title:</i> New and Emerging Threats</p> <p><i>Description:</i> This effort funds the development of capabilities not included in the current requirement resulting from the bi-annual release of the system threat assessment report (STAR) and changes on the battlefield due to new tactics, techniques, and procedures (TTPs) and/or areas of operation.</p> <p><i>FY 2017 Plans:</i> Continue developmental efforts to accurately detect, track, and locate new and emerging threats to the warfighter as a result of changes in the battlefield and areas of operation; this includes associated Program Management Office (PMO) and test support costs.</p> <p><i>FY 2018 Plans:</i> Continue developmental efforts to accurately detect, track, and locate new and emerging threats to the warfighter as a result of changes in the battlefield and areas of operation; Begin development efforts for compliance to Counter-Unmanned Aerial Systems (C-UAS) requirements; this includes associated Program Management Office (PMO) and test support costs.</p>	-	1.300	1.290
Accomplishments/Planned Programs Subtotals	-	6.048	7.469

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SSN B05310 AN/TPQ-53: SSN B05310 AN/TPQ-53	198.379	314.509	329.057	-	329.057	148.700	12.300	7.110	7.443	0	1,017.498

Remarks

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604823A / <i>Firefinder</i>	Project (Number/Name) L88 / <i>Enhanced AN/TPQ 36</i>
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D. Acquisition Strategy

The AN/TPQ-53 leverages technology developed in the multi-mission radar advanced technology objective (ATO) program. In 2006, the Government awarded a contract following full and open competition for the design of the AN/TPQ-53 radar and the purchase of four non-recurring engineering (NRE) radars. Twelve additional quick reaction capability (QRC) radars were purchased under the same contract in response to an urgent directed procurement in July 2008. The Milestone Decision Authority (MDA) approved the acquisition of up to 20 more QRC radars. Twenty systems were procured through two separate contract actions in 2010 and 2011. A competitive production contract for Low Rate Initial Production (LRIP) systems was awarded in 2012 and options for additional systems were awarded in 2013, 2014, and 2015. Production and delivery of all QRC/Initial Production (IP) systems are complete, and production of LRIP systems is ongoing. A Full Rate Production (FRP) decision was obtained in December 2015. The FRP contract to fill the remainder of the Army Acquisition Objective (AAO) was awarded in March 2017. Additionally, all initial production systems will be retrofitted to the FRP configuration. The FRP system deliveries will continue through fiscal year (FY) 2021. The system will eventually replace all of the AN/TPQ-36 and AN/TPQ-37 systems in the fleet.

The FY 2018 funds of \$7.469 million will support ongoing test efforts, Army interoperability certifications (AICs), development and testing of modernization efforts for electronic protection and new and emerging threats, and the performance of technical assessments, concept studies, risk reduction and required documentation.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604827A / Soldier Systems - Warrior Dem/Val
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	15.694	12.393	16.127	-	16.127	12.199	6.833	3.927	2.285	Continuing	Continuing
DX7: TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM	-	0.901	0.751	0.879	-	0.879	0.500	0.500	0.500	0.668	Continuing	Continuing
EY2: Integrated Soldier Power Data System - Core	-	0.000	0.000	6.949	-	6.949	2.894	1.456	1.258	0.000	0.000	12.557
EY3: Soldier Power Generator	-	0.000	0.000	0.000	-	0.000	0.321	0.327	0.334	0.341	0.000	1.323
EY4: Universal Battery Charger	-	0.000	0.000	1.731	-	1.731	1.764	1.799	1.835	1.276	0.000	8.405
S65: Soldier Power	-	2.830	11.642	6.568	-	6.568	6.720	2.751	0.000	0.000	0.000	30.511
S75: Ground Soldier Ensemble	-	11.963	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	11.963

A. Mission Description and Budget Item Justification

This program element contains five projects:

Project S65 - Soldier Power: Soldier Power enables dismounted Soldiers to efficiently execute missions for longer durations by reducing the logistical burden associated with fuel and primary (disposable) batteries. Platoon Power Generator - PM E2S2: This project supports the demonstration and development of a Platoon Power Generation (PPG). The SUP PPG (1kW Generator) will provide small units with sufficient portable power to sustain Modified Table of Organizational Equipment (MTOE) unit power demand in support of 48 to 72 hour missions using a common logistical fuel (JP-8). It will be used for charging batteries and powering various types of Army communications and electronics devices.

Project EY2 - Integrated Soldier Power Data System - Core: Integrated Soldier Power and Data System-Core, Conformal Wearable Battery, Squad Power Manager (SPI) fills the power and energy gaps created by the increase in mission essential, Soldier portable power consumers, such as situational awareness displays, GPS systems, weapon sensors, radios, and other devices.

Project EY4 - Universal Battery Charger: Universal Battery Charger (UBC) fills the power and energy gap created by the increase in mission essential, Soldier portable power consumers, by providing a sole charging solution capable of providing power to handheld communication devices and a suite of military batteries.

Project S75 - Nett Warrior (NW), [named in honor of Medal of Honor recipient COL Robert Nett], previously known as Ground Soldier System (GSS): NW provides unparalleled situational awareness and understanding to the dismounted leader allowing for faster and more accurate decisions in the tactical fight. This translates into Soldiers being at the right place, at the right time, with the right equipment making them more effective, more lethal, and more survivable in the execution of their combat mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>
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Project DX7 - Tactical Communications and Protective System (TCAPS): TCAPS enables Soldiers to communicate over radios in combat environments while simultaneously providing hearing protection from both steady state and impulse noise.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	18.776	12.393	9.460	-	9.460
Current President's Budget	15.694	12.393	16.127	-	16.127
Total Adjustments	-3.082	0.000	6.667	-	6.667
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.214	-			
• Adjustments to Budget Years	0.000	0.000	6.667	-	6.667
• Other Adjustments	-2.868	0.000	0.000	-	0.000

Change Summary Explanation

FY 2018 program increase is mainly attributable to increases in the following project efforts:

Project EY2 - Integrated Soldier Power Data System - Core: Integrated Soldier Power and Data System-Core, Conformal Wearable Battery, Squad Power Manager (SPI) fills the power and energy gaps created by the increase in mission essential, Soldier portable power consumers, such as situational awareness displays, GPS systems, weapon sensors, radios, and other devices.

Project EY4 - Universal Battery Charger: Universal Battery Charger (UBC) fills the power and energy gap created by the increase in mission essential, Soldier portable power consumers, by providing a sole charging solution capable of providing power to handheld communication devices and a suite of military batteries.

Project DX7 - Tactical Communications and Protective System (TCAPS): TCAPS enables Soldiers to communicate over radios in combat environments while simultaneously providing hearing protection from both steady state and impulse noise.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>				Project (Number/Name) DX7 / <i>TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
DX7: <i>TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM</i>	-	0.901	0.751	0.879	-	0.879	0.500	0.500	0.500	0.668	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Description: The Tactical Communications and Protective System (TCAPS) and TCAPS-Lite provide Soldiers with advanced, active hearing protection that simultaneously protects Soldiers' hearing while enabling situational awareness and mission command. TCAPS protects Soldiers against harmful impulse and steady-state noises characteristic of combat environments while also enabling Soldiers to communicate with each other using voice communications over a tactical radio, while TCAPS-Lite provides protection for Soldiers without a radio. Both systems enhance survivability and situational awareness by allowing Soldiers to selectively amplify faint sounds that would not be otherwise audible or intelligible. TCAPS and TCAPS-Lite reduces Soldiers' noise induced hearing damage. Includes integration and interface of products on Soldiers.

TCAPS and TCAPS-Lite contribute to the reduction of post-service disability compensation and limits lost in-service time related to hearing injuries. TCAPS Program of Record will continue to employ commercial-off-the-shelf (COTS) solutions that are evaluated periodically. The commercial solutions that meet the technical requirements and are rated the best by the Soldiers will transition to production and fielding.

Justification: FY18 RDTE funding supports continued testing and evaluation of enhanced protective hearing devices for soldiers in combat environments. Funding also supports annual efforts to relook technology for improved future capabilities.

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

	FY 2016	FY 2017	FY 2018
Title: TCAPS testing and evaluation.	0.639	0.625	0.654
Description: Test articles procurement and testing & evaluation.			
FY 2016 Accomplishments: Completed Headset X5 Generation 2 (Gen 2) testing and evaluation of TCAPS technology relook that supports the GEN 2. Received approval to proceed with phased-in production.			
FY 2017 Plans: Funding supports test articles and evaluation for a limited relook of commercial technology for improved capabilities to existing fielded systems or similar capabilities at lower costs.			
FY 2018 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) DX7 / <i>TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Initiation of TCAPS-Lite Generation 2 test efforts. Vehicle Platform integration test and evaluation efforts for TCAPS interface with VIC-3 vehicle intercommunication systems.			
Title: System Engineering and Program Management (SEPM)	0.262	0.126	0.225
Description: TCAPS system engineering and program management support.			
FY 2016 Accomplishments: Developed TCAPS Generation 2 performance parameters. Supported combat developer on modification of TCAPS CPD in order to include TCAPS-Lite materiel solution.			
FY 2017 Plans: Funds system engineering and program management for TCAPS; the development of electronic training materials for improved leader training; and ensuring integration and interoperability with other Soldier equipment.			
FY 2018 Plans: Development of test scope of work and identification of vehicle platforms to support TCAPS VIC-3 interface efforts. Develop performance parameters for construction of a TCAPS-Lite Generation 2.			
Accomplishments/Planned Programs Subtotals	0.901	0.751	0.879

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• B55510: <i>Tactical Communications and Protective System</i>	25.597	3.607	4.411	-	4.411	1.000	1.000	1.000	1.000	Continuing	Continuing

Remarks

D. Acquisition Strategy
TCAPS is an ACAT III program that leverages commercial-off-the-shelf (COTS) technology. TCAPS conducts periodic relook of commercial technology to seek improved capabilities, reduce costs, conducts test and evaluation that allows transition to production.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>				Project (Number/Name) EY2 / <i>Integrated Soldier Power Data System - Core</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EY2: <i>Integrated Soldier Power Data System - Core</i>	-	0.000	0.000	6.949	-	6.949	2.894	1.456	1.258	0.000	0.000	12.557
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Soldier Power Integrated Soldier Power and Data System-Core, Conformal Wearable Battery, Squad Power Manager (SPI) fills the power and energy gaps created by the increase in mission essential, Soldier portable power consumers, such as situational awareness displays, GPS systems, weapon sensors, radios, and other devices. Specific systems of SPI are the Integrated Soldier Power and Data System-Core (ISPDS-C), the Conformal Wearable Battery (CWB) and the Squad Power Manager (SPM). This RDT&E line develops power sources and solutions suited for not only the individual Soldier, but for the team and squad. These power solutions are intended for use in the most austere operating environments and include, but are not limited to, individual Soldier worn systems, integrated power management, and renewable energy. SPI systems will enable dismounted Soldiers to execute their missions more efficiently, for longer durations and with fewer battery resupplies. SPI systems will also reduce the logistical burden associated with moving fuel and primary (disposable) batteries, and allow dismounted Soldiers to operate independently for longer missions without being tethered to a large generator, vehicle, or supply train. This effort is consistent with the Soldier Protection Capability Development Document (CDD) (March 2011), Operational Energy Initial Capabilities Document (ICD) (26 April 2012), the Sep 2013 Small Unit Power CDD (26 September 2013), and the draft SPM, ISPDS-C with Conformal Central Power Source (CCPS) Capability Production Document (CPD).

Justification: Beginning in FY18, funding for ISPDS-C was realigned from Program Element: 0604827A (Soldier Systems – Warrior Dem/Val)/Project: S65 (Soldier Power). FY18 RDTE funding develops power sources and solutions suited for not only the individual Soldier, but for the team and squad. These power solutions are intended for use in the most austere operating environments and include, but are not limited to, individual Soldier worn systems, integrated power management, and renewable energy.

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

	FY 2016	FY 2017	FY 2018
Title: Test and Evaluation	-	-	1.210
FY 2018 Plans: Will conduct required testing to support a new contract award for the ISPDS-C. Will conduct required testing to support a new contract award for the CWB. Will test and validate new battery chemistries and interfaces with the IPSPDS-C and SPM.			
Title: System Engineering & Program Management	-	-	1.889
FY 2018 Plans: Will develop and evaluate a power and data management hub that contains host control capability. Will continue to evaluate intra-Soldier wireless technologies.			
Title: ISPDS-C/CWB Capability Improvements Integration	-	-	3.850

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY2 / <i>Integrated Soldier Power Data System - Core</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<i>FY 2018 Plans:</i> Conduct evaluation of new equipment for suitability and the ability to interface within the Soldier Power and Data Architecture. Will conduct integration of new lightweight, Soldier Power Generation, chargers / harvesters, and generators capable of supporting the variety of power devices used in tactical formations.			
Accomplishments/Planned Programs Subtotals	-	-	6.949

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PE 0604827A S65: <i>Soldier Systems - Warrior Dem/Val (Soldier Power)</i>	2.830	11.642	6.568	-	6.568	6.720	2.751	-	-	0.000	30.511
• PE 0604827A EY4: <i>Universal Battery Charger</i>	-	-	1.731	-	1.731	1.764	1.799	1.835	1.276	0.000	8.405
• R800100: <i>Small Unit Power Increment 1</i>	25.306	30.014	-	-	-	-	-	-	-	0.000	55.320
• R091030: <i>Universal Battery Charger</i>	-	-	3.086	-	3.086	6.469	9.987	10.201	10.243	Continuing	Continuing
• PE 0604827A EY3: <i>Soldier Power Generator</i>	-	-	-	-	-	0.321	0.327	0.334	0.341	Continuing	Continuing
• R08090: <i>Integrated Soldier Power Data System - Core</i>	-	-	-	-	-	25.134	30.016	33.046	35.364	Continuing	Continuing

Remarks

D. Acquisition Strategy
Pursue a variety of Soldier power initiatives under full and open competition. These initiatives range from Commercial-Off-The-Shelf (COTS) solutions to developmental efforts. The type of solicitation depends on the maturity of the technology. The power initiatives will be evaluated through scheduled test and evaluation events, and if successful, selected for procurement and subsequent fielding and sustainment. The acquisition strategy varies by product. For example, the SPM acquisition strategy will consist of two phases: Phase one includes the purchase of test articles using the Defense Logistics Agency (DLA) Special Operational (Spec Ops) Equipment Tailored Logistic Support Program (TLSP). Phase two includes the procurement of additional test articles through Indefinite Delivery Indefinite Quantity (IDIQ) contracts established through the Army Contracting Command (ACC). The Project Manager office will establish IDIQ contracts to support the SPI requirements over time. Each SPI system will be procured under purchase orders for production quantities that will be awarded on a Firm Fixed Price (FFP) contract.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY2 / <i>Integrated Soldier Power Data System - Core</i>

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY3 / <i>Soldier Power Generator</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
<i>EY3: Soldier Power Generator</i>	-	0.000	0.000	0.000	-	0.000	0.321	0.327	0.334	0.341	0.000	1.323
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

There is no justification at this time as funding begins in FY 2019.

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

N/A

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-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY4 / <i>Universal Battery Charger</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EY4: <i>Universal Battery Charger</i>	-	0.000	0.000	1.731	-	1.731	1.764	1.799	1.835	1.276	0.000	8.405
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Universal Battery Charger (UBC) fills the power and energy gap created by the increase in mission essential, Soldier portable power consumers, by providing a single charging solution capable of providing power to handheld communication devices and a suite of military batteries. The UBC charging solution is suited for the squad and platoon and intended for use in the most austere operating environments and can draw power from wall outlets, vehicle power, and solar power sources. The UBC enables dismounted Soldiers to execute their missions with fewer battery resupplies, thus reducing the logistical burden associated with moving fuel and primary (disposable) batteries. Develops the vehicle integration kits that allow for the UBC to be mounted on vehicle platforms. The UBC capability also allows dismounted Soldiers to operate independently for longer missions without being tethered to a large generator, vehicle, or supply train. This effort is consistent with the Operational Energy ICD (26 April 2012) and the Universal Battery Charger CPD (27 May 2015).

Justification: Beginning in FY18, funding for Integrated Soldier Power Data System-Core (ISPDS-C) was realigned from Program Element: 0604827A (Soldier Systems - Warrior Dem/Val)/Project S65 (Soldier Power). FY18 RDTE funding develops battery power solutions suited for not only the individual Soldier and the team and squad.

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

	FY 2016	FY 2017	FY 2018
Title: Test & Evaluation	-	-	1.413
FY 2018 Plans: Conduct vehicle integration testing of the UBC Vehicle Integration Kit (VIK) on vehicle platforms. Test and evaluate new battery chemistries and interfaces with the UBC.			
Title: System Engineering & Program Management	-	-	0.318
FY 2018 Plans: Design and develop the UBC Vehicle Integration Kit (VIK) for vehicle platforms. Develop alternate dismounted charging solutions to reduce Soldier bulk and load.			
Accomplishments/Planned Programs Subtotals	-	-	1.731

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• R80010000: <i>Small Unit Power Increment 1</i>	25.306	30.014	-	-	-	-	-	-	-	0.000	55.320

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY4 / <i>Universal Battery Charger</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• R09103000: <i>Universal Battery Charger</i>	-	-	3.086	-	3.086	6.469	9.987	10.201	10.243	Continuing	Continuing
• 0604827A / Project S65: <i>Soldier Systems - Warrior Dem/Val (Soldier Power)</i>	2.008	-	9.352	-	9.352	-	-	-	-	0.000	11.360

Remarks

D. Acquisition Strategy

Using full and open competition, an Indefinite Delivery Indefinite Quantity (IDIQ) production contract was awarded 27 January 2016, in order to procure the UBC. The IDIQ contract contains First Article Testing (FAT) Contract Line Item Numbers (CLINs) to support initial testing activities. Additionally, the contracts will contain production CLINs to ensure the Project Management office can carry out production buys. The system will be procured under purchase orders for production quantities that will be awarded on a Firm Fixed Price (FFP) contract. Primary development activities for Fiscal Year 2018 (FY18) are the development of the UBC Vehicle Integration Kit (VIK). The UBC VIKs will be designed, developed, and tested in partnership with the Product Manager for AMPV (PM AMPV).

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) S65 / <i>Soldier Power</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
<i>S65: Soldier Power</i>	-	2.830	11.642	6.568	-	6.568	6.720	2.751	0.000	0.000	0.000	30.511
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

Soldier and Small Unit Power (SUP) enables dismounted Soldiers to efficiently execute missions for longer durations by reducing the logistical burden associated with fuel and primary (disposable) batteries. Power solutions address energy deficits resulting from increased power demands associated with providing the Soldier with increased situational awareness displays, Global Positioning System (GPS) systems, weapon sensors, radios, and other devices. The Soldier and Small Unit Power system develops and tests power sources and solutions suited for the individual Soldier, team, squad, and platoon in the most austere operating environments, while also providing dismounted Soldiers the ability to execute their missions more efficiently, for longer durations and with fewer battery resupplies. An integrated Soldier power system will provide the Soldier with a wearable power supply that will be significantly more efficient than carrying separate batteries for each device. Soldier power systems will also reduce the logistical burden associated with moving fuel and primary (disposable) batteries, and allow dismounted Soldiers to operate independently for longer missions without being tethered to a large generator, vehicle, or supply train. SUP develops systems that consist of the Integrated Soldier Power and Data System-Core (ISPDS-C), Conformal Wearable Battery (CWB), Squad Power Manager (SPM), Universal Battery Charger (UBC), and Soldier Power Generation (SPG) Technologies. Develops and evaluates additional sources of power such as individual Soldier worn systems, renewable energy, and kinetic energy harvesting technologies. This effort is consistent with the Sep 2013 Small Unit Power CDD, the Dec 2011 Operational Energy ICD, and the Mar 2011 Soldier Protection CDD, and the Universal Battery Charger CPD (May 2015).

Justification: Beginning in FY18, funding for SUP was realigned to Program Element: 0604827A (Soldier Systems - Warrior Dem/Val)/Projects: EY2 (Integrated Soldier Power Data System - Core) and EY3 (Soldier Power Generator) and EY4 (Universal Battery Charger). Under this realignment Soldier and Small Unit Power will continue to develop and test power solutions for the ISPDS, UBC, CWB, SPM and SPG technologies.

Platoon Power Generator - PM E2S2: This project supports the demonstration and development of a Platoon Power Generation (PPG). The Small Unit Power PPG (1kW Generator) will provide small units with sufficient portable power to sustain Modified Table of Organizational Equipment (MTOE) unit power demand in support of 48 to 72 hour missions using a common logistical fuel (JP-8). It will be used for charging batteries and powering various types of Army communications and electronics devices. It will provide sufficient power to recharge and power all Platoon equipment and fulfill residual power gaps at the Squad and Soldier level. The generator will provide Platoon power for charging batteries when away from vehicles in Stryker Brigade Combat Teams (SBCT), Armor Brigade Combat Team (ABCT) and as a power source for Infantry Brigade Combat Teams (IBCT) in austere environments. FY17 funds will be used for the preparation of MS "B" and allow for the award and management of R&D contracts to two manufacturers to develop and demonstrate a 1kW PPG in FY18.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) S65 / <i>Soldier Power</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Title: Soldier Power Generation (SPG)</p> <p>Description: Soldier portable, renewable energy solutions for Soldier Power Generation.</p> <p>FY 2016 Accomplishments: Continued development and optimization of lightweight, Soldier Power Generation, chargers / harvesters, and generators capable of supporting the variety of power devices used in tactical formations. Developed Phase II of the Knee-Worn Kinetic Energy Harvester. Developed and evaluated alternative kinetic energy harvesting rucksack frames. Analyzed the feasibility, suitability, and acceptability of technologies under evaluation as potential material solutions.</p> <p>FY 2017 Plans: Will support EMD activities leading to Milestone C/ Full Rate Production in 1QFY19 for Soldier Power generation. Will continue development and optimization of lightweight, Soldier-portable chargers/harvesters and generators capable of supporting the variety of power devices used in tactical formations. Will support integration of the Universal Battery Charger on HMMWV platforms.</p>		1.399	7.984	-
<p>Title: Soldier Power Test and Evaluation</p> <p>Description: Integration testing and annual testing and evaluation events</p> <p>FY 2016 Accomplishments: Completed test requirements necessary to satisfy Milestone C / Full Rate production requirements for the Integrated Soldier Power and Data System-Core (ISPDS-C), the Squad Power Manager (SPM), the Conformal Wearable Battery (CWB). Developed a power management application for the Nett Warrior End User Device. Investigated lightweight power generation capability at the squad level. Tested and Evaluated an alternative dismounted solution to the UBC.</p> <p>FY 2017 Plans: Will conduct developmental testing to support Milestone C/Full Rate production requirements for Soldier Power Generation and user evaluations at the Joint Infantry Company Prototype (JIC-P) event hosted by the Navy in 2QFY17. Will test and validate new battery chemistries and interfaces with the existing power charging solutions within Small Unit Power. Will test the integration of the Universal Battery charger on HMMWV platforms.</p>		0.609	1.404	-
<p>Title: Platoon Power Generation (PPG) - PM E2S2</p> <p>Description: Prepare for award and manage an EMD phase R&D contract for the PPG.</p> <p>FY 2016 Accomplishments:</p>		0.822	2.254	6.568

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) S65 / <i>Soldier Power</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Award EMD contract and fund applicable functional support agreements.			
<i>FY 2017 Plans:</i> Continue EMD contract: fund applicable functional support agreements and MIPRs; prepare documentation and vendor for Milestone C and production, respectively.			
<i>FY 2018 Plans:</i> Continue EMD contract: fund applicable functional support agreements and MIPRs; prepare documentation and vendor for Milestone C and production, respectively.			
Accomplishments/Planned Programs Subtotals	2.830	11.642	6.568

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• R80010000: <i>Small Unit Power Increment 1</i>	25.306	30.014	-	-	-	-	-	-	-	0.000	55.320
• R08090000: <i>Integrated Soldier Power Data System - Core</i>	-	-	7.370	-	7.370	25.134	30.016	33.046	35.364	Continuing	Continuing
• R09103000: <i>Universal Battery Charger</i>	-	-	3.086	-	3.086	6.469	9.987	10.201	10.243	Continuing	Continuing
• 0604827A / Project EY2: <i>Integrated Soldier Power Data System - Core</i>	-	-	6.949	-	6.949	2.894	1.456	1.258	-	0.000	12.557
• 0604827A / Project EY4: <i>Universal Battery Charger</i>	-	-	1.731	-	1.731	1.764	1.799	1.835	1.276	Continuing	Continuing
• 0604827A / Project EY3: <i>Soldie Power Generator</i>	-	-	-	-	-	0.321	0.327	0.334	0.341	Continuing	Continuing

Remarks

D. Acquisition Strategy
Soldier and Small Unit Power

Pursue a variety of Soldier power initiatives under full and open competition. These initiatives range from Commercial-Off-The-Shelf (COTS) solutions to developmental efforts. The type of solicitation depends on the maturity of the technology. The power initiatives will be evaluated through scheduled test and evaluation events, and if

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) S65 / <i>Soldier Power</i>
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successful, selected for procurement and subsequent fielding and sustainment. The acquisition strategy varies by product. For example, the SPM acquisition strategy will consist of two phases: Phase one includes the purchase of test articles using the Defense Logistics Agency (DLA) Special Operational (Spec Ops) Equipment Tailored Logistic Support Program (TLSP). Phase two includes the procurement of additional test articles through Indefinite Delivery Indefinite Quantity (IDIQ) contracts established through the Army Contracting Command (ACC). The Project Manager office will establish IDIQ contracts to support the SUP requirements over time. Each SUP system will be procured under purchase orders for production quantities that will be awarded on a Firm Fixed Price (FFP) contract.

PEO CS/CSS Effort on the Platoon Power Generation - PM E2S2:

Full and open competitive acquisition will be conducted culminating in an award of up to two (2) Cost Plus Incentive Fee (CPIF) contracts supporting a 24 month Engineering and Manufacturing Development (EMD) phase. Two selected contractors will be awarded EMD contracts and will separately perform a 15 month effort (Phase I) to fabricate and produce the minimum order of 10 Small Unit Power Platoon Power Generation (1kW Generator) systems (5 per vendor). Phase I will be followed by a down-select evaluation to choose the manufacturer that could produce the best value system. During Phase II, selected vendor will produce 5 additional systems to undergo developmental test (DT), a logistics demonstration (LD), pre-production qualification test, and limited user / operational test (LUT/OT). Upon successful completion of these tests and completion of logistics supportability, the performance data and Soldier's feedback will be utilized in preparation for Milestone C (MS C).

E. Performance Metrics

NA

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior</i> <i>Dem/Val</i>	Project (Number/Name) S75 / <i>Ground Soldier Ensemble</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
<i>S75: Ground Soldier Ensemble</i>	-	11.963	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	11.963
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Nett Warrior (NW) Program (named in honor of Medal of Honor recipient Colonel Robert C. Nett), also known as the Ground Soldier System (GSS) Program, leverages commercial smart devices and secure Army tactical radios to provide the dismounted leader an integrated mission command and situational awareness system for use during combat operations. The NW system provides leaders electronic real-time information on friendly positions; information about enemy activity and movement; navigational data and map imagery; a collaborative planning tool; and other mission related graphics which effectively puts the power of the entire Army tactical network in the hands of the dismounted leader. The NW system also provides the same integrated mission command capability to the tactical vehicle-mounted leaders so that when dismounted, the leader still maintains the common operating picture (COP) and has continuous situational awareness. This capability provides unparalleled situational awareness and enhanced communications to the dismounted leader allowing for faster, more accurate decisions and reduced fratricide in the tactical fight. Includes integration and interface of products on Soldiers.

The continued development and integration of the NW program also integrates applications from other programs aimed at considerably reducing the weight and bulk of the dismounted Soldier's load by using a single End User Device. The NW program harnesses Soldiers' experience in combat operations and employs combat veterans for Soldier feedback enhancing human factors design and fightability of the system. This project funds the following: 1) Incorporation of additional new hardware applications and capabilities into Nett Warrior, 2) Yearly developmental and operational tests of the NW with continually advancing commercial smart device technology inserted, 3) Software development for planned updates, 4) Integration of new End User Devices with the existing and re-competed Army Tactical Radios, including vehicle power integration, 5) Government led integration and system engineering and program management, and 6) Conduct NW Operational Test and Evaluation with Mechanized and Infantry units in FY16/17.

NOTE: Beginning in FY17, funding for Nett Warrior was realigned to 0604818A (Army Tactical Command & Control Hardware & Software)/Project EQ8 (Mobile/ Handheld Computing Environment). Under this realignment Nett Warrior will continue to integrate, conduct developmental and operational test, etc. as stated above.

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

	FY 2016	FY 2017	FY 2018
Title: Test and Evaluation including twice a year Network Integration Evaluation (NIE) to gain Soldier feedback	2.596	-	-
Description: Funding is provided for the following efforts.			
FY 2016 Accomplishments: Conducted NW test and evaluation, along with 3rd party applications, for technical verification at developmental events and user verification to include new dismounted Soldier hardware and new Full and Open Competition (FOC) Rifleman Radios from PEO C3T. Supported NW as a baseline NIE and Army Warfighting Assessment (AWA) system including: Brigade level support,			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) S75 / <i>Ground Soldier Ensemble</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
equipping, training, test costs, and spares for NW; yearly Army Interoperability Certification; environmental testing; electronic warfare testing; and Information Assurance penetration prevention testing for new commercial smart devices, NW software and accessories. Tested emerging secure 4G/LTE Army tactical networks.				
<p>Title: Hardware and Software Integration and Evaluation for Capability Improvements</p> <p>Description: Funding is provided for the following efforts.</p> <p>FY 2016 Accomplishments: Integrated and evaluated emerging advanced commercial smart devices, cables, and other hardware including unmanned sensor systems for potential adoption into the NW system. Integrated new PEO C3T FOC rifleman radios with NW from the 2015 Rifleman Radio procurement contract award. Integrated 3rd party software combat applications for increased functionality to keep pace with emerging technology, lower cost and weight. Continued to integrate tactical 4G/LTE capability with NW, to include accreditation via the NSA's Commercial Solutions for Classified (CSFC) process.</p>		4.536	-	-
<p>Title: Software Development and Integration</p> <p>Description: Funding is provided for the following efforts.</p> <p>FY 2016 Accomplishments: Integrated NW capabilities, radio drivers, other Army required applications via the Nett Warrior software development kit to expand capabilities to meet Army, Special Forces and Army Mobile / Handheld Computer Environment (M/HHCE) requirements, retain interoperability certification for Army Capability Sets, information assurance accreditation, and complete required AIC testing for latest NW software baseline.</p>		2.491	-	-
<p>Title: Integration with AN/PRC-154A and Vehicle Platforms</p> <p>Description: Funding is provided for the following efforts.</p> <p>FY 2016 Accomplishments: Integrated new commercial smart devices with competitively procured FOC Rifleman Radio AN/PRC-154A Radio from PEO C3T in preparation for planned FOT&E in FY17. Conducted integration and testing of Army secure tactical 4G/LTE with NW.</p>		1.412	-	-
<p>Title: Conduct Systems Engineering and Program Management Support to Nett Warrior</p> <p>Description: Funding is provided for the following efforts.</p> <p>FY 2016 Accomplishments:</p>		0.928	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) S75 / <i>Ground Soldier Ensemble</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Conducted government systems / software engineering and program management support for NW program. Collected input from Soldiers to improve NW size, weight, power, fightability, safety and effectiveness via surveys. Managed system configuration and testing, development and integration planning, to include investigation and analysis of emerging innovative commercial technologies to lower the size, weight, power, cost and increase Nett Warrior functionality.			
Accomplishments/Planned Programs Subtotals	11.963	-	-

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPA 3, R80501: OPA 3, <i>R80501, Ground Soldier System</i>	49.798	32.419	38.219	-	38.219	38.642	39.171	37.926	41.739	Continuing	Continuing
• RDT&E, PE 0604818A EQ8: <i>RDT&E, PE 0604818A EQ8 Army Tactical Command & Control Hardware & Software</i>	-	10.563	11.850	-	11.850	11.920	12.089	12.385	12.577	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Nett Warrior (NW) program provides unparalleled situational awareness and mission command to dismounted combat leaders through a secure commercial smart device, power source, cables and tactical radio. The NW is focused on Team Leader and higher echelons and provides an integrated secure information-centric Commercial-Off-The Shelf (COTS) mobile application-based computation platform with data collection, enhanced SA, mission planning, and navigational aid functions overlaid on geo-referenced maps and high resolution imagery throughout a brigade. The NW enables real-time ground tactical-level knowledge sharing and command and control (C2), directly impacting combat effectiveness and decision-making. The NW also improves lower echelon intelligence production and analysis capabilities which are central to efficient and effective counter-insurgency warfare. NW program completed LRIP/MS C in 2012 followed by two LRIP decisions in 2013-14 in preparation for IOT&E under DOT&E oversight in 4QFY14-1QFY15. This IOT&E event led to an additional NW Low Rate Initial Production (LRIP) decision in 2015 and a Full Rate Production (FRP) Decision is planned for early FY18. Upon a successful FRP Decision, NW will complete annual production and fielding events based on yearly development, integration and testing of emerging advanced smart devices to lower cost, weigh and power. To capitalize on commercial industry's investment in advanced smart device technology as well as innovation and changes within Army, NW requires annual RDT&E funding for integration and evaluation. Through this process and at low cost, the Army is able to integrate and evaluate for combat utility the hundreds of millions spent in product development by the major commercial device manufactures.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	98.600	-	98.600	28.900	50.000	96.729	100.607	Continuing	Continuing
FE8: Vehicle Protection Suite	-	0.000	0.000	14.800	-	14.800	28.900	50.000	96.729	100.607	Continuing	Continuing
XU9: Active Protection System	-	0.000	0.000	83.800	-	83.800	0.000	0.000	0.000	0.000	0.000	83.800

Note
 Project FE8 (Vehicle Protection Suite) is a new start effort.
 Project XU9 (Active Protection System) is a continuation of efforts previously executed under PE 0203735A - Combat Vehicle Improvement Programs.

A. Mission Description and Budget Item Justification

Current ground combat vehicle platforms and Tactical Wheeled Vehicles (TWVs) within Army Brigade Combat Teams (BCTs) lack the ability to effectively detect, track, divert, disrupt, neutralize, or destroy incoming direct or indirect fired threat munitions. Current solutions to defeat these threats, Explosive Reactive Armor (ERA) and Slat armor, do not provide preemptive or active protection and impose secondary blast hazards to crew, dismounted soldiers, and adjacent vehicles and equipment. The Suite of Vehicle Protection Systems - EMD Program Element (0604852A) will develop and mature solutions to increase the protection of the Army's ground systems from both current and next generation direct or indirect fired threat munitions.

The Active Protection System Project (XU9) will install and characterize Non-Developmental Item (NDI) Active Protection Systems on Abrams, Bradley, and Stryker demonstrator vehicles. The Active Protection System effort will assess the maturity, performance, and integration risk of NDI Active Protection Systems, develop and refine Abrams, Bradley, and Stryker Active Protection System installation kit designs, and build prototypes necessary to conduct performance and safety testing to obtain an Active Protection System Urgent Materiel Release (UMR). The Active Protection System NDI effort will also serve to inform the Vehicle Protection Suite Analysis of Alternatives (AoA).

The Vehicle Protection Suite (VPS) Project (FE8) will design, mature, and evaluate combinations of active, reactive, and passive solutions and leverage both Horizontal Technology Integration (HTI) principles and the Army's Modular Active Protection System (MAPS) to develop tailored vehicle Survivability Sets that will mitigate existing protection gaps, allow for future technology insertion to meet evolving threats, and minimize the impact to the current capabilities hosted on Army ground system platforms.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0604852A / <i>Suite of Vehicle Protection Systems - EMD</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	98.600	-	98.600
Total Adjustments	0.000	0.000	98.600	-	98.600
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	0.000	0.000	98.600	-	98.600

Change Summary Explanation

FY18 Base includes the new start Vehicle Protection Suite (Project FE8) effort and the continuation of Active Protection System (APS) (Project XU9) efforts previously executed under PE 0203735A - Combat Vehicle Improvement Programs.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD				Project (Number/Name) FE8 / Vehicle Protection Suite			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FE8: <i>Vehicle Protection Suite</i>	-	0.000	0.000	14.800	-	14.800	28.900	50.000	96.729	100.607	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Vehicle Protection Suite program is a new start effort.

A. Mission Description and Budget Item Justification

Current ground combat vehicle platforms and Tactical Wheeled Vehicles (TWVs) within Army Brigade Combat Teams (BCTs) lack the ability to effectively detect, track, divert, disrupt, neutralize, or destroy incoming direct or indirect fired threat munitions. Current solutions to defeat these threats, Explosive Reactive Armor (ERA) and Slat armor, do not provide preemptive or active protection and impose secondary blast hazards to crew, dismounted soldiers, and adjacent vehicles and equipment.

Vehicle Protection Suite (VPS) will design, mature, and evaluate combinations of active, reactive, and passive solutions and leverage both Horizontal Technology Integration (HTI) principles and the Army's Modular Active Protection System (MAPS) to develop tailored vehicle Survivability Sets that will mitigate existing protection gaps, allow for future technology insertion to meet evolving threats, and minimize the impact to the current capabilities hosted on Army ground system platforms.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: MAPS Controller Characterization - Hardware and Installation	-	-	8.200	-	8.200
Description: Funding is provided for the following effort					
FY 2018 Base Plans: Installation of MAPS-enabled softkill and hardkill solutions to allow characterization of the MAPS controller to inform the VPS Analysis of Alternatives (AoA).					
Title: VPS - Analysis of Alternatives (AoA)	-	-	3.050	-	3.050
Description: Funding is provided for the following effort					
FY 2018 Base Plans: Perform Analysis of Alternatives (AoA) of both existing and developmental active, reactive, and passive protection solutions. The VPS AoA will assess the cost, maturity, complexity, performance, and physical properties of alternative survivability sets to determine the optimal application of VPS into to the Army's ground platforms.					
Title: MAPS Controller Characterization - Test and Planning Support	-	-	1.200	-	1.200

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD	Project (Number/Name) FE8 / Vehicle Protection Suite

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Funding is provided for the following effort					
FY 2018 Base Plans: Test planning support in preparation for FY19 characterization of the MAPS controller.					
Title: Vehicle Protection Suite Government Engineering and Program Management	-	-	2.350	-	2.350
Description: Funding is provided for the following effort					
FY 2018 Base Plans: Government program management support (labor, travel, training, supplies, and equipment) to support VPS program planning, to include the oversight of MAPS characterization, the VPS AoA, and preparation for source selection of vendor(s) to develop MAPS-compliant VPS survivability sets.					
Accomplishments/Planned Programs Subtotals	-	-	14.800	-	14.800

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

N/A

Remarks

D. Acquisition Strategy

In FY 2018, the VPS program will initiate characterization of the MAPS controller with both softkill and hardkill countermeasures to inform the VPS Analysis of Alternatives (AoA). The VPS AoA will assess the cost, maturity, complexity, performance and physical properties of alternative survivability sets to support a FY2019 Materiel Development Decision (MDD). Informed by the results of the MDD, Source Selection Evaluation Boards (SSEB) will be initiated in FY19 to select vendors that will mature common MAPS components and integrate tailored MAPS-compliant survivability sets onto ground combat vehicle platforms. The VPS platform integration contracts are planned for award in the first quarter of FY 2020.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604852A / Suite of Vehicle Protection Systems - EMD				FE8 / Vehicle Protection Suite							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Vehicle Protection Suite Program Management	MIPR	TACOM Warren, Michigan : Various	0.000	-		-		2.350	Oct 2017	-		2.350	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		2.350		-		2.350	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MAPS-enabled softkill/hardkill hardware and installation	MIPR	Various TACOM Warren : Warren, MI	0.000	-		-		5.075	Nov 2017	-		5.075	Continuing	Continuing	Continuing
Contractor technical support of MAPS-enabled softkill/hardkill installation	TBD	Various : Various	0.000	-		-		3.125	Nov 2017	-		3.125	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		8.200		-		8.200	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Vehicle Protection Suite Analysis of Alternatives (AoA)	MIPR	Various : TACOM Warren Michigan	0.000	-		-		3.050	Jan 2018	-		3.050	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		3.050		-		3.050	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017				
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)						
2040 / 5						PE 0604852A / Suite of Vehicle Protection Systems - EMD				FE8 / Vehicle Protection Suite						
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
MAPS-enabled softkill/ hardkill characterization planning	MIPR	Various : TACOM Warren, MI	0.000	-		-		1.200	Aug 2018	-		1.200	Continuing	Continuing	Continuing	
Subtotal			0.000	-		-		1.200		-		1.200	-	-	-	
Project Cost Totals			0.000	-		0.000		14.800		-		14.800	-	-	-	
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD	Project (Number/Name) FE8 / Vehicle Protection Suite
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Characterization of MAPS with Softkill/Hardkill Solutions									MAPS characterization																							
Vehicle Protection Suite (VPS) Analysis of Alternatives (AoA)									VPS Analysis of Alternatives																							
Vehicle Protection Suite (VPS) Source Selection Evaluation Boards (SS																	VPS SSEBs															
(1) Vehicle Protection Suite (VPS) Milestone B																					▲ 1 VPS MSB											
(2) Vehicle Protection Suite (VPS) Development Contract Awards																					▲ 2 VPS Development Contract Awards											
Vehicle Protection Suite (VPS) MAPS Development/Maturation																					VPS MAPS Development/Maturation											
Vehicle Protection Suite (VPS) Platform Integration																									VPS Platform Integration							

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604852A / <i>Suite of Vehicle Protection Systems - EMD</i>	Project (Number/Name) FE8 / <i>Vehicle Protection Suite</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Characterization of MAPS with Softkill/Hardkill Solutions	1	2018	3	2019
Vehicle Protection Suite (VPS) Analysis of Alternatives (AoA)	2	2018	2	2019
Vehicle Protection Suite (VPS) Source Selection Evaluation Boards (SSEB)	2	2019	4	2019
Vehicle Protection Suite (VPS) Milestone B	4	2019	4	2019
Vehicle Protection Suite (VPS) Development Contract Awards	1	2020	1	2020
Vehicle Protection Suite (VPS) MAPS Development/Maturation	1	2020	1	2021
Vehicle Protection Suite (VPS) Platform Integration	1	2020	4	2025

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD				Project (Number/Name) XU9 / Active Protection System			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
XU9: Active Protection System	-	0.000	0.000	83.800	-	83.800	0.000	0.000	0.000	0.000	0.000	83.800
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project XU9 (Active Protection System) is a continuation of efforts previously executed under PE 0203735A - Combat Vehicle Improvement Programs.

A. Mission Description and Budget Item Justification

The Active Protection System effort will install and characterize Non-Developmental Item (NDI) Active Protection Systems on Abrams, Bradley, and Stryker demonstrator vehicles. The Active Protection System effort will assess the maturity, performance, and integration risk of NDI Active Protection Systems, develop and refine Abrams, Bradley, and Stryker Active Protection System installation kit designs, and build prototypes necessary to conduct performance and safety testing to obtain an Active Protection System Urgent Materiel Release (UMR). The Active Protection System NDI effort will also serve to inform the Vehicle Protection Suite Analysis of Alternatives (AoA).

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Active Protection System Installation Kit Refinement and System Test - Abrams	-	-	36.800	-	36.800
Description: Funding is provided for the following effort					
FY 2018 Base Plans: Engineering, logistics, and program management to mature the Abrams Active Protection System (APS) integration kit design, build Abrams APS prototypes, and execute system performance and safety testing necessary to obtain an Abrams APS Urgent Materiel Release (UMR).					
Title: Active Protection System Installation Kit Refinement and System Test - Bradley	-	-	30.000	-	30.000
Description: Funding is provided for the following effort					
FY 2018 Base Plans: Engineering, logistics, and program management to mature the Bradley Active Protection System (APS) integration kit design, develop software releases across Bradley vehicle variants to operate the APS, and execute contractor testing of the Vehicle Software Version Updates prior to the execution of system performance and safety testing necessary to obtain a Bradley APS Urgent Materiel Release (UMR).					
Title: Active Protection System Installation Kit Refinement and System Test - Stryker	-	-	17.000	-	17.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD	Project (Number/Name) XU9 / Active Protection System

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Funding is provided for the following effort					
FY 2018 Base Plans: Engineering, logistics, and program management to mature the Stryker Active Protection System (APS) integration kit design, build Stryker APS prototypes, and execute system performance and safety testing necessary to obtain a Stryker APS Urgent Materiel Release (UMR).					
Accomplishments/Planned Programs Subtotals	-	-	83.800	-	83.800

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• GA0700: Abrams Tank (MOD)	430.939	480.166	248.826	138.700	387.526	238.500	272.200	280.467	275.000	Continuing	Continuing
• GZ2400: Bradley Program (MOD)	210.042	490.033	444.851	30.000	474.851	333.000	403.872	417.000	431.946	Continuing	Continuing

Remarks
FY18 OCO funding in GA0700 and GZ2400 supports the procurement of Non-Development Item (NDI) Active Protection Systems (APS) for installation onto Abrams and Bradley vehicles.

D. Acquisition Strategy
The Active Protection System Project (XU9) is a continuation of efforts previously executed under PE 0203735A - Combat Vehicle Improvement Programs.

The Active Protection System (APS) installation and characterization effort will evaluate platform (Abrams, Bradley, Stryker) performance with an Non-Developmental Item (NDI) APS solution installed. Platform performance evaluation includes APS sensor assessments, minimum live threat characterization, surface danger zone characterization, co-site mitigation (antennas/radiators), electromagnetic interference assessment/characterization, energetic radiation assessment, and a durability assessment. The NDI APS installation and characterization is being executed through a partnership between the US Army, NDI APS solution vendors, and prime contractors for Abrams, Bradley, and Stryker vehicles. NDI APS vendor support, to include procurement of demonstration hardware, is contracted on a Firm-Fixed Price (FFP) basis, while platform prime contractor technical support is provided on a Cost Plus Fixed-Fee (CPFF) basis. The results from the installation and characterization effort will inform FY17 and FY18 decisions to pursue the additional prototyping and testing necessary to obtain Urgent Materiel Releases (UMR) for NDI APS systems.

E. Performance Metrics
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD	Project (Number/Name) XU9 / Active Protection System
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Active Protection System (APS) Installation Kit Development and Prototype Build - Abrams	SS/ Various	US Army TARDEC; Rafael Advanced Defense Systems; General Dynamics Land Systems (GDLS) : Warren, MI	0.000	-		-		23.881	Oct 2017	-		23.881	0.000	23.881	0.000
Active Protection System (APS) Installation Kit Development and Prototype Build - Bradley	SS/ Various	US Army TARDEC; Israeli Military Industries (IMI); BAE Systems : Warren, MI	0.000	-		-		28.948	Jan 2018	-		28.948	0.000	28.948	0.000
Active Protection System (APS) Installation Kit Development and Prototype Build - Stryker	SS/ Various	US Army TARDEC; Artis, LLC.; General Dynamics Land Systems (GDLS) : Warren, MI	0.000	-		-		5.183	Jan 2018	-		5.183	0.000	5.183	0.000
Subtotal			0.000	-		-		58.012		-		58.012	0.000	58.012	0.000

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (PMO) Support	MIPR	PEO Ground Combat Systems : Warren, MI	0.000	-		-		3.223	Oct 2017	-		3.223	0.000	3.223	0.000
Subtotal			0.000	-		-		3.223		-		3.223	0.000	3.223	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD	Project (Number/Name) XU9 / Active Protection System
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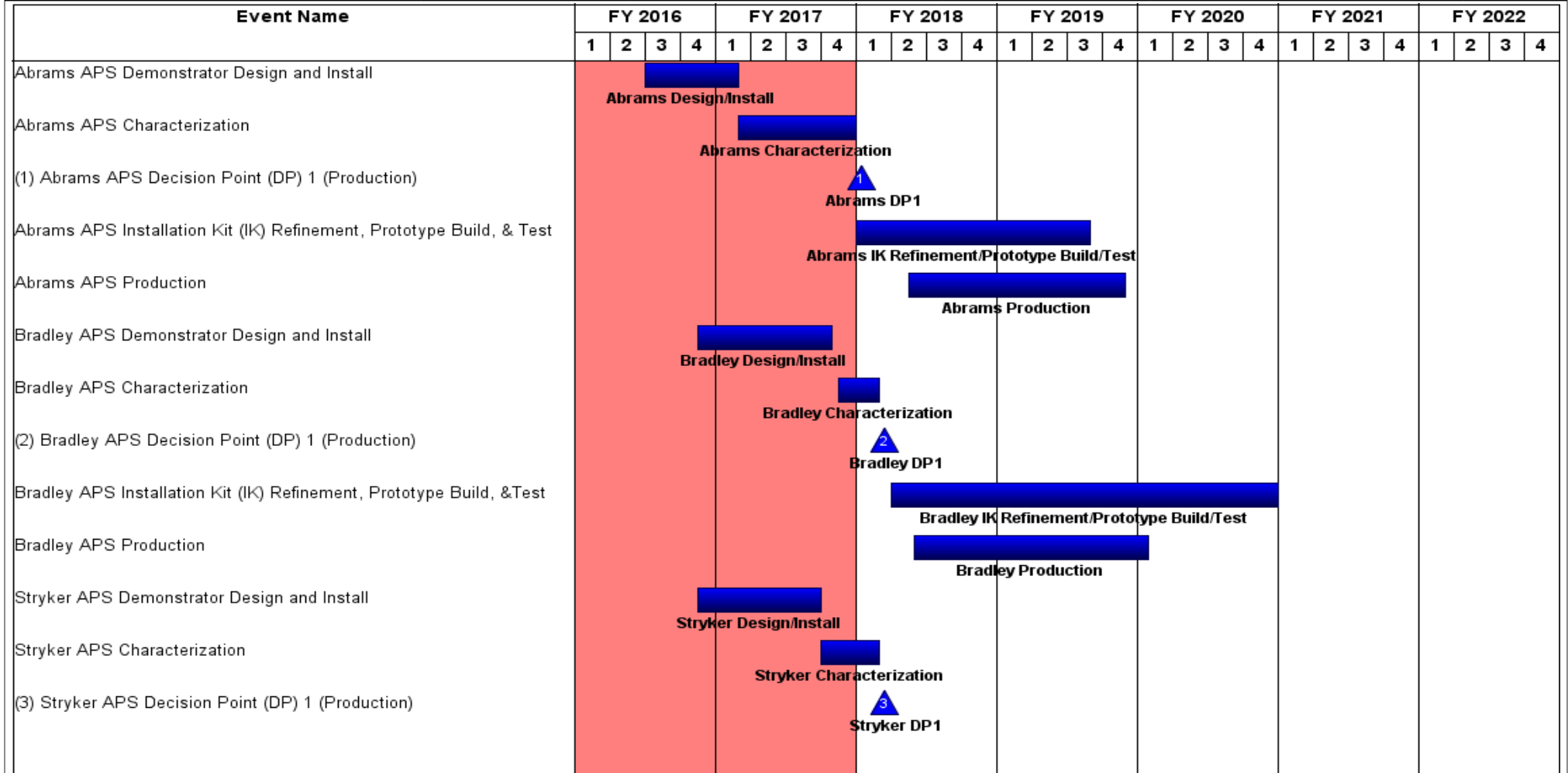
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Government Testing - Abrams Active Protection System (APS)	MIPR	Various : Army Test Centers	0.000	-		-		11.464	Jan 2018	-		11.464	0.000	11.464	0.000	
Government Testing - Stryker Active Protection System (APS)	MIPR	Various : Army Test Centers	0.000	-		-		11.101	Mar 2018	-		11.101	0.000	11.101	0.000	
Subtotal			0.000	-		-		22.565		-		22.565	0.000	22.565	0.000	
Project Cost Totals			0.000	-		0.000		83.800		-		83.800	0.000	83.800	0.000	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD	Project (Number/Name) XU9 / Active Protection System
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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD	Project (Number/Name) XU9 / Active Protection System
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Stryker APS Installation Kit (IK) Refinement, Prototype Build, & Test									Stryker IK Refinement/Prototype Build/Test				Stryker Production															
Stryker APS Production																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604852A / Suite of Vehicle Protection Systems - EMD	Project (Number/Name) XU9 / Active Protection System

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Abrams APS Demonstrator Design and Install	3	2016	1	2017
Abrams APS Characterization	1	2017	4	2017
Abrams APS Decision Point (DP) 1 (Production)	1	2018	1	2018
Abrams APS Installation Kit (IK) Refinement, Prototype Build, & Test	1	2018	3	2019
Abrams APS Production	2	2018	4	2019
Bradley APS Demonstrator Design and Install	4	2016	4	2017
Bradley APS Characterization	4	2017	1	2018
Bradley APS Decision Point (DP) 1 (Production)	1	2018	1	2018
Bradley APS Installation Kit (IK) Refinement, Prototype Build, & Test	2	2018	4	2020
Bradley APS Production	2	2018	1	2020
Stryker APS Demonstrator Design and Install	4	2016	3	2017
Stryker APS Characterization	4	2017	1	2018
Stryker APS Decision Point (DP) 1 (Production)	1	2018	1	2018
Stryker APS Installation Kit (IK) Refinement, Prototype Build, & Test	2	2018	4	2018
Stryker APS Production	2	2019	1	2020

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604854A / <i>Artillery Systems - EMD</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	2.251	4.506	1.972	-	1.972	2.312	7.097	8.835	9.185	Continuing	Continuing
509: <i>LIGHTWEIGHT 155M HOWITZER</i>	-	2.251	4.506	1.972	-	1.972	2.312	7.097	8.835	9.185	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Lightweight 155mm Howitzer (LW155), also known as the M777A2, provides direct, reinforcing, general support fires to maneuver forces and direct support artillery. It replaces all howitzers in all missions in the USMC and replaces the M198 howitzer as the general support artillery for light forces in the Army. The LW155 fires unassisted projectiles to a range of 15 miles and assisted projectiles to 19 miles. The addition of the digital fire control system enables the weapon to program and fire the improved Excalibur precision-guided munitions to ranges in excess of 25 miles with better than 10-meter Circular Error Probable (CEP) accuracy. The LW155 is the first ground combat system whose major structures are made of high strength titanium alloy and the system makes extensive use of hydraulics to operate the breech, load tray, recoil and wheel arms. The combination of titanium structures and the use of hydraulic systems resulted in a significant weight savings of 7000 lbs over the M198 system. Compared to the M198, the LW155 emplaces three-times faster and displaces four-times faster. It traverses 32 percent more terrain worldwide and is 70 percent more survivable than the M198. It is a successful joint service program between the Marine Corps and Army working together to develop, produce, field, and sustain the howitzer. The LW155 was first introduced into the Marine Corps in April 2005 and the Marines have now fielded the howitzer to all active units. The Army has fielded the howitzer to its Stryker Brigade Combat teams (SBCT), Fires Brigades and National Guard. Fielding of the Infantry Brigade Combat Teams (IBCT) commenced in FY14 and will continue through 2018. The LW155 saw extensive action in Afghanistan, receiving high marks for its performance. Having now been in the field for over 10 years, the howitzer will be going through obsolescent replacement of electronic components in its digital fire control system.

Funding supports engineering studies for capabilities identified in the Joint U.S. Army, U.S. Marine Corps Operational Requirements Document (JORD) for the Advanced Towed Cannon System but deferred during Engineering Manufacturing and Development due to technology maturity, cost and schedule as well as government sustainment activities requiring RDTE. This includes a digital direct fire sight for the Digital Fire Control System; low temperature, high density power solutions; and electric elevation drives and auto loader to achieve full operational requirements. Efforts in FY2015-FY2018 center on researching technical solutions while efforts in FY2019-FY2022 will involve developing technology demonstrator prototypes.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0604854A / <i>Artillery Systems - EMD</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	1.953	1.756	1.800	-	1.800
Current President's Budget	2.251	4.506	1.972	-	1.972
Total Adjustments	0.298	2.750	0.172	-	0.172
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.298	0.000	0.172	-	0.172
• FY17 Amendment	0.000	2.750	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604854A / <i>Artillery Systems - EMD</i>				Project (Number/Name) 509 / <i>LIGHTWEIGHT 155M HOWITZER</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
509: <i>LIGHTWEIGHT 155M HOWITZER</i>	-	2.251	4.506	1.972	-	1.972	2.312	7.097	8.835	9.185	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Lightweight 155mm (LW155) Towed Howitzer is a jointly managed program with the Marine Corps.

A. Mission Description and Budget Item Justification

The Lightweight 155mm Howitzer (LW155), also known as the M777A2, provides direct, reinforcing, general support fires to maneuver forces and direct support artillery. It replaces all howitzers in all missions in the USMC and replaces the M198 howitzer as the general support artillery for light forces in the Army. The LW155 fires unassisted projectiles to a range of 15 miles and assisted projectiles to 19 miles. The addition of the digital fire control system enables the weapon to program and fire the improved Excalibur precision-guided munitions to ranges in excess of 25 miles with better than 10-meter Circular Error Probable (CEP) accuracy. The LW155 is the first ground combat system whose major structures are made of high strength titanium alloy and the system makes extensive use of hydraulics to operate the breech, load tray, recoil and wheel arms. The combination of titanium structures and the use of hydraulic systems resulted in a significant weight savings of 7000 lbs over the M198 system. Compared to the M198, the LW155 emplaces three-times faster and displaces four-times faster. It traverses 32 percent more terrain worldwide and is 70 percent more survivable than the M198. It is a successful joint service program between the Marine Corps and Army working together to develop, produce, field, and sustain the howitzer. The LW155 was first introduced into the Marine Corps in April 2005 and the Marines have now fielded the howitzer to all active units. The Army has fielded the howitzer to its Stryker Brigade Combat teams (SBCT), Fires Brigades and National Guard. Fielding of the Infantry Brigade Combat Teams (IBCT) commenced in FY14 and will continue through 2018. The LW155 has seen extensive action in Afghanistan, receiving high marks for its performance. Having now been in the field for over 10 years, the howitzer will be going through obsolescent replacement of electronic components in its digital fire control system.

Funding supports engineering studies for capabilities identified in the Joint U.S. Army, U.S. Marine Corps Operational Requirements Document (JORD) for the Advanced Towed Cannon System but deferred during Engineering Manufacturing and Development due to technology maturity, cost and schedule as well as government sustainment activities requiring RDTE. This includes a digital direct fire sight for the Digital Fire Control System; low temperature, high density power solutions; electric elevation drives and auto loader to achieve full operational requirements; and extended range and mobility concepts. Efforts in FY2018 through FY2019 will continue to support XM907 Common Cannon Assembly support; objective M777ER design, analysis, and drawings; and M777ER component fabrication. Funding in FY2019 through FY2020 will support component integration and engineering tests. FY2021 will support completion of the demonstrator and system demonstration testing.

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

	FY 2016	FY 2017	FY 2018
Title: Management Services	0.197	0.199	0.204
Description: Funding supports management services within the Program Management Office, Towed Artillery Systems			
FY 2016 Accomplishments:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604854A / <i>Artillery Systems - EMD</i>	Project (Number/Name) 509 / <i>LIGHTWEIGHT 155M HOWITZER</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
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<p>Funding supported management and coordination with the Armaments Research Development and Engineering Center to conduct modeling, simulation, analysis and trade studies to characterize the M777A2 for performance improvements. The data generated from these efforts will be used to establish a database to support future technology demonstrations focused on achieving current JORD objective capabilities as well as Force 2025 and Beyond Initiatives.</p> <p>FY 2017 Plans: Funding supports management and coordination with the Armaments Research Development and Engineering Center to conduct modeling, simulation, analysis and trade studies to characterize the M777A2 for performance improvements. The data generated from these efforts will be used to establish a database to support future technology demonstrations focused on achieving current JORD objective capabilities as well as Force 2025 and Beyond Initiatives.</p> <p>FY 2018 Plans: Funding will support management and coordination with the Armaments Research Development and Engineering Center to conduct modeling, simulation, analysis and trade studies to characterize the M777A2 for performance improvements. The data generated from these efforts will be used to establish a database to support future technology demonstrations focused on achieving current JORD objective capabilities as well as Force 2025 and Beyond Initiatives.</p>			
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Title: Product Development	2.054	4.307	1.768
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Description: Funds engineering support from the Armaments Research Development and Engineering Center

<p>FY 2016 Accomplishments: Funding supported continued modeling, simulation, and analysis to characterize the objective M777A2 extended range design, analysis, and drawings. Continued XM907 common cannon assembly support and objective M777ER Design, Analysis, and drawings.</p> <p>FY 2017 Plans: Funding supports continued modeling, simulation, and analysis to characterize the objective M777A2 extended range design, analysis, and drawings. Continues XM907 common cannon assembly support. Funding also supports the design and analysis of items such as the muzzle brake, slide block breech, and upper carriage for integration into the M777ER.</p> <p>FY 2018 Plans: Funding will support continued modeling, simulation, and analysis to characterize the objective M777A2 extended range design, analysis, and drawings. Continues XM907 common cannon assembly support and will provide for fabrication of cannon integration components.</p>			
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Accomplishments/Planned Programs Subtotals	2.251	4.506	1.972
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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604854A / <i>Artillery Systems - EMD</i>	Project (Number/Name) 509 / <i>LIGHTWEIGHT 155M HOWITZER</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• M777 Mods: <i>M777 Mods - Modification of Weapons and Other Combat Vehicles SSN GZ1700</i>	10.070	33.600	3.985	-	3.985	3.973	3.201	13.290	18.906	Continuing	Continuing

Remarks

Procurement Funding supports active retrofits and hardware refresh for previously contracted Digital Fire Control System components, addressing obsolescence. FY21 and FY22 funding procures integration and mounting hardware for new system radio and Global Positioning System antennae.

D. Acquisition Strategy

This is a collaborative effort between the Program Management Office, Towed Artillery Systems, and the Armaments Research Development and Engineering Center at Picatinny Arsenal.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	48.028	74.236	81.776	-	81.776	116.915	99.026	79.008	74.120	Continuing	Continuing
099: <i>Army Human Resource System</i>	-	1.603	5.180	16.607	-	16.607	4.050	0.315	1.321	1.171	Continuing	Continuing
184: <i>Installation Support Modules</i>	-	0.871	1.254	1.520	-	1.520	1.521	1.520	1.428	1.293	Continuing	Continuing
193: <i>Medical Communications For Combat Casualty</i>	-	1.380	1.207	0.390	-	0.390	0.000	2.390	1.551	0.000	0.000	6.918
738: <i>AcqBiz</i>	-	8.313	8.737	9.118	-	9.118	43.782	35.240	23.232	20.100	Continuing	Continuing
FE9: <i>ALTESS (P&R Forms)</i>	-	0.000	0.000	0.110	-	0.110	0.120	0.120	0.120	0.130	Continuing	Continuing
T04: <i>USMEPCOM TRANSFORMTION - IT MODERNIZATION</i>	-	11.733	29.281	11.217	-	11.217	30.030	23.712	8.311	8.391	Continuing	Continuing
T05: <i>Army Business System Modernization Initiatives</i>	-	24.128	28.577	39.216	-	39.216	34.385	32.630	39.883	39.775	Continuing	Continuing
VR3: <i>ASMIS-R (REPORTIT)</i>	-	0.000	0.000	3.598	-	3.598	3.027	3.099	3.162	3.260	0.000	16.146

Note

Army Safety Management Information System - Revised (ASMIS-R) funding was realigned from PE 0605013, Project T05 to PE 0605013, Project VR3 for greater transparency in FY 2018.
 ALTESS (P&R Forms) funding was realigned from PE 0605013, Project 738 to PE 0605013, Project FE9 for greater transparency in FY2018.

A. Mission Description and Budget Item Justification

This program supports efforts to plan, design, develop, and test information technology solutions to fulfill the Army's Warfighter Support Mission and accommodate changing Army requirements while fulfilling future Army needs. Provides for development and acquisition of Combat Service Support (CSS) and business information technology solutions to help arm, sustain, fix, move, train and man the force. Completed development/acquisition efforts will also enhance sustaining base functions and power projection capabilities and facilitate global messaging and electronic data interchange (EDI). Ongoing development efforts support multiple functional areas including logistics, personnel, transportation, training, medical/health protection, and the sustaining base.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0605013A / <i>Information Technology Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	60.358	74.236	76.906	-	76.906
Current President's Budget	48.028	74.236	81.776	-	81.776
Total Adjustments	-12.330	0.000	4.870	-	4.870
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.331	-			
• Other Adjustments 2	-9.999	0.000	1.272	-	1.272
• Other Adjustments 3	0.000	0.000	3.598	-	3.598

Change Summary Explanation

FY 2016 funding adjustment in the amount of (2.331) reflects transfer to SBIR/STTR.

FY 2016 funding adjustment in the amount of (9.999) reflects Below Threshold Reprogramming in support of higher priority Army requirement.

FY 2018 additional funding in the amount of \$3.598 million supports Project VR3 ASMIS-R (REPORTIT) and additional \$1.272 million supports increased Army priorities and inflation among all projects.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>				Project (Number/Name) 099 / <i>Army Human Resource System</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
099: <i>Army Human Resource System</i>	-	1.603	5.180	16.607	-	16.607	4.050	0.315	1.321	1.171	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2018 Base funding in the amount 16.607 million in support of Army Human Resource Systems (AHRS) continues to provide the Warfighter with state of art standardized systems that assist the Combatant Commander sustain, train, equip, deploy and account for personnel in and out of Theater. Systems include the emerging Commanders' Risk Reduction Dashboard, Deployed Theater Accountability System, Range Facility Maintenance Support System and the electronic Military Personnel System.

A. Mission Description and Budget Item Justification

This project funds the Personnel Transformation - Enterprise Service Bus and GoArmyEd.

- Personnel Transformation (PT) - Enterprise Service Bus (ESB) - The Army's Enterprise Service Bus (ESB) provides a data integration service in which data can be extracted from the legacy human resource systems and transferred to DIMHRS. The ESB will be a middleware application which will provide a single interface to and from DIMHRS from the Army Legacy Systems. The ESB will provide the infrastructure for the integration of new and existing applications by allowing systems and applications to easily exchange information across different environments and platforms. It will also form the information bridge between IPPS-A, the Army Legacy Systems, and external systems to create more streamlined systems in support of the military mission and personnel transformation goals.

- GoArmyEd is an Army Continuing Education System (ACES) program that provides the virtual gateway for soldiers to request Tuition Assistance (TA) and Department of the Army (DA) civilians to request training funds online, anytime for classroom, distance learning, and online college courses. GoArmyEd is a dynamic online portal that automates many of the paper-based processes historically conducted in-person at Army Education Centers. GoArmyEd includes automated registration tools that enforce TA policies and procedures. GoArmyEd is used by authorized users to pursue their post secondary educational goals: Army Education Counselors to provide educational guidance; CPMS and TMs to manage civilian training and Colleges to deliver degree and course offerings and to report user progress.

Modernization initiatives address continued improvements related to the integration of new users and decreasing reliance on the help desk. GoArmyEd is the Army's enterprise education solution. GoArmyEd has integrated the Reserve Component (USAR and National Guard) and the Department of the Army Civilians. In addition, GoArmyEd is working to add a new data warehouse for HQ data retrieval and user self help tools. Education benefits are paramount to recruiting and retention of quality Soldiers, Civilians and Families.

FY 2018 Base funding in the amount 16.607 million in support of Army Human Resource Systems (AHRS) continues to provide the Warfighter with state of art standardized systems that assist the Combatant Commander sustain, train, equip, deploy and account for personnel in and out of Theater. Systems include the emerging Commanders' Risk Reduction Dashboard, Deployed Theater Accountability System, Range Facility Maintenance Support System and the electronic Military Personnel System.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 099 / <i>Army Human Resource System</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Title: Army Human Resource System (AHRIS)</p> <p>Description: Funding will support continued enhancement/automation of the software functionality.</p> <p>FY 2016 Accomplishments: GoArmy Ed will add functionality, continue automation of manual business processes, and add a virtual self help tool.</p> <p>FY 2018 Plans: GoArmy Ed will add functionality, continue automation of manual business processes, and add a virtual self help tool, data hosting of GoArmy Ed at HRC.</p>		0.289	-	1.730
<p>Title: Commanders Risk Reduction Dashboard (CRRD)</p> <p>Description: Commanders Risk Reduction Dashboard will consolidate information from multiple Army databases and present to commanders a concise report about which soldiers in their units have been involved with at-risk behaviors, some of which may be associated with suicide, and when those instances occurred.</p> <p>FY 2017 Plans: Commanders Risk Reduction Dashboard will consolidate information from multiple Army databases and present to commanders a concise report about which soldiers in their units have been involved with at-risk behaviors, some of which may be associated with suicide, and when those instances occurred.</p> <p>FY 2018 Plans: During FY 2018 CRRD will complete development, conduct developmental testing, user experience experiments, system integration testing, performance testing, operational testing, interoperability certification testing, and cybersecurity testing and accreditation.</p>		-	4.676	3.320
<p>Title: VACE</p> <p>Description: VACE</p> <p>FY 2016 Accomplishments: blank</p> <p>FY 2017 Plans: VACE</p> <p>FY 2018 Plans:</p>		1.314	0.504	11.557

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 099 / <i>Army Human Resource System</i>

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

Funding will initiate the modernization/development and data hosting of Go Army Ed at Human Resources Command (HRC). Obtain a flexible, real-time system that is adaptable and responsive to the Army's financial assistance needs, i.e., TA Program, funding for civilian training and education, and SROTC Scholarship Program to replace the current 16-year old GoArmyEd system. The software and platforms upon which GoArmyEd was built in 2000, have been outmoded by present day software and platforms offering efficiency, agility, and configurability that should be used to update GoArmyEd. These improvements will enable expeditious modifications to the system to accommodate changes in the operating environment that ensure the post-secondary education needs and professional development of all eligible Army personnel are met. The Army needs a system that is flexible, responsive to changes in policy, and requires fewer manual fixes than the current 16-year old GoArmyEd system provides.	FY 2016	FY 2017	FY 2018		
	Accomplishments/Planned Programs Subtotals			1.603	5.180

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• GCSS-A Inc 1: SSN W00800	143.262	152.965	30.637	-	30.637	2.394	2.316	0.069	0.025	Continuing	Continuing

Remarks

D. Acquisition Strategy

GoArmyEd - The program manager makes extensive use of Integrated Product Teams (IPTs). Sub-elements of the acquisition (engineering and design, logistics planning, testing, etc.) are intensively managed by integrated teams of government and contractor personnel. Task performance is tracked against the Work Breakdown Structure (WBS) and resources allocated to each task are adjusted based on performance against the WBS. GoArmyEd contractual efforts are acquired on a firm fixed price basis on existing contractual vehicles.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 099 / <i>Army Human Resource System</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	C/FFP	Acquisition Contract Center : Rock Island, II	1.519	-		-		-		-		-	0.000	1.519	0.000
Subtotal			1.519	-		-		-		-		-	0.000	1.519	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AHRS - ECPs/SCPs/ICPs	C/FFP	Hewlett Packard : various	89.251	-		-		-		-		-	0.000	89.251	0.000
AHRS - Software Development	C/FFP	Hewlett Packard : various	51.723	-		-		-		-		-	0.000	51.723	0.000
GoArmyEd	C/FFP	IBM : Various	6.959	0.289		0.504		-		-		-	Continuing	Continuing	0.000
CRRD	C/FFP	PEO EIS : FT Belvoir VA	0.000	1.314		4.676		16.607		-		16.607	0.000	22.597	0.000
Subtotal			147.933	1.603		5.180		16.607		-		16.607	-	-	0.000

Remarks
 AHRS Software Development contract for CRRD FY17 is TBD; estimated value is \$4.900 million, contract method is Firm Fixed Price (FFP). Commanders Risk Reduction Dashboard will consolidate information from multiple Army databases and present to commanders a concise report about which soldiers in their units have been involved with at-risk behaviors, some of which may be associated with suicide, and when those instances occurred.

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		149.452	1.603	5.180	16.607	16.607	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 099 / <i>Army Human Resource System</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GoArmyEd Support/Enhancements																												
Commanders Risk Reduction Dashboard (CRRD) Enhancements																												
Commanders Risk Reduction Dashboard (CRRD) Development																												
					Develop CRRD																							

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 099 / <i>Army Human Resource System</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GoArmyEd Support/Enhancements	1	2013	4	2017
Commanders Risk Reduction Dashboard (CRRD) Enhancements	1	2019	4	2025
Commanders Risk Reduction Dashboard (CRRD) Development	3	2015	4	2018

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>				Project (Number/Name) 184 / <i>Installation Support Modules</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
184: <i>Installation Support Modules</i>	-	0.871	1.254	1.520	-	1.520	1.521	1.520	1.428	1.293	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2018 Base funding in the amount of 1.520 million will continue to facilitate Coalition Force interoperability research and development Coalition Warfighter Interoperability Demonstration (CWID) and will continue development of the Army Behavioral Health Integrated Data Environment (ABHIDE) system.

A. Mission Description and Budget Item Justification

Installation Support Modules (ISM) consists of four standardized, web based, custom-developed enterprise wide applications that integrate essential installation business practices and processes throughout the Army, to meet Army Force Generation (ARFORGEN) Brigade Combat Team readiness and deployment requirements. Three modules support human resources business functions (In/Out-Processing, Transition Processing, and Personnel Locator); the fourth module, Central Issue Facility (CIF) supports management of over \$9 billion combatant Organizational Clothing and Individual Equipment inventory. The web server architecture is fully internet protocol capable and allows soldiers ready access to their records and commanders and logisticians access to information affecting readiness of combat organizations.

Coalition Warfighter Interoperability Demonstration (CWID) is a mandated Joint program that requires participation by the US Army to explore near-term technologies that support Joint and Coalition Warfare Interoperability. Funding is to facilitate Coalition Force interoperability research and development and to comply with CJCSI 6230.2 date 30 April 05.

Army Behavioral Health Integrated Data Environment (ABHIDE) will be the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) Suicide Registry. Data relating to suicides and suicide attempts are collected and stored in disparate, non-related databases that cross the domains of medical, personnel and law enforcement. ABHIDE will provide the capability of integrating the non-related and dispersed data from the separate sources into a single comprehensive database to support both retrospective and predictive analysis. The information obtained will be used to conduct epidemiological surveillance, identify trends in behavior patterns and identify potential indicators for suicidal tendencies supporting the mitigation of future suicide attempts across all phases of Army service.

ISM Core funding is essential for supporting demands to research and develop improved systems to provide for soldier safety and inventory reduction without risking readiness. Funding supports research and development to comply with Department of Defense Instruction 8320.4 Serialized Item Management. Applications to use commercial off the shelf wireless bar code equipment to ensure inventory accuracy throughout 154 warehouses in worldwide locations potentially reduces operating costs by \$500.0 million.

FY 2018 Base funding in the amount of 1.520 million will continue to facilitate Coalition Force interoperability research and development Coalition Warfighter Interoperability Demonstration (CWID) and will continue development of the Army Behavioral Health Integrated Data Environment (ABHIDE) system.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 184 / <i>Installation Support Modules</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Title: Army Behavioral Health Integrated Data Environment</p> <p>Description: Army Behavioral Health Integrated Data Environment (ABHIDE) will be the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) Suicide Registry.</p> <p>FY 2016 Accomplishments: Army Behavioral Health Integrated Data Environment (ABHIDE) will be the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) Suicide Registry. Data relating to suicides and suicide attempts are collected and stored in disparate, non-related databases that cross the domains of medical, personnel and law enforcement. ABHIDE will provide the capability of integrating the non-related and dispersed data from the separate sources into a single comprehensive database to support both retrospective and predictive analysis. The information obtained will be used to conduct epidemiological surveillance, identify trends in behavior patterns and identify potential indicators for suicidal tendencies supporting the mitigation of future suicide attempts across all phases of Army service.</p> <p>FY 2017 Plans: Army Behavioral Health Integrated Data Environment (ABHIDE) will be the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) Suicide Registry. Data relating to suicides and suicides attempts are collected and stored in a in disparate, non-related databases that cross the domains of medical, personnel and law enforcement. ABHIDE will provide the capability of integrating the non-related and dispersed data from the separate sources into a single comprehensive database to support both retrospective and predictive analysis. The information obtained will be used to conduct epidemiological surveillance, identify trends in behavior patterns and identify potential indicators for suicidal tendencies supporting the mitigation of future suicide attempts across all phases of Army service.</p> <p>FY 2018 Plans: Army Behavioral Health Integrated Data Environment (ABHIDE) will be the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) Suicide Registry. Data relating to suicides and suicides attempts are collected and stored in a in disparate, non-related databases that cross the domains of medical, personnel and law enforcement. ABHIDE will provide the capability of integrating the non-related and dispersed data from the separate sources into a single comprehensive database to support both retrospective and predictive analysis. The information obtained will be used to conduct epidemiological surveillance, identify trends in behavior patterns and identify potential indicators for suicidal tendencies supporting the mitigation of future suicide attempts across all phases of Army service.</p>		0.871	1.254	1.520
Accomplishments/Planned Programs Subtotals		0.871	1.254	1.520

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 184 / <i>Installation Support Modules</i>

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• BE4162: <i>MACOM AUTOMATION SYSTEMS (BE4162)</i>	31.967	57.427	43.069	-	43.069	70.067	119.465	78.315	101.288	Continuing	Continuing

Remarks

D. Acquisition Strategy

Installation Support Modules is in Post Deployment Software Support (PDSS). The present concept calls for the use of full and open competition to implement enhancements as defined by the Functional Proponent, Army Chief Information Officer (CIO)/G-6. Current emphasis is to bring the ISM systems to functional readiness for transfer to an Army Data Center and virtualize the ISM systems.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>				Project (Number/Name) 193 / <i>Medical Communications For Combat Casualty</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
193: <i>Medical Communications For Combat Casualty</i>	-	1.380	1.207	0.390	-	0.390	0.000	2.390	1.551	0.000	0.000	6.918
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2018 Base funding in the amount of \$.390 million will be used for the engineering effort required to evaluate initiatives that improve the performance of the Defense Health Medical Systems (DHMS) Theater Medical Information Program-Joint (TMIP-J) software on the Army platform, as well as the engineering effort for other Army unique capabilities. Activities include:

- Research of technologies to integrate software into Army future information infrastructure and meet common operating environment requirements
- Evaluation of hardware technology obsolescence and solutions

A. Mission Description and Budget Item Justification

The Medical Communications for Combat Casualty Care (MC4) System interfaces Force Health Protection and medical surveillance information with Army Mission Command information technology systems. The MC4 System fulfills the requirements highlighted in United States Code: Title 10, Subtitle A, Part II, Chapter 55, Section 1074f, mandating the proper documentation of deployed Service members' medical treatment to include pre- and post-deployment screening and its associated medical surveillance. The MC4 System supports other Soldier protection initiatives by providing data for analyses which can be used for identification and development of critical soldier support systems such as body armor, improved helmets, traumatic brain injury protection and trauma reduction. Current MC4 Program efforts are focused on system engineering, testing, integration, and fielding automation infrastructure for Army users of the Theater Medical Information Program-Joint (TMIP-J) suite of software. Effort has also been initiated to integrate MC4 with the Army Chief Information Office (CIO) Network 2020 and Common Operating Environment (COE) and as a program of record in the Mobile/Handheld Computing Environment Working Group. Funding provides engineering, developmental testing, and integration of information management/information technology to support Force Health Protection in accordance with the Army Equipment Modernization Plan.

FY 2018 Base funding in the amount of \$.390 million will be used for the engineering effort required to evaluate initiatives that improve the performance of the Defense Health Medical Systems (DHMS) Theater Medical Information Program-Joint (TMIP-J) software on the Army platform, as well as the engineering effort for other Army unique capabilities. Activities include:

- Research of technologies to integrate software into Army future information infrastructure and meet common operating environment requirements
- Evaluation of hardware technology obsolescence and solutions

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

	FY 2016	FY 2017	FY 2018
Title: Engineering and Technical Support	0.526	1.207	0.390
Description: Engineering and Technical Support for Preplanned Program Improvements and System Upgrades, Systems Integration, Software Support and other new initiatives to improve system performance and effectiveness.			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 193 / <i>Medical Communications For Combat Casualty</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p><i>FY 2016 Accomplishments:</i> Completed initial evaluation and development of virtualization, interface/integration with Common Operating Environment, Cloud Computing Environment, and Mobile Handheld Computing Environment. Supported C4ISR and participated in E16 exercise (Fort Dix) to demonstrate the MC4 system capability. Completed upgrade to Health Assessment Lite Operations software application (HALO).</p> <p><i>FY 2017 Plans:</i> Continued evaluation and development of virtualization, interface/integration with Common Operating Environment. Evaluation of Army standard mobile handheld device as hardware solution for MC4 mobile system requirement. Development of mobile handheld software application for MC4 requirement.</p> <p><i>FY 2018 Plans:</i> Continued evaluation and development of virtualization, interface/integration with Common Operating Environment as relevant to MC4 system.</p>			
<p><i>Title:</i> PMO Testing Support</p> <p><i>Description:</i> Test augmentation by outside agencies to include test efforts for DHMS/TMIP-J and other Army unique software capabilities</p> <p><i>FY 2016 Accomplishments:</i> Test augmentation for DHMS/TMIP-J and MC4 Operational Test and Evaluation by outside agencies, in support of TMIP Increment 2 Release 3 software version. Also outside agency support, to include ATEC, CECOM Safety Board, and AMEDD Board, for documentation of testing results required for fielding decision.</p>	0.200	-	-
<p><i>Title:</i> MC4/TMIP Integration and Testing</p> <p><i>Description:</i> Development testing of DHMS/TMIP-J Increment 2 (all releases) and Increment 3; Lab site studies with technology and scenarios; Integration testing of software systems on the MC4 baseline system; test and evaluation of new capabilities for combat theater functionality.</p> <p><i>FY 2016 Accomplishments:</i> Completed planned Multi Service Operational Test and Evaluation (MOTE) and test documentation for DHMS/TMIP-J Software. Completed x3 Software Integration Tests (SIT) and continued integration and test of DHMS/TMIP-J Increment 2 Release 3 (TMIP-J I2R3 -- MC4 version 2310) on the MC4 baseline system.</p>	0.654	-	-
Accomplishments/Planned Programs Subtotals	1.380	1.207	0.390

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 193 / <i>Medical Communications For Combat Casualty</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPA SSN MA8046: <i>OPA MA8046</i>	24.388	19.893	15.964	-	15.964	17.124	27.946	23.837	-	Continuing	Continuing
• OMA PE 432612: <i>OMA PE 432612</i>	3.412	3.467	3.464	-	3.464	2.359	4.917	4.396	2.522	Continuing	Continuing

Remarks

D. Acquisition Strategy

The MC4 Program supports a number of Army Medical Information Technology/Communications initiatives. The near and mid-term focus of the MC4 program is to engineer, design, integrate, test, acquire and field the Army automation infrastructure capabilities supporting fielding of the Theater Medical Information Program-Joint (TMIP-J) integrated software application suite and other Army requirements. The MC4 hardware is procured as Commercial-off-the-Shelf (COTS) components. Since TMIP software is a major component of the MC4 System and being developed in increments, the MC4 Program will deliver capabilities in increments, recognizing the need for future system updates and planned upgrades. The MC4 Program works with the user community to continually define and refine additional requirements and match them with available technologies to provide the user enhanced capabilities. These enhanced capabilities will be provided to the user at the earliest possible date. This approach yields the most operationally useful and supportable capability in the shortest time possible with Cost As an Independent Variable. Moreover, this approach provides an initial capability with the explicit intent of delivering improved and updated capability in subsequent updates and planned upgrades. This evolutionary development approach will be accomplished through a rapid prototyping process that will progress the system from its current functional capabilities to fully integrated objective capabilities. Appropriate commercial technology enhancements (e.g. advances in operating systems, voice activated technology, etc) will be incorporated into MC4 products and systems as they become available. Each MC4 System component will undergo a full range of developmental testing to include software unit testing, integration testing, interoperability testing and software qualification testing. The MC4 system updates and planned upgrades will continue to undergo follow-on testing.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>				Project (Number/Name) 738 / <i>AcqBiz</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
738: <i>AcqBiz</i>	-	8.313	8.737	9.118	-	9.118	43.782	35.240	23.232	20.100	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

PM AcqBusiness provides acquisition-centric enterprise solutions. Delivers innovative and adaptive solutions that streamline the collection and analysis of data to support powerful decisions across the Army acquisition enterprise. PM AcqBusiness will be the premier source of information technology solutions that enable information dominance at all levels of the Army acquisition enterprise. PM AcqBusiness provides Army Acquisition practitioners with a consistent set of unique business tools, web services, and decision support tools integrated through a common architecture, which provide visibility of authoritative data, consistency in business process, and more timely support to acquisition decisions. The enterprise tools provided via PM AcqBusiness enable the reduction and eventual elimination of stovepipe and redundant tools that exist in the domain today. PM AcqBusiness provides an environment that enables centralized, role-based access to trusted and authoritative data from disparate Acquisition Domain data sources. In addition, PM AcqBusiness provides a framework for information providers to publish their data and provide their services to authorized users.

The funding in this program element also funds the development requirements for the Human Resources Command, U.S. Army Accessioning Integrated Automation Architecture which provides the Information Technology solution necessary to accomplish the Army's Accessioning mission.

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

	FY 2016	FY 2017	FY 2018
Title: Program Management	3.790	3.008	5.957
Description: This effort provides program management in support of the U.S. Army Accessioning Integrated Automation Architecture mission.			
FY 2016 Accomplishments: Program Management			
The funding in this program element also resources the development requirements for the Human Resources Command, U.S. Army Accessioning Integrated Automation Architecture which provides the Information Technology solution necessary to accomplish the Army's Accessioning mission.			
FY 2017 Plans: Program Management			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 738 / <i>AcqBiz</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>The funding in this program element also resources the development requirements for the Human Resources Command, U.S. Army Accessioning Integrated Automation Architecture which provides the Information Technology solution necessary to accomplish the Army's Accessioning mission.</p> <p>FY 2018 Plans: Program Management</p> <p>The funding in this program element also resources the development requirements for the Human Resources Command, U.S. Army Accessioning Integrated Automation Architecture which provides the Information Technology solution necessary to accomplish the Army's Accessioning mission.</p>				
<p>Title: Design, Development, and Test</p> <p>Description: This effort supports the ultimate integration of the AcqBusiness Portfolio.</p> <p>FY 2016 Accomplishments: PdM AcqBusiness staff executed funds supporting the functional proponent, Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA (ALT)), leaning forward on initial draft Business Requirements Document (BRD) providing an expanded scope of actionable information that maintains data integrity across the entire acquisition lifecycle for acquisition programs; a set of data collection, data storage, & analytic capabilities that integrates data from multiple authoritative/trusted enterprise sources and provides executive decision makers a clear, accurate & deep understanding of programs of record; enterprise access to data & provide decision makers at all levels with a common operation procedure (COP) that displays programmatic/funding metrics for programs of record; & a data visualization/analysis environment that helps ASA(ALT) reduce cost/mitigate risks.</p> <p>Human Resources Command completed Financial Audit Readiness Requirements for CCIMM and JCIMS and Phase II of Reception Module.</p> <p>FY 2017 Plans: PdM AcqBusiness funds will support the integration of COTS SW solutions (tentatively referred to as PM Tools) that provide authoritative, visible, accessible, understandable, trusted, and interoperable data in an Acquisition Data Warehouse (ADW) down to the ACAT III program level through the optimization of Product/Project Manager business processes. Increment 1 of the new Army Acquisition Domain Data Management (AADDM) capability will focus on programmatic information such as Integrated Master Schedules (IMS), cost and budget, industrial base and contractor information. Increment II will then begin the connection of live, authoritative Army databases to the Acquisition data warehouse. Once the business processes and external data sources are providing the data: visualization tools can be utilized to provide key charts/views that support Army Staff</p>		4.523	5.729	3.161

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 738 / <i>AcqBiz</i>

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

	FY 2016	FY 2017	FY 2018
<p>(ARSTAFF) processes such as Program Objective Memorandum (POM), Weapon System Review (WSR), Strategic Portfolio Analysis and Review (SPAR), and budget execution drills. Supporting efforts include business process evaluation and definition to maximize efficiency of the Software integration process. Completion of Increment I PM Tools software integration, demonstration and evaluation of the PM Tools in a 6-9 month pilot event within a minimum of one PEO. Funding also supports further acquisition integration of external data sources as required. Further focus will concentrate on delivering more common data views and analytical capabilities to support decision making at Product Manager (PdM), Program Manager (PM), Program Executive Officer (PEO), ASA (ALT), and at ARSTAFF levels. Key events include the PM Tool pilot evaluation and a FP Tool deployment decision by the Milestone Decision Authority (MDA).</p> <p>Human Resources Command (HRC) will continue effort for CCIMM and JCIMS for Financial Audit Readiness Requirement and technical requirements gathering, analysis and documentation to allow TRADOC to conduct the Analysis of Alternatives for the RIE.</p> <p>FY 2018 Plans: PdM AcqBusiness funds will support the integration of COTS SW solutions (tentatively referred to as PM Tools) that provide authoritative, visible, accessible, understandable, trusted, and interoperable data in an Acquisition Data Warehouse (ADW) down to the ACAT III program level through the optimization of Product/Project Manager business processes. Increment 1 of the new Army Acquisition Domain Data Management (AADDM) capability will focus on programmatic information such as Integrated Master Schedules (IMS), cost and budget, industrial base and contractor information. Increment II will then begin the connection of live, authoritative Army databases to the Acquisition data warehouse. Once the business processes and external data sources are providing the data: visualization tools can be utilized to provide key charts/views that support Army Staff (ARSTAFF) processes such as Program Objective Memorandum (POM), Weapon System Review (WSR), Strategic Portfolio Analysis and Review (SPAR), and budget execution drills. Supporting efforts include business process evaluation and definition to maximize efficiency of the Software integration process. Completion of Increment I PM Tools software integration, demonstration and evaluation of the PM Tools in a 6-9 month pilot event within a minimum of one PEO. Funding also supports further acquisition integration of external data sources as required. Further focus will concentrate on delivering more common data views and analytical capabilities to support decision making at Product Manager (PdM), Program Manager (PM), Program Executive Officer (PEO), ASA (ALT), and at ARSTAFF levels. Key events include the PM Tool pilot evaluation and a FP Tool deployment decision by the Milestone Decision Authority (MDA).</p> <p>Human Resources Command will continue effort for CCIMM and JCIMS for Financial Audit Readiness Requirement and technical requirements gathering, analysis and documentation to allow TRADOC to conduct the Analysis of Alternatives for the RIE.</p>			
Accomplishments/Planned Programs Subtotals	8.313	8.737	9.118

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) 738 / <i>AcqBiz</i>

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• 432615000: <i>Operations and Maintenance</i>	10.889	10.542	8.294	-	8.294	8.511	8.738	8.977	9.224	0	65.175

Remarks

D. Acquisition Strategy

PM AcqBusiness was established to acquire a centrally managed and funded suite of standard net-centric business capabilities to provide Army acquisition practitioners the data visibility necessary to optimize the acquisition of materiel, supplies, and services for the Warfighter. PM AcqBusiness is using an evolutionary acquisition strategy, incorporating the use of COTS hardware and software, when practicable, in order to realize benefits early and reduce risk. The AcqBusiness acquisition approach embraces the tenets of Subtitle III of Title 40, U.S.C. (formerly the Clinger-Cohen Act of 1996).

PM AcqBusiness leverages existing DoD and Army enterprise capabilities to fulfill Acquisition Domain business needs whenever possible. When no Army enterprise systems satisfy approved requirements, priority is given to existing acquisition business systems or services where they are scalable and in conformance with technical architecture standards. In the event neither of these options is available to satisfy a business need, capabilities are acquired as commercial off-the-shelf (COTS) products. PM AcqBusiness maximizes use of COTS technology by implementing an architecture and infrastructure based on services and virtualization. If there are no available COTS solutions, PM AcqBusiness will develop the capability, leveraging an incremental approach to enable: (1) consistent and phased definition of requirements, (2) mature technologies, and (3) collaboration among user, tester and developer.

As such, PM AcqBusiness is:

- collaborating with the ASA(ALT) community to facilitate Business Process Reengineering in advance of development of AcqBusiness capabilities.
- encouraging the purchase of commercial products and innovations from private industry.
- involving potential suppliers early in the requirements generation process.
- employing outsourcing wherever possible, and
- acquiring AcqBusiness capabilities in interoperable modules, minimizing the time required to deliver new capabilities to users.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) FE9 / <i>ALTESS (P&R Forms)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FE9: <i>ALTESS (P&R Forms)</i>	-	0.000	0.000	0.110	-	0.110	0.120	0.120	0.120	0.130	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is not a New Start. Funds were previously requested in project 738 and have been realigned for greater transparency.

A. Mission Description and Budget Item Justification

The P&R Forms application supports the creation and production of the Committee Staff Procurement Backup Book (P-Forms), as well as Research, Development, Test and Evaluation Descriptive Summaries (RDTE, or R-Forms). Using P&R Forms, budgetary forms and data can be quickly and efficiently submitted, coordinated, and approved.

This is not a new start. Project breaks out previously requested funds from project 738.

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

	FY 2016	FY 2017	FY 2018
Title: Continued development of the Army's Budget System	-	-	0.110
FY 2018 Plans: Continued development of the Army's Budget System			
Accomplishments/Planned Programs Subtotals	-	-	0.110

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-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>				Project (Number/Name) T04 / <i>USMEPCOM TRANSFORMTION - IT MODERNIZATION</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
T04: <i>USMEPCOM TRANSFORMTION - IT MODERNIZATION</i>	-	11.733	29.281	11.217	-	11.217	30.030	23.712	8.311	8.391	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

US Military Entrance Processing Command Integrated Resource System (MIRS) provides automation and communications capability to meet peacetime, mobilization and wartime military manpower accession mission for the Armed Services. MIRS interfaces with recruiting capabilities for the services, incorporating the concept of electronic data sharing using standard DoD data elements between USMEPCOM and all Armed Services recruiting commands. This project includes Computerized Adaptive Testing-Armed Services Vocational Aptitude Battery (CAT-ASVAB), automated Armed Services Vocational Aptitude Battery is given to determine applicants' mental abilities. Data Services mission consists of automatic data processing in support of USMEPCOM, the Selective Service System (SSS) and other external agencies for both peacetime and mobilization requirements. MIRS directly supports mobilization in the event of a military draft, through electronic links with the SSS and its ability to process and ship. USMEPCOM/MIRS is the only DoD organization legally authorized to collect civilian, medical and testing data for purposes of processing into military services and is the only DoD joint support system used to enforce congressional, DoD and Armed Forces qualification criteria for enlistment. USMEPCOM has established interfaces with US Citizenship and Immigration Services to verify citizenship status for applicants of military service to screen out undesired or security threat and Federal Bureau of Investigation for background screening using digital fingerprints to eliminate people with criminal records from entering military service. USMEPCOM's IT sustainment effort will maintain MIRS and the associated network certification and accreditation until the end of system lifecycle. MIRS was scheduled to be replaced by the Virtual Interactive Processing System (VIPS). VIPS program cancellation has placed USMEPCOMs legacy IT infrastructure at high risk. The resultant system leaves a non-compliant and non-networkworthy accession system with processing gaps that need to be addressed for secure, compliant, sustainable, and reliable capabilities to meet DoD and Service requirements. USMEPCOM must continue toward security and data integrity regulatory/security compliance (PII and HIPAA) or lose Authority to Operate.

Customers/beneficiaries of this investment include the Accessions Community of Interest (ACOI) including components of the Army, Navy, Air Force, Marines, Coast Guard, USMEPCOM and OSD (P&R).

Stakeholders include: All Uniformed Services, Assistant Secretary of Defense (Health Affairs), Defense Transportation Management Office, USD P&R, USD Intel, Defense Manpower Data Center and Department of Veterans Affairs.

Requested funding mitigates inefficient system sustainability and scalability through an update of the applications underlying database, operating system and middleware software. The current legacy system requires time consuming and expensive efforts to make operational changes (even minor ones) to military accessions processing to meet DoD and individual Services requirements. MIRS operational processes exist in a system where business rules and workflow are hard coded throughout the system. Any changes require extensive review and analysis of the code to see what is impacted before a change can be made, then extensive testing afterwards to make sure it works correctly throughout the accession process. Currently there are over 600 Problem Reports (PR) and System Change Requests (SCRs) pending.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T04 / <i>USMEPCOM TRANSFORMTION - IT MODERNIZATION</i>		
Requested funding also provides for a follow-on acquisition plan that will be informed by the recent DCMO initiated Technical Demonstration. The acquisition will provide future enhancements and additional capabilities like those to be proven through the currently evolving Tech Demo. These efforts will culminate in new USMEPCOM business process vision of an anytime, anywhere accession processing capability.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Title: Phase 3 Application update		11.733	20.089	9.717
Description: Initiate update of MIRS and associated Applicant Processing applications to secure applicant data				
FY 2016 Accomplishments: Completed update of MIRS and associated Applicant Processing applications to secure applicant data.				
FY 2017 Plans: Initiate update of MIRS and associated Applicant Processing applications to secure applicant data.				
FY 2018 Plans: continue update of MIRS and associated Applicant Processing applications to secure applicant data				
Title: Project Support		-	9.192	1.500
Description: Funding will support Information Technology				
FY 2017 Plans: Update of MIRS and associated Applicant Processing Applications to facilitate DoDAF 2.0 and BEA compliant architecture.				
FY 2018 Plans: Continue Update of MIRS and associated Applicant Processing Applications to facilitate DoDAF 2.0 and BEA compliant architecture.				
Accomplishments/Planned Programs Subtotals		11.733	29.281	11.217
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy N/A				
E. Performance Metrics N/A				

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T04 / <i>USMEPCOM TRANSFORMTION - IT MODERNIZATION</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 PM Support	Various	TBD : TBD	4.134	5.511		-		8.474		-		8.474	0.000	18.119	0.000
Subtotal			4.134	5.511		-		8.474		-		8.474	0.000	18.119	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MIRS Phase 3 & eSecurity/Biometircs Replacement	C/Various	various : various	5.840	6.222		29.281		2.743		-		2.743	Continuing	Continuing	0.000
Subtotal			5.840	6.222		29.281		2.743		-		2.743	-	-	0.000

Remarks
MEPCOM Jnt Comp Ctr(JCC) & Integ Resource Sys(IRR). This RDT&E will be used by USMEPCOM for continued project transformation support of VIPS.

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	9.974	11.733	29.281	11.217	-	11.217	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T04 / <i>USMEPCOM TRANSFORMTION - IT MODERNIZATION</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PRODUCT DEVELOPMENT																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T04 / <i>USMEPCOM TRANSFORMTION - IT MODERNIZATION</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
PRODUCT DEVELOPMENT	1	2015	4	2020

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>				Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
T05: <i>Army Business System Modernization Initiatives</i>	-	24.128	28.577	39.216	-	39.216	34.385	32.630	39.883	39.775	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Army Training Information System (ATIS) will provide a common operational picture (COP) of the training environment through integrated, interoperable training development, management, scheduling, and delivery capabilities. Existing training information systems do not provide Commanders, leaders, Soldiers, and civilians a centralized COP of the training environment that enables persistent, consistent access to the Training and Education information and products necessary to support readiness to meet emerging threats. Without ATIS, Army organizations will continue to develop and maintain a multitude of TIS that are not part of an enterprise, thus inhibiting visualization, understanding, and informed decision making.

The Army Contract Writing System (ACWS) was realigned to PE 0605047 beginning FY17 for increased program transparency.

Commander's Risk Reduction Dashboard (CRRD) will consolidate information from multiple Army databases and present to commanders a concise report about which Soldiers in their unit have been involved with at-risk behaviors, some of which may be associated with suicide, and when those instances occurred. The dashboard will be able to generate multiple reports, including one that highlights just Soldiers with risk factors within a certain time period; another that focuses only on newly assigned Soldiers; and another that allows commanders to look at a specific Soldier's history with at-risk behaviors.

The Army Safety and Health Management System (ASHMS) initiative provides a framework of people, processes and technology to synchronize, integrate and optimize Army Safety and Occupational Health (SOH) capabilities to preserve war fighting capabilities and enhance the force by providing a safe and healthy environment for Soldiers, Families, Civilians, and contractors. An analysis of Army SOH Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities and Policies (DOTMLPF-P) determined that the Army Safety Management Information System – Revised (ASMIS-R), a Defense Business System, is currently not able to satisfy current and emerging ASHMS capability requirements without modernization to resolve these capability gaps. Changes in requirements for the Army Safety and Health Management System (Programmatic) related to DoDI 6055.01, AR 385-10, Information Assurance requirements and direct feedback from the Safety professionals within the DoD and the Army have resulted in the need for changes in associated business processes. Additionally, a business gap analysis performed by the DASA(ESOH) revealed a deficiency in the system's requirements that would support Army Commands in identifying hazards in the work place, determining hazard mitigation strategies and controls, employing these strategies and controls, and measuring their potential for reducing mishaps. Addressing these problems will have an immediate and direct impact on meeting regulatory requirements, improving data integrity, improving information assurance posture (compliance), increasing the Army's ability to reduce mishaps across the force structure, and promoting Army Force Generation (ARFORGEN) capabilities.

The Army Human Resources Command (HRC) has several efforts for which RDT&E will be applied. One is to prepare those systems for subsumption into the Integrated Personnel and Pay System (IPPS-A). The other is to disconnect and upgrade those systems not being subsumed by IPPS-A. Systems that will be targeted by HRC to prepare for IPPS-A subsumption or upgrade are the Automated Orders and resources System (AORS), Army Selection Board System (ASBS), Data Base

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<p>Administration Suite of System (DBA), Enlisted Distribution and Assignment system (EDAS), Enlisted Promotion Model (EPM), Enterprise Service Bus (ESB), Human Resource Command Identity Management System (HIMS), Integrated Total Army Personnel Database (ITAPDB), Officer Selection Support System (OSSS), Reserve Statistics Accounting System/Reserve Component Common Personnel Data System (RSAS/RCCPDS), Senior Enlisted Promotions Model (SEPM), Single Evaluation Processing System (SEPS), Soldier Management System Webified Suite of System (SMSWEB), Total Army Personnel Data Base - Active Enlisted (TAPDB-AE), Total Army Personnel Data Base - Active Officer (TAPDB-AO), Total Army Personnel Data Base - Active Reserve (TAPDB-AR), Total Officer Personnel Management Information System (TOPMIS), Total Officer Personnel Management Information System II (TOPMIS II), Keystone Request/Retain System, and the Interactive Personnel Electronic Records Management System (iPERMS).</p> <p>The Defense Language Software Upgrade will perform a major modification to the Universal Course Authoring Tool (UCAT). The modification will enable the tool to allow the curriculum development department to author new curricula without having to know a programming language, such as HTML. Currently, the tool has limited authoring templates and doesn't support the higher language levels or contain testing templates. The tool will do the programming automatically in the proper format for online viewing regardless of the mobile device used to view the material. This will enable the author to input the content in a predetermined way and the program will convert it into the proper online format. There will also be programming support to develop and convert existing online material into the current formats for use with all mobile devices regardless of the operating system used. Our current online material does not support all mobile devices and it needs to be reprogrammed to support all current mobile devices regardless of the Operating System (OS) used (Android, Apple, Microsoft). The Defense Language Institute (DLI) doesn't have the capability to do any programming modifications to existing programs. The programs are in need of modifications to meet DLI's new graduation standards of 2+/2+.</p> <p>The Program Planning Budget (PPB)- Business Operating System (BOS) will standardize and better integrate the transactional automated information systems used in the HQDA level programming and budgeting processes. These systems are core to the PPBE business processes of the HQ for gathering programmatic requirements, balancing resources and delivering the Army's program budget to OSD. This project is streamlining programming and budgeting processes and significantly improving strategic analysis capabilities. The project is architecting, reengineering, streamlining and consolidating HQDA systems, feeder data base systems, and streamlining the associated processes. These improvements will improve capability, eliminate redundancies and reduce overall cost of operations. The PPB BOS project is complementary to the Army's General Fund Enterprise Business System (GFEBs) program. It includes a new effort in FY14, the Army Contract Writing System, a replacement for the DoD Standard Procurement System (SPS).</p> <p>Army Career Tracker (ACT) is a leader development tool created to change significantly the way training, education, and experiential learning support is provided to Army enlisted, officers, civilians, and their leaders/supervisors. Users can search multiple education and training resources, monitor career development, and receive advice from their leadership. ACT provides single-site, easy access, and offers a complete and personalized career picture not available until now. ACT allows users to manage career objectives and monitor progress towards career requirements and goals. ACT provides an integrated approach to supporting military and civilian personnel's personal and professional development which capitalizes on the mutual (personnel and Army) need for life-long learning. The unique inter-relationship between the user's personal growth and development, and the Army's need for Soldiers to be continuously developing, building and cultivating a culture of life-long learning is critical for the Soldier's and the Army's success. ACT comprises over 780,000 users with an adoption rate of 4,000 users per week. HQDA EXORD 054-12 ISO Army Transition mandates that leaders utilize roles in ACT to promote life-long learning and development opportunities throughout the Soldier's lifecycle of service (hire to retire).</p>		

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The Defense Language Software Upgrade will perform a major modification to the Universal Course Authoring Tool (UCAT). The modification will enable the tool to allow the curriculum development department to author new curricula without having to know a programming language, such as HTML. Currently, the tool has limited authoring templates and doesn't support the higher language levels or contain testing templates. The tool will do the programming automatically in the proper format for online viewing regardless of the mobile device used to view the material. This will enable the author to input the content in a predetermined way and the program will convert it into the proper online format. There will also be programming support to develop and convert existing online material into the current formats for use with all mobile devices regardless of the operating system used. Our current online material does not support all mobile devices and it needs to be reprogrammed to support all current mobile devices regardless of the Operating System (OS) used (Android, Apple, Microsoft). The Defense Language Institute (DLI) doesn't have the capability to do any programming modifications to existing programs. The programs are in need of modifications to meet DLI's new graduation standards of 2+/2+.

Criminal Information Management System (CIMS): CIMS, formerly known as the Law Enforcement Advisory Program (LEAP), is a collection of mission essential information technology (IT) systems within the United States Army Criminal Investigation Command (USACIDC) and the Office of the Provost Marshal General (OPMG). Through CIMS, the USACIDC and the OPMG developed an integrated and unified, comprehensive enterprise program / system that houses both classified and unclassified Law Enforcement Sensitive (LES) data. CIMS leverages existing and future Army Law Enforcement (LE) enterprise information technology (IT) assets and other external data sources providing a full range of law enforcement functions to support business objectives and mission. The primary component is a comprehensive enterprise system known as the Army Law Enforcement Reporting and Tracking System (ALERTS) providing Army LE stakeholders the enhanced capability to rapidly and efficiently manage a variety of LE and criminal intelligence functions as well as a broader range of senior executive reporting requirements. The Consolidated Operations Police Suite (COPS) was previously comprised of five separate applications: two of these applications have been rationalized under ALERTS; the remaining three (related to the Army Corrections discipline) require modernization to ensure continued function and security compliance. RDT&E dollars are required to further enhance & enable CIMS' consolidation/rationalization of LE applications thereby providing the LE community the tools to more quickly investigate, solve, and prevent Army crime while also facilitating the management of those placed in corrections facilities. At present, all requested CID RDT&E funding will be applied to CIMS initiatives.

Educational Outreach Initiative: The Defense Forensic Science Center (DFSC), a subordinate element of USACIDC, requires funding for educational outreach initiatives including internship positions at the undergraduate, graduate, and doctoral candidate levels. The DFSC was designated as the leader for forensic science disciplines (DAPM Memo 4 Oct 2011). This memorandum states that the DFSC will establish a forensic RDT&E program that provides the integration of joint operational research, including procedures for establishing customer requirements, and identifying gaps and needs that lead to RDT&E priorities. The program includes developing a scholarly environment across the Defense Forensic Enterprise through the use of educational partnerships, internships and fellowships to facilitate participation in RDT&E projects. The Educational Outreach program provides an opportunity for students to contribute to forensic science research and influence shared research priorities across forensic science communities, while simultaneously supporting DFSC laboratory operations. Through the internship program, innovative research is conducted that supports research capabilities across the entire range of defense forensic operations (traditional laboratory, expeditionary (forward-deployed) laboratories, and reach-back functions).

Research & Development Identified through the Broad Agency Announcement (BAA) Initiative: The DFSC requires funds to coordinate the execution of forensic research projects that will enhance the capability of forensic science applications for DoD customers both in traditional law enforcement/criminal justice settings as well as in expeditionary environments. The DFSC staff manage federally-funded research & development contracts identified through a two-year, rolling BAA procedure.

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The BAA is issued under the provisions of paragraph 6.102(d) (2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of proposals. Submitted BAA research proposals selected for award are considered to be the result of full and open competition and in full compliance with the provisions of Public Law 98-369, "The Competition in Contracting Act of 1984" (and subsequent applicable amendments).

Financial Integrated Reporting Environment (FIRE): FIRE is a U.S. Army Material Command (AMC) Enterprise Resource Planning (ERP) system currently deployed at the Armament, Research, Development and Engineering Center (ARDEC). FIRE supports the funding and manpower required to accomplish ARDEC's reimbursable workload. RDTE is required to develop and expand the system as an enterprise solution across all AMC reimbursable activities. This strategy is in line with existing Army Portfolio Management System (APMS) and Business Enterprise Architecture (BEA) Objectives.

Regional Level Application Software (RLAS) is a critical IT application to the AR managing the automated military pay, funds control, training calendar management and administrative records management for 198,000 Soldiers.

RLAS

Army Software Marketplace (ASM): ASM will enable the Army to have a centralized location to store software applications and application metadata.

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

	FY 2016	FY 2017	FY 2018
<p>Title: Army Contract Writing System (ACWS)</p> <p>Description: ACWS is the Army strategy for a single enterprise-wide contract writing and management solution that will meet the Army's current critical functional contract writing requirement and can expand to meet future functional needs. The Army's goal is to streamline Acquisition, Technology and Logistics (AL&T) end-to-end business processes; reduce operating, maintenance and support costs; decrease, and where applicable, mitigate the number of existing and future interfaces.</p> <p>FY 2016 Accomplishments: FY16 funds are to perform all requisite activities to carry the program through the source selection process, a contract award authority to proceed decision (ATP-1)</p>	4.170	-	-
<p>Title: Army Training Information System (ATIS)</p> <p>Description: Army Training Information System (ATIS) is an enterprise system that will provide a common operational picture (COP) of the training environment through integrated, interoperable training development, management, scheduling, and delivery capabilities. These capabilities will enable Commanders, leaders, Soldiers, and civilians to better understand, visualize, describe, direct, lead, and assess training requirements so they can more effectively plan, prepare, execute, and assess training. End result is an ATIS that enables Soldiers to train as they will fight, so they can effectively fight as they have trained.</p> <p>FY 2016 Accomplishments:</p>	8.845	15.670	12.722

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Complete the Analysis of Alternatives to include the incremental developmental plan. FY 2017 Plans: RDTE funding will be used to complete the Army Cost Estimate, complete Capability Development Document, preparation of life cycle documentation needed for entry into the Business System Functional Requirements and Acquisition Planning (BS FRAP) phase, reduction of technology risks through prototyping, and preparations needed for entry into Business System Acquisition, Testing, and Deployment (BS ATD) phase for development of ATIS. FY 2018 Plans: Funding will be used to continue the Business System Functional Requirements and Acquisition Planning (BS FARP) phase activities, complete RFP activities, and develop documentation needed to achieve the Acquisition Authority to Proceed (ATP) milestone.				
Title: Commanders Risk Reduction Dashboard (CRRD) Description: CRRD will consolidate information from multiple Army databases and present to commanders a concise report about which Soldiers in their unit have been involved with at-risk behaviors, some of which may be associated with suicide, and when those instances occurred. FY 2016 Accomplishments: Receive approval to proceed with development -begin development of CRRD dashboard increment 2 -Conduct Integrated Baseline Review with developer FY 2018 Plans: -Complete development of CRRD Inc 2 capability -Conduct Operational Test		0.723	-	2.968
Title: The Army Safety and Health Management System (ASHMS) Description: The Army Safety and Health Management System (ASHMS) initiative provides a framework of people, processes and technology to synchronize, integrate and optimize Army Safety and Occupational Health (SOH) capabilities to preserve war fighting capabilities and enhance the force by providing a safe and healthy environment for Soldiers, Families, Civilians, and contractors. An analysis of Army SOH Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities and Policies (DOTMLPF-P) determined that the Army Safety Management Information System – Revised (ASMIS-R), a Defense Business System, is currently not able to satisfy current and emerging ASHMS capability requirements without modernization to resolve these capability gaps. Changes in requirements for the Army Safety and Health Management System (Programmatic) related to DoDI 6055.01, AR 385-10, Information Assurance requirements and direct feedback from the Safety professionals within the DoD and the Army have resulted in the need for changes in associated business processes. Additionally, a business gap analysis performed by the DASA(ESOH) revealed a deficiency in the system's requirements that would support		3.765	4.846	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>Army Commands in identifying hazards in the work place, determining hazard mitigation strategies and controls, employing these strategies and controls, and measuring their potential for reducing mishaps. Addressing these problems will have an immediate and direct impact on meeting regulatory requirements, improving data integrity, improving information assurance posture (compliance), increasing the Army's ability to reduce mishaps across the force structure, and promoting Army Force Generation (ARFORGEN) capabilities. .</p> <p>FY 2016 Accomplishments: FY16 funds are being used for development of products and tools to modernize mishap reporting through the addition of an Initial Notification capability for Commanders, offline capability for mishap reporting in low/no bandwidth areas, and mobile application capabilities as well as Human Factors risk management.</p> <p>FY 2017 Plans: FY17 funds are being used to continue development of products and tools to modernize mishap reporting through the addition of an Initial Notification capability for Commanders, offline capability for mishap reporting in low/no bandwidth areas, and mobile application capabilities as well as Human Factors risk management.</p>			
<p>Title: Army Business System Modernization Initiatives, CPOL, iPERMS & RLAS</p> <p>Description: Modernization requirements will add new capabilities to legacy IT systems that support human resource functions such as organization and position management, training, and employment. The PPB BOS system standardize and integrate the transactional information systems used in the Headquarters Department of Army (HQDA) Programming and Budgeting processes. The program is streamlining programming and budgeting business processes and significantly improving strategic analysis capabilities. The PPB BOS architecture reengineers, streamlines, and consolidates HQDA systems and financial feeder systems; aligns to the DoD Business Enterprise Architecture (BEA); implements powerful business intelligence analytical tools to support strategic planning, programming, and budgeting within HQDA; and provides access to GFEBS funds management and execution data through system interfaces with required SFIS compliancy integral to the PPB BOS data model. The LEAP program will provide criminal intelligence querying and reporting capabilities in compliance with regulatory and policy standards for Army Law Enforcement regarding investigation of felony crimes. LEAP captures criminal case investigative information regarding incidents, location descriptors, entities (name, social security number, rank, title, physical characteristics, sex, birth place, and date), agent assignment, crime description and identifiers, statements, property data, laboratory tests; verifies and stores this data for criminal intelligence purposes: and reports this information to the proper authorities from the Division Commanding Officer to the United States Grand Jury. The system will extract necessary data for consolidation and input to Defense Incident-Based Reporting System (DIBRS) monthly reports, National Incident-Based Reporting System (NIBRS) monthly reports and the Defense Clearance and Investigations Index (DCII) daily updates. The LIMS system will automate business processes that support the forensic examiners. These processes include, but are not limited to, analytics, materials management, management reporting, Freedom of Information Act requests (FOIA), legal discovery request, court preparation and outsource processing.</p>	6.036	1.413	0.777

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

	FY 2016	FY 2017	FY 2018
<p>Civilian Personnel Online - Portal (CPOL-Portal) is a one stop secure site which provides Army civilian employees and HR specialists access to a private portal with a complete set of employment related resources, links and web based applications that require single sign-on access - Army Regional Tools (ART). CPOL-Portal will provide an Integrated Management System (IMS) in support of Civilian Workforce Transformation (CWT). It will support Civilian human capital decision making and allow leaders and employees to perform their roles more efficiently in support of Army goals and missions. CPOL Portal will provide the full spectrum of IT application support and access to Acquire, Develop, Distribute and Sustain components of the Army Civilian HCM Life-Cycle and link to G3 'Structure' IT Enterprise Applications.</p> <p>The Fully Automated System for Classification (FASCLASS) is a centralized, web-based system that maintains civilian position descriptions and position related information across Department of the Army. It provides classifiers and managers capability to create, edit, and verify position descriptions. Also it offers robust search, report generation, and lookup & support capabilities.</p> <p>The Overseas Entitlement Tracker (OET) provides the capability to accurately track Living Quarters Allowance (LQA). LQA is provided to reimburse employees for suitable, adequate living quarters at posts where the U.S. Government does not provide quarters. OET also tracks these other overseas entitlements for employees: Advance Pay, Danger Pay, Imminent Danger Pay, Foreign Differential, Home Leave, Post Allowance, Separation Maintenance Allowance, and Temporary Quarters Subsistence Allowance.</p> <p>FY 2016 Accomplishments: Modernization requirements will add new capabilities to legacy IT systems that support human resource functions such as organization and position management, training, and employment. Will continue deployment and final fielding of the enterprise-level PPB BOS application throughout HQDA and the transfer of budget data to the Army's financial enterprise resource system, the General Fund Enterprise Business System. Will field the full operating capability of the Army Mapper system, which is the Army Geospatial data base of record and the HQDA repository for all Installation & Environment related geo-spatial data systems.</p> <p>The RLAS system, lacking substantial technology improvements between FY03 and FY15, operates on aging technology framework, architecture, utilities and Operating Systems (OS) not in compliance with many recent Army CIO policies, Army NETCOM directives and Army Cyber defense requirements. With the increasing threat of cyber-attack and the resulting increase in Army directives for IT system security compliance, the RLAS system is accumulating a number of system compliance waivers and submitting multiple Plan Of Action Memorandum (POAM) to maintain its Authority To Operate (ATO) on the Army Land War Net (LWN). Funding supports systems modification and development.</p> <p>FY 2017 Plans:</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Modernization requirements will add new capabilities to legacy IT systems that support human resource functions such as organization and position management, training, and employment. Will develop technologies for Army Installation Support, PM Personnel Employee Records Management System, HRC Core Automation Support, Records Management and Army Civilian Personnel Operations.</p> <p>Army Civilian Human Resources Agency will deliver additional capability increments of OET in FY 2016, through FY 2019. The FY 2016 increment consists of the initial set of Civilian Employee Interface functions. The FY 2017 increment delivers enhancements to the Civilian Employee Interface. The FY 2018 and FY 2019 increments include electronic files in place of paper, embed additional calculations, auto-generate additional notifications, online document review, and automate flow of data to Defense Civilian Personnel Data System.</p> <p>FY 2018 Plans: Continue to fund Army Business System Modernization Initiatives.</p>				
<p>Title: Army Career Tracker (ACT)</p> <p>Description: Modify the existing Soldier Home Page to quickly display key career related status requiring immediate action. Use ACT professional development systems to support and enhance Soldier competitive efforts for advancement and retention. ACT will utilize the Real-Time Broker Service (RBS) to get the DoD ID Number from DMDC for new users who come to them through these other systems. This method will allow ACT to retrieve DoD ID for users that may not have been processed in the Batch Request.</p> <p>FY 2016 Accomplishments: Provide competency management tool to manage leader attributes characteristics of the individual that shape the motivations for actions and bearing, and how thinking affects decisions and interactions with others; enhancement of counseling capabilities linked to the Individual Development Plan and current Counselor functions to provide greater functions and access to specific information by various counselors in support of Army Transition; enhance sponsorship functions to provide ease of execution and enhanced workflow between the many sponsorship Stakeholders</p> <p>FY 2017 Plans: Provide competency management tool to manage leader attributes characteristics of the individual that shape the motivations for actions and bearing, and how thinking affects decisions and interactions with others; enhancement of counseling capabilities linked to the Individual Development Plan and current Counselor functions to provide greater functions and access to specific information by various counselors in support of Army Transition; enhance sponsorship functions to provide ease of execution and enhanced workflow between the many sponsorship Stakeholders.</p> <p>FY 2018 Plans:</p>		0.580	0.748	0.960

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>The revision of the Professional development model will ensure greater granularity, while providing the ability to capture and report on branch competencies by skill levels. This effort will include provide a backend administrative console for use of management and sustainment, additions and deletions of career/learning content and related competencies. The automated Individual Development Plan in ACT does not support the continuous interaction between the supervisor and employee as a living document. As we transition to DoD Performance Management and Appraisal Program (DPMAP), these required enhancements to the ACT system will assist in keeping a strong connection between performance management and employee development. Currently the Sergeant Major Management Office (SMMO) does not have an enterprise level leader development tool for accurate display management of KSAs at the personnel or position level. Exportable Life Long Learning Profile is needed in collaboration with each individual, identify employment, education, and training opportunities which will extend their talents and optimize their performance.</p>				
<p>Title: Criminal Information Management System (CIMS)</p> <p>Description: CIMS formerly known as the Law Enforcement Advisory Program (LEAP), is a collection of mission essential information technology (IT) systems within the Criminal Investigation Command (CIDC) and the Office of the Provost Marshal General (OPMG). Thru the CIMS, USACIDC and OPMG developed an integrated and unified, comprehensive enterprise program / system that houses Classified and Unclassified - Law Enforcement Sensitive (LES) data, leveraging existing and future Army LE enterprise information technology (IT) assets and other external data sources providing a full range of law enforcement functions to support business objectives and mission. The primary component is a comprehensive enterprise system, known as the Army Law Enforcement Reporting and Tracking System (ALERTS), provides US Army Law Enforcement stakeholders the enhanced capability to rapidly and efficiently manage a variety of Law Enforcement and criminal intelligence (CrimIntel) functions; as well as a broader range of senior executive reporting requirements. RDT&E dollars are required to further enhance ALERTS and other CIMS systems to continue the consolidation/rationalization of LE applications, and to give the LE community the tools to more quickly investigate, solve, and prevent Army crime.</p> <p>FY 2017 Plans: FY17 funds will be used in the research and development of the LEAP Database and to increase and improve law enforcement data sharing in the Army Law Enforcement Community</p> <p>FY 2018 Plans: FY18 funds will continue to develop the Database and to increase and improve law enforcement data sharing in the Army Law Enforcement Community. FY18 RDT&E dollars are required to further enhance ALERTS, COPS and other CIMS systems to continue the consolidation/rationalization of Law Enforcement applications, and to give the law enforcement community the tools to more quickly investigate, solve, and prevent Army crime.</p>		-	2.254	4.361
<p>Title: Educational Outreach Initiative</p>		-	0.156	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>Description: Defense Forensic Science Center requires funding for educational outreach initiatives including internship positions at the undergraduate, graduate, and doctoral candidate levels. Defense Forensic Science Center was designated as the leader for forensic science disciplines (DAPM Memo 4 Oct 2011). This memorandum states that the DFSC will establish a forensic RDT&E program that provides the integration of joint operational research, including procedures for establishing customer requirements, and identifying gaps and needs that lead to RDT&E priorities. The program includes developing a scholarly environment across the Defense Forensic Enterprise through the use of educational partnerships, internships and fellowships to facilitate participation in RDT&E projects. The Educational Outreach program will provide an opportunity for students to contribute to forensic science research and influence shared research priorities across the forensic science communities, while supporting the DFSC and laboratory operations. Through the internship program, a variety of innovative research will be conducted that supports research capabilities across the entire range of military operations including traditional, expeditionary (forward deployed laboratories), and reach-back operations.</p> <p>FY 2017 Plans: FY17 funds will be used to explore 7 innovative internship positions at the undergraduate, graduate, and doctoral candidate levels. Through this startup program interns would provide an invaluable contribution to forensic research...</p>			
<p>Title: Financial Integrated Reporting Environment (FIRE)</p> <p>Description: FIRE supports the funding and manpower required to accomplish ARDEC's reimbursable workload. RDTE is required to develop and expand the system as an enterprise solution across all AMC reimbursable activities. This strategy is in line with existing Army Portfolio Management System (APMS) and Business Enterprise Architecture (BEA) Objectives.</p> <p>FY 2016 Accomplishments: blank</p> <p>FY 2018 Plans: Continue funding development work to expand the system as an enterprise solution across all AMC reimbursable activities.</p>	0.009	-	10.569
<p>Title: Research & Development Identified through the Broad Agency Announcement Initiative</p> <p>Description: The Defense Forensic Science Center (DFSC) requires funds to coordinate the execution of forensic research projects that will enhance the capability of forensic science applications for DoD customers both in traditional law enforcement/ criminal justice purviews and in expeditionary environments. The DFSC staff will manage federally funded research and development contracts identified through a two year rolling Broad Agency Announcement (BAA) procedure. The BAA is issued under the provisions of paragraph 6.102(d) (2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of proposals. Research proposals submitted in response to this BAA and selected for award are considered to be</p>	-	2.340	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
the result of full and open competition and in full compliance with the provisions of Public Law 98-369, "The Competition in Contracting Act of 1984" and subsequent amendments.				
FY 2017 Plans: FY17 funds will provide for new forensic research and testing of new technology. Funds will assist the Defense Forensic Science Center to comply with DODD 5205.15E				
Title: Defense Language Software Upgrade Description: Modify the Universal Course Authoring Tool (UCAT). This tool will enable the curriculum development department to author new curricula without having to program in HTML. The tool will do the programming automatically in the proper format for online viewing. There will also be programming support to develop and convert existing online material into the current formats for use with all mobile devices regardless of the operating system used. FY 2017 Plans: Base FY 2017 Description: Modify the Universal Course Authoring Tool (UCAT). This tool will enable the curriculum development department to author new curricula without having to program in HTML. The tool will do the programming automatically in the proper format for online viewing. There will also be programming support to develop and convert existing online material into the current formats for use with all mobile devices regardless of the operating system used. FY 2018 Plans: Modify the Universal Course Authoring Tool (UCAT). This tool will enable the curriculum development department to author new curricula without having to program in HTML. The tool will do the programming automatically in the proper format for online viewing. There will also be programming support to develop and convert existing online material into the current formats for use with all mobile devices regardless of the operating system used.		-	1.150	1.379
Title: Army Software Marketplace (ASM) Description: ASM will enable the Army to have a centralized location to store software applications and application metadata. FY 2018 Plans: User will be able to access application software to perform their mission. ASM will allow the Army to avoid duplicative efforts and excessive cost by creating a standardized environment. ASM will allow the Army to manage software applications and control which users have the ability to download and/or install software.		-	-	5.480
Accomplishments/Planned Programs Subtotals		24.128	28.577	39.216

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>

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

N/A

Remarks

D. Acquisition Strategy

Modernize IT legacy systems across Army IT domains by adapting/improving government off the shelf (GOTS), commercial off the shelf (COTS), and new software development to perform various tasks in a networked environment. These efforts include Army Contract Writing System (ACWS), Army Training Information System (ATIS), Soldier Management System (SMS), Commander's Risk Reduction Dashboard (CRRD), the Army Strategic Readiness Update (ASRU), Law Enforcement Advisory Program (LEAP), Educational Outreach Program, R&D Broad Agency Program, Program Planning Budget Execution (PPBE) - Business Operating System (BOS), Automated Orders and Resources System (AORS), Army Selection Board System (ASBS), Data Base Administration Suite of System (DBA), Enlisted Distribution and Assignment system (EDAS), Enlisted Promotion Model (EPM), Enterprise Service Bus (ESB), Human Resource Command Identity Management System (HIMS), Integrated Total Army Personnel Database (ITAPDB), Officer Selection Support System (OSSS), Reserve Statistics Accounting System/Reserve Component Common Personnel Data System (RSAS/RCCPDS), Senior Enlisted Promotions Model (SEPM), Single Evaluation Processing System (SEPS), Soldier Management System Webified Suite of System (SMSWEB), Total Army Personnel Data Base - Active Enlisted (TAPDB-AE), Total Army Personnel Data Base - Active Officer (TAPDB-AO), Total Army Personnel Data Base -Active Reserve (TAPDB-AR), Total Officer Personnel Management Information System (TOPMIS), Total Officer Personnel Management Information System II (TOPMIS II), KEYSTONE Retain System, Army Contract Writing System (ACWS), Army Mapper, and the Interactive Personnel Electronic Records Management System (iPERMS).

ACWS strategy is to perform all requisite activities to concurrently develop pre-milestone A/B documentation and perform pre-solicitation/source selection activities to meet the USD AT&L timelines for building a contract writing system to replace legacy contract systems to include the Standard Procurement System (SPS).

ASMIS-R is comprised of legacy modules (applications) that require modernization to maintain their relevancy to the Army in support of mishap reduction. As stated above, these are primarily related to meeting minimum DoD regulatory requirements related to the collection of mishap information, safety information storage, and resolving inefficiencies in data quality control and information flow.

Additionally, advances in technology allow for improvements in performance and data integrity that currently are deficiencies in the system. ASMIS-R, in its current state, does not provide any IT (material solution) to the business requirements identified above. The Command has utilized a FFP contract to execute specific Task Orders to develop the tools and products through mid-year FY15. The CRC will be competing a new contract vehicle to support the development of products and tools from midyear FY15 through FY19.

HQDA AG-1 Civilian Personnel (CP) Systems' Acquisition Strategy – The HQDA AG-1 Civilian Personnel (CP) office, Civilian Information Services Division (CISD) Chief and Program Managers will manage these modernization efforts and will utilize the HQDA AG-1 CP's Configuration Control Committee (CCC), Configuration Control Board (CCB), and Integrated Product Teams (IPT) to ensure the appropriate functionality is implemented into OET, CPOL Portal, and FASCLASS. Development tasks will be performed by AG-1 CP's contractor staff, whose performance is monitored according to the Quality Assurance Surveillance Program. In addition, unit testing and operational testing will be implemented to ensure the new functionality performs as required. This work will be performed on a firm- fixed- price contract vehicle.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CRRD Program Management	C/TBD	Army Contracting Center : Rock Island, II	0.000	-		-		0.150		-		0.150	0.000	0.150	0.000
Subtotal			0.000	-		-		0.150		-		0.150	0.000	0.150	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 FOR KEYSTONE RETAIN SYSTEM, i-PERMS PRODUCT DEVELOPMENT	MIPR	M&RA/G-1 : ARLINGTON, VA	16.570	-		-		-		-		-	0.000	16.570	0.000
PPBOS PRODUCT DEVELOPMENT	MIPR	OAA : FORT BELVOIR, VA	23.230	-		-		-		-		-	0.000	23.230	0.000
Product Development for ACWS	C/IDIQ	PEO EIS : Alexandria, VA	41.644	4.097		-		-		-		-	Continuing	Continuing	Continuing
ATIS	C/IDIQ	PEO EIS : FT Eustice VA	0.000	8.845		15.670		12.722		-		12.722	Continuing	Continuing	0.000
CRRD	C/IDIQ	TBD : TBD	0.000	-		-		2.818		-		2.818	Continuing	Continuing	0.000
The Army Safety and Health Management System	C/IDIQ	TBD : TBD	0.000	3.692		4.846		7.465		-		7.465	Continuing	Continuing	0.000
Army Career Tracker	C/FFP	IBM : Reston, VA	0.000	0.580		0.748		0.960		-		0.960	Continuing	Continuing	0.000
Army Business System Modernization Initiatives	C/IDIQ	TBD : TBD	13.679	6.036		1.413		1.837		-		1.837	Continuing	Continuing	0.000
CIMS	C/IDIQ	ACC : NCR	0.003	-		2.254		2.254		-		2.254	0.000	4.511	0.000
Educational Outreach Initiative:	C/IDIQ	DFSC : FT Gillem	0.000	-		0.156		0.156		-		0.156	0.000	0.312	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Research & Development Identified through the Broad Agency Announcement Initiative	C/IDIQ	DFSC : Ft Gillem	0.000	-		2.340		2.340		-		2.340	0.000	4.680	0.000
Defense Language Software Upgrade	C/FFP	TBD : TBD	0.000	0.878		1.150		1.379		-		1.379	0.000	3.407	0.000
Army Software Marketplace (ASM)	TBD	PEO EIS : Fort Belvoir, VA	0.000	-		-		5.480		-		5.480	0.000	5.480	0.000
Subtotal			95.126	24.128		28.577		37.411		-		37.411	-	-	-

Remarks

Army Contract Writing System: The Under Secretary of Defense, Acquisition, Technology and Logistics directed that the Standard Procurement System (SPS) be decommissioned by FY17. In order for the Army to meet appropriate legislative mandates, the new capability will provide improved functionality in general contract writing and contract administration while seamlessly operating in the NIPR, SIPR, CONUS, OCONUS, and in low/no bandwidth environments. In addition, the replacement capability will produce data that is trackable and auditable by the Army designated finance account system(s) and will be in compliance with the Secretary of Defense's mandate for implementing internal controls to facilitate full financial audit readiness and accountability.

Army Training Information System (ATIS) is an enterprise system that will provide a common operational picture of the training environment through integrated, interoperable training development, management, scheduling, and delivery capabilities. These capabilities will enable commanders, leaders, soldiers, and civilians to better understand, visualize, describe, direct, lead and assess training requirements so they can more effectively plan, prepare, execute, and assess training. End result is an ATIS that enables soldiers to train as they fight so they can effectively fight as they have trained.

Adapt/improve/install/field government off the shelf (GOTS), commercial off the shelf (COTS), and new software to perform various tasks in a networked environment such as data warehousing, force management, personnel, installation and environmental databases and applications to support Business System Transformation and Installation Management, to include Commander's Risk Reduction Dashboard.

The Army Human Resources Command (HRC) has several efforts for which RDT&E will be applied. One is to prepare those systems for subsumption into the Integrated Personnel and Pay System (IPPS-A). The other is to disconnect and upgrade those systems not being subsumed by IPPS-A. Systems that will be targeted by HRC to prepare for IPPS-A subsumption or upgrade are the Automated Orders and resources System (AORS), Army Selection Board System (ASBS), Data Base Administration Suite of System (DBA), Enlisted Distribution and Assignment system (EDAS), Enlisted Promotion Model (EPM), Enterprise Service Bus (ESB), Human Resource Command Identity Management System (HIMS), Integrated Total Army Personnel Database (ITAPDB), Officer Selection Support System (OSSS), Reserve Statistics Accounting System/ Reserve Component Common Personnel Data System (RSAS/RCCPDS), Senior Enlisted Promotions Model (SEPM), Single Evaluation Processing System (SEPS), Soldier Management System Webified Suite of System (SMSWEB), Total Army Personnel Data Base - Active Enlisted (TAPDB-AE), Total Army Personnel Data Base - Active Officer (TAPDB-AO), Total Army Personnel Data Base - Active Reserve (TAPDB-AR), Total Officer Personnel Management Information System (TOPMIS), Total Officer Personnel Management Information System II (TOPMIS II), Keystone Request/Retain System, and the Interactive Personnel Electronic Records Management System (iPERMS).

Criminal Information Management System (CIMS): CIMS formerly known as the Law Enforcement Advisory Program (LEAP), is a collection of mission essential information technology (IT) systems within the Criminal Investigation Command (CIDC) and the Office of the Provost Marshal General (OPMG). Thru the CIMS, USACIDC and OPMG developed an integrated and unified, comprehensive enterprise program / system that houses Classified and Unclassified - Law Enforcement Sensitive (LES) data, leveraging

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

existing and future Army LE enterprise information technology (IT) assets and other external data sources providing a full range of law enforcement functions to support business objectives and mission. The primary component is a comprehensive enterprise system, known as the Army Law Enforcement Reporting and Tracking System (ALERTS), provides US Army Law Enforcement stakeholders the enhanced capability to rapidly and efficiently manage a variety of Law Enforcement and criminal intelligence (CrimIntel) functions; as well as a broader range of senior executive reporting requirements. RDT&E dollars are required to further enhance ALERTS and other CIMS systems to continue the consolidation/rationalization of LE applications, and to give the LE community the tools to more quickly investigate, solve, and prevent Army crime. Educational Outreach Initiative: Defense Forensic Science Center requires funding for educational outreach initiatives including internship positions at the undergraduate, graduate, and doctoral candidate levels. Defense Forensic Science Center was designated as the leader for forensic science disciplines (DAPM Memo 4 Oct 2011). This memorandum states that the DFSC will establish a forensic RDT&E program that provides the integration of joint operational research, including p

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IPPS-A SUPPORT COSTS	MIPR	HRC : FORT KNOX, KY	15.357	-		-		-		-		-	0.000	15.357	0.000
HRC SYSTEMS KEYSTONE, IPERMS	MIPR	HRC : FORT KNOX, KY	0.385	-		-		-		-		-	0.000	0.385	0
Law Enforcement Advisory Program(LEAP)	MIPR	ACC/NCR : Quantico, VA	2.677	-		-		-		-		-	Continuing	Continuing	0
ARMY MAPPER	C/T&M	TBD : TBD	0.220	-		-		-		-		-	0	0.220	0
Subtotal			18.639	-		-		-		-		-	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
The Army Safety and Health Management System (FIRE)	C/FFP	ARMY Contracting Command : Rock Island, IL	0.000	-		-		1.655	Feb 2018	-		1.655	0.000	1.655	0.000
Subtotal			0.000	-		-		1.655		-		1.655	0.000	1.655	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army							Date: May 2017						
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>			Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>						
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	113.765	24.128		28.577		39.216		-		39.216	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ACWS Product Development					ACWS																							
ATIS Product Development																												
CRRD Product Development																												
ASHMS Product Development																												
ACT Product Development																												
Army Business System Modernization																												
Army Software Marketplace (ASM)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) T05 / <i>Army Business System Modernization Initiatives</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ACWS Product Development	1	2014	4	2018
ATIS Product Development	1	2016	1	2023
CRRD Product Development	1	2016	2	2017
ASHMS Product Development	1	2016	2	2018
ACT Prduct Development	1	2016	4	2018
Army Business System Modernization	1	2016	4	2020
Army Software Marketplace (ASM)	3	2017	1	2018

Note

Army Contract Writing System moves to 0605047 FY17.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605013A / <i>Information Technology Development</i>	Project (Number/Name) VR3 / <i>ASMIS-R (REPORTIT)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
VR3: <i>ASMIS-R (REPORTIT)</i>	-	0.000	0.000	3.598	-	3.598	3.027	3.099	3.162	3.260	0.000	16.146
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This funding line is not a new start in FY 2018. Army Safety Management Information System - Revised (ASMIS-R) funding has been realigned from PE 0605013, Project T05 to PE 0605047, Project VR3 in FY 2018

A. Mission Description and Budget Item Justification

The Army Safety and Health Management System (ASHMS) initiative provides a framework of people, processes and technology to synchronize, integrate and optimize Army Safety and Occupational Health (SOH) capabilities to reserve war fighting capabilities and enhance the force by providing a safe and healthy environment for Soldiers, Families, Civilians, and contractors. An analysis of Army SOH Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities and Policies (DOTMLPF-P) determined that the Army Safety Management Information System – Revised (ASMIS-R), a Defense Business System, is currently not able to satisfy current and emerging ASHMS capability requirements without modernization to resolve these capability gaps. Changes in requirements for the Army Safety and Health Management System (Programmatic) related to DoDI 6055.01, AR 385-10, Information Assurance requirements and direct feedback from the Safety professionals within the DoD and the Army have resulted in the need for changes in associated business processes. Additionally, a business gap analysis performed by the DASA(ESOH) revealed a deficiency in the system's requirements that would support Army Commands in identifying hazards in the work place, determining hazard mitigation strategies and controls, employing these strategies and controls, and measuring their potential for reducing mishaps. Addressing these problems will have an immediate and direct impact on meeting regulatory requirements, improving data integrity, improving information assurance posture (compliance), increasing the Army's ability to reduce mishaps across the force structure, and promoting Army Force Generation (ARFORGEN) capabilities.

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

	FY 2016	FY 2017	FY 2018
Title: ASMIS-R Development	-	-	3.598
FY 2018 Plans: FY18 funds are being used to continue development of ASMIS-R products and tools.			
Accomplishments/Planned Programs Subtotals	-	-	3.598

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

N/A

Remarks

D. Acquisition Strategy

ASMIS-R is comprised of legacy modules (applications) that require modernization to maintain their relevancy to the Army in support of mishap reduction. As stated

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0605013A / <i>Information Technology Development</i>	VR3 / <i>ASMIS-R (REPORTIT)</i>

above, these are primarily related to meeting minimum DoD regulatory requirements related to the collection of mishap information, safety information storage, and resolving inefficiencies in data quality control and information flow.

Additionally, advances in technology allow for improvements in performance and data integrity that currently are deficiencies in the system. ASMIS-R, in its current state, does not provide any IT (material solution) to the business requirements identified above. The Command has utilized a FFP contract to execute specific Task Orders to develop the tools and products through mid-year FY15. The CRC will be competing a new contract vehicle to support the development of products and tools from midyear FY15 through FY19.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	116.215	155.584	172.361	-	172.361	122.630	39.304	40.067	78.300	0.000	724.461
ED9: <i>Integrated Personnel and Pay System - Army Inc 2</i>	-	116.215	155.584	172.361	-	172.361	122.630	39.304	40.067	78.300	0.000	724.461

Note

IPPS-A Increment II (Project ED9) is a designated Major Automated Information System (MAIS) program.

A. Mission Description and Budget Item Justification

The Integrated Personnel and Pay System - Army (IPPS-A) provides the Army with an integrated, multi-Component, personnel and pay system which streamlines Army Human Resources (HR), enhances the efficiency and accuracy of Army personnel and pay procedures, and supports Soldiers and their families. IPPS-A will subsume approximately 43 Army legacy systems across the Army, Army Reserve and National Guard, into an integrated system. IPPS-A will be a web-based tool, available 24 hours a day, accessible to HR professionals, combatant commanders, personnel and pay managers, and other authorized users throughout the Army. IPPS-A addresses major deficiencies in the delivery of military personnel and pay services and also provides internal controls and audit procedures that prevent erroneous payments and loss of funds.

B. Program Change Summary (\$ in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	121.011	155.584	150.582	-	150.582
Current President's Budget	116.215	155.584	172.361	-	172.361
Total Adjustments	-4.796	0.000	21.779	-	21.779
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.796	-			
• Other Adjustments 2	0.000	0.000	21.779	-	21.779

Change Summary Explanation

IPPS-A's program funding increased \$21.779 million to support the multiple concurrent development releases of Increment II.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017			
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>					Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
ED9: <i>Integrated Personnel and Pay System - Army Inc 2</i>	-	116.215	155.584	172.361	-	172.361	122.630	39.304	40.067	78.300	0.000	724.461	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

Note

IPPS-A Increment II is a designated Major Automation Information System (MAIS).

A. Mission Description and Budget Item Justification

The Integrated Personnel and Pay System - Army (IPPS-A) Increment II will deliver fully integrated personnel and pay services for all Army Components, building on the trusted database delivered by the IPPS-A Increment I program. Increment II will be able to link the personnel and pay functions for all Army personnel, eliminating duplicate data entry, reducing complex system maintenance, and minimizing pay discrepancies. IPPS-A Increment II will account for status changes between Active, Reserve, and National Guard components to ensure accurate service time minimizing impact on individual pay, credit for service, and other benefits as well as enable disciplined human resource management.

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

	FY 2016	FY 2017	FY 2018
Title: Analysis and Design, Development, and Integration of IPPS-A Increment II	116.215	155.584	172.361
Description: Funding is provided for the following efforts:			
FY 2016 Accomplishments: IPPS-A achieved Milestone B; completed the System Requirement Review (Oct 2015), System Functional Review (Feb 2016), Integrated Baseline Review for Release 2.0 (April 2016), and Preliminary Design Review (Sep 2016). Other major activities include blueprinting of Authoritative data source, build-out infrastructure requirements in Defense Information Systems Agency, Business Process Re-engineering, Fit Gap Analysis, support Mil-Pay transition, legacy system analysis with Functional Proponents, define, develop, evaluate and build the Risk Management Framework.			
FY 2017 Plans: IPPS-A will complete the design, development, integration, and developer integration test for Release 2.0. Support an Integrated Progress Review (IPR) with Milestone Decision Authority (MDA) for both Releases 3.0 and 4.0. IPPS-A will complete IBR and all critical activities, leading to a PDR for Release 3.0.			
FY 2018 Plans: IPPS-A will complete Limited User Test (LUT), and Limited Fielding Decision Activity for the Army National Guard (Release 2.0). IPPS-A will continue the system design, configuration, development, integration, and major testing activities leading to the Government Acceptance Testing and Limited Fielding Decision for Release 3.0 in FY19. IPPS-A will complete the IPR, IBR, PDR,			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>	Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
system design, configuration, development, integration and all other major activities leading to a CDR for Release 4.0. IPPS-A will complete all critical activities to complete an IPR with Milestone Decision Authority (MDA), as well as all activities leading to an IBR in the 4th Quarter of FY18 for Release 5.0.			
Accomplishments/Planned Programs Subtotals	116.215	155.584	172.361

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• System Implementation/ Fielding: <i>OPA - Army Integrated Personnel and Pay System - Army (IPPS-A) (B66706)</i>	4.446	4.214	16.140	-	16.140	46.378	9.504	9.695	10.000	3.500	103.877
• Sustainment & Support: <i>OMA - Army Integrated Personnel and Pay System - Army (IPPS-A)</i>	-	-	30.346	-	30.346	67.101	99.293	101.294	100.069	Continuing	Continuing

Remarks

Comment: 0308610A (OMA) Funding will be used for the Operations and Maintenance support of IPPS-A, which includes civilian salaries, program office contractor office support, travel and training for program office Personnel, software license renewal, and Help Desk support.

B66706000 (OPA) Funding will be used for initial system implementation and fielding of IPPS-A, to include new equipment training (NET) as well as procurement of hardware and software which is required to build out the infrastructure of IPPS-A Data Centers.

D. Acquisition Strategy

IPPS-A Increment II will be developed in accordance with DoDI 5000.02, Enclosure 12 requirements and will deliver full integrated personnel and pay services for all Army Components (Active, National Guard, and Reserve), building on the trusted database delivered by the IPPS-A Increment I program. IPPS-A Increment II will consist of four releases (Releases 2.0-5.0). Each release will build upon the previous release, providing pre-defined personnel and/or pay capabilities. IPPS-A will pursue a single MS B decision at the start of Increment II and a separate Authorization To Proceed (ATP) at the start of each subsequent release. Each release will also hold separate Preliminary and Critical Design Reviews prior to the start of development and test activities. Increment II Full Deployment Decision is anticipated at the conclusion of Release 4.0 when the system will provide integrated personnel and pay capabilities. IPPS-A achieved Milestone B, 14 December 2014.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>	Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>
<p>Release 2.0 – SIDPERS Functionality Only: Begins in FY15 and delivers capability in FY18, building upon Increment I capabilities and provide the functionality from PeopleSoft necessary to subsume the SIDPERS system for all ARNG locations. End-to-end Business Process development considerations will be evaluated to support various activities to include, but not be limited to, promotions/demotions, training requirements, member benefits, duty status, and unit level manning.</p> <p>Release 3.0 – Accountability and Essential Personnel Services: Begins in FY17 and delivers capability in FY19, supporting accountability and essential personnel services necessary to subsume numerous legacy field systems including eMILPO and TAPDB-R. IPPS-A will establish a consolidated system that provides accountability and tracking of all personnel to include deployed Soldiers. It will allow Commanders in the field to access timely, accurate, and standardized personnel data for Soldiers in all components and provide a basic means to identify Soldiers who should be on a payroll. In addition to delivering most of the functions required to establish an Army-wide HR system, Release 3.0 will bring HR payroll drivers on board to enhance accuracy of pay, credit for service, and benefits. IPPS-A will serve as the authoritative data source for all personnel within the system.</p> <p>Release 4.0 – Pay Services: Begins in FY17 and delivers capability in FY20, focusing on pay services and building upon Release 2.0 and 3.0 to provide the basis for the fully integrated personnel and pay system. IPPS-A will incorporate pay functionality to include, but not limited to, base pay, taxes, allowances, bonuses, allotments and leave. At deployment, Release 4.0 will serve as the authoritative data source for all personnel and pay transactions within IPPS-A and will be able to produce initial data in support of the Army’s audit readiness goals.</p> <p>Release 5.0 – Personnel Services: Begins in FY18 and delivers capability in FY20, focusing on the personnel services not yet addressed by the previous releases. Specifically, it will incorporate remaining functions related to record evaluation and retention management, along with some predominant manual activities.</p> <p><u>E. Performance Metrics</u> N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>	Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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	C/CPIF	Program oversight, resource justification, budget and programming, milestone and schedule tracking : Various	2.993	4.278	Jan 2016	4.047	Jan 2017	4.070	Jan 2018	-		4.070	0.000	15.388	0.000
In-House Government Management Support	Allot	Program oversight, resource justification, budget and programming, milestone and schedule tracking : NCR	2.749	3.846	Apr 2016	3.591	Apr 2017	3.955	Apr 2018	-		3.955	0.000	14.141	0.000
Subtotal			5.742	8.124		7.638		8.025		-		8.025	0.000	29.529	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 License -All Others	C/FFP	Various : Various	2.720	2.182	Jan 2016	3.500	Jan 2017	3.518	Jan 2018	-		3.518	0.000	11.920	0.000
Software Licenses - IBM	C/FFP	Immixtechnology INC : McLean, Va	1.100	0.320	Feb 2016	0.438	Feb 2017	1.075	Jan 2018	-		1.075	0.000	2.933	0.000
Software Licenses - GRC	C/FFP	Mythics : Virginia Beach, VA	0.999	0.999	Jul 2016	0.951	Jul 2017	1.098	Jul 2018	-		1.098	0.000	4.047	0.000
Software Ab Initio	C/FFP	Various : Various	0.000	1.046	Sep 2016	0.263	Sep 2017	0.206	Sep 2018	-		0.206	0.000	1.515	0.000
Oracle Bundle - Software	SS/FFP	Oracle America INC : Reston, VA	2.348	13.030	May 2016	0.936	May 2017	2.463	May 2018	-		2.463	0.000	18.777	0.000
Oracle - ULA	C/FFP	Myhtics : Virginia Beach, VA	0.000	1.876	May 2016	1.800	May 2017	1.970	May 2018	-		1.970	0.000	5.646	0.000
Software Licenses- CA	SS/FFP	Immix Tech : McLean, VA	0.829	0.030	Jan 2016	0.897	Jan 2017	-		-		-	0.000	1.756	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>	Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Licenses -ESB	SS/FFP	Actuate Corp : San Mateo, CA	0.585	2.291	Aug 2016	0.469	Aug 2017	0.469	Aug 2018	-		0.469	0.000	3.814	0.000
Software Product Level SME Consulting Support	SS/FFP	Various : Various	2.158	5.653	May 2016	2.709	May 2017	3.549	May 2018	-		3.549	0.000	14.069	0.000
in House contract support of system development	C/CPFF	Various : Various	10.675	16.157	May 2016	15.553	May 2017	21.390	May 2018	-		21.390	0.000	63.775	0.000
Functional in house contract support of system development-Army National Guard/Army Reserve/FMD	C/FFP	BAH : NCR	5.000	6.383	Jan 2016	-		-		-		-	0.000	11.383	0.000
Design, Development and Integration - Increment II	C/CPFI	CACI : Chantilly, VA	7.601	36.008	May 2016	54.897	May 2017	61.323	May 2018	-		61.323	0.000	159.829	0.000
Network Support/ Production Hosting Services/Hardware Leasing	MIPR	Defense Information Systems Agency (DISA) Defense Enterprise Computing Center (DECC) : various	16.071	8.813	May 2016	36.722	May 2017	36.400	May 2018	-		36.400	0.000	98.006	0.000
System Interface	MIPR	various : various	0.000	1.468	May 2016	7.542	May 2017	5.236	Jul 2018	-		5.236	0.000	14.246	0.000
Software Licenses -m Factory C	C/FP	ACC -NJ : New Jersey	0.000	1.321	Sep 2016	0.234	Sep 2017	0.255	Sep 2018	-		0.255	0.000	1.810	0.000
Software Licenses- PeopleSoft Enterprise Licenses	C/FFP	PeopleSoft : Pleasanton, CA	0.000	2.471	Nov 2016	1.016	Nov 2016	1.248	Nov 2018	-		1.248	0.000	4.735	0.000
Subtotal			50.086	100.048		127.927		140.200		-		140.200	0.000	418.261	0.000

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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/Lease/Rents	MIPR	Facilities/Leases/ Rents : Various	3.128	4.746	Oct 2016	4.675	Oct 2017	5.220	Oct 2018	-		5.220	0.000	17.769	0.000

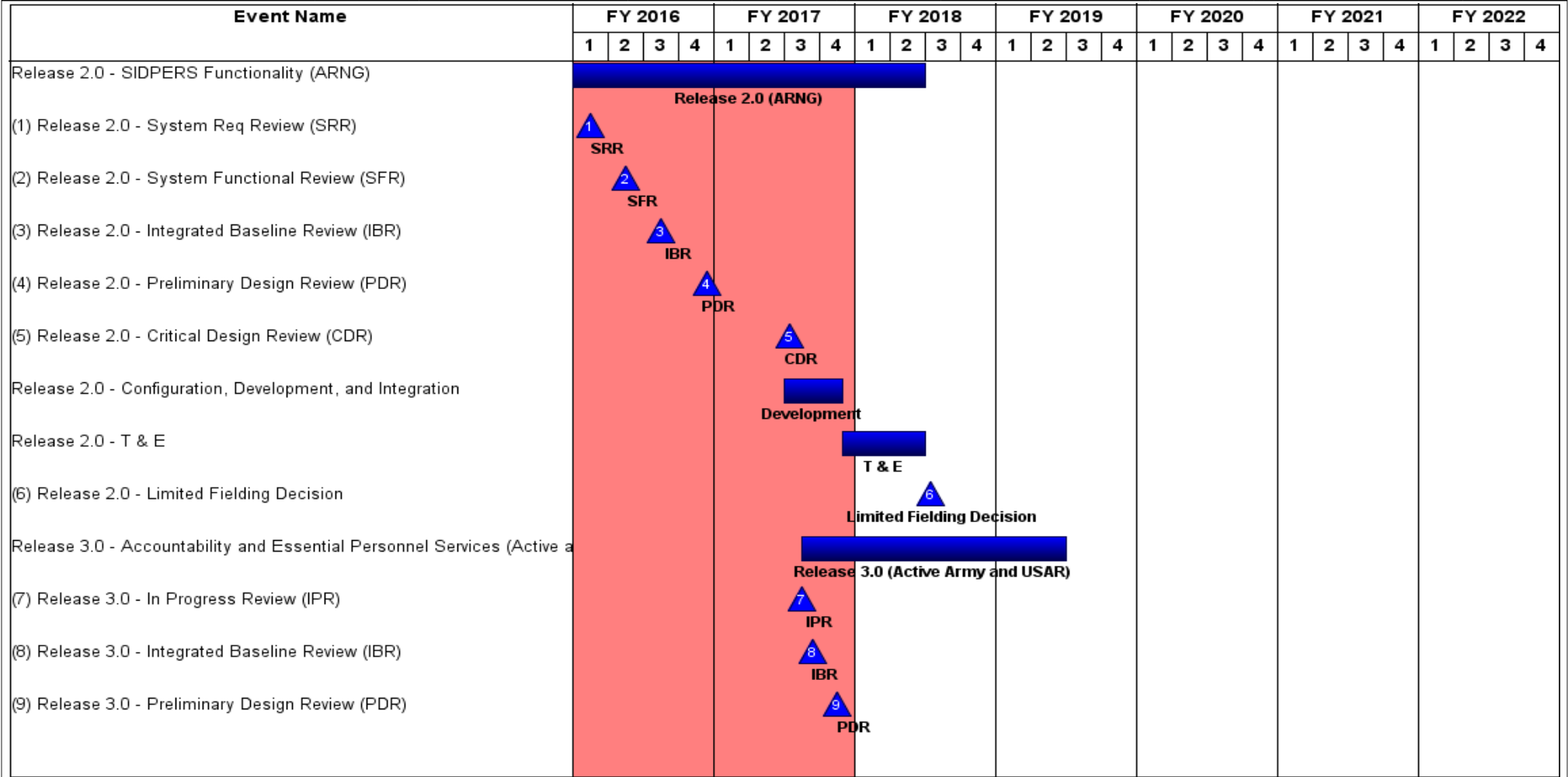
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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army													Date: May 2017		
Appropriation/Budget Activity				R-1 Program Element (Number/Name)						Project (Number/Name)					
2040 / 5				PE 0605018A / Integrated Personnel and Pay System-Army (IPPS-A)						ED9 / Integrated Personnel and Pay System - Army Inc 2					
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Equipment and Supplies MISC	Various	Various : Various	2.987	0.959	May 2016	1.000	May 2017	1.143	May 2018	-		1.143	0.000	6.089	0.000
Subtotal			6.115	5.705		5.675		6.363		-		6.363	0.000	23.858	0.000
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Increment II-Government Acceptance Testing/ Operational Test and Evaluation	MIPR	Various Government Agencies : Various	0.000	0.576	Oct 2016	7.382	Oct 2017	8.416	Oct 2018	-		8.416	0.000	16.374	0.000
Increment II - Capability Acceptance Testing (CAT) /DT	Various	Government & Support Contractors : Various	0.981	1.762	Oct 2016	6.962	Oct 2017	9.357	Oct 2018	-		9.357	0.000	19.062	0.000
Subtotal			0.981	2.338		14.344		17.773		-		17.773	0.000	35.436	0.000
Project Cost Totals			62.924	116.215		155.584		172.361		-		172.361	0.000	507.084	0.000
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>	Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>
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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>	Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>
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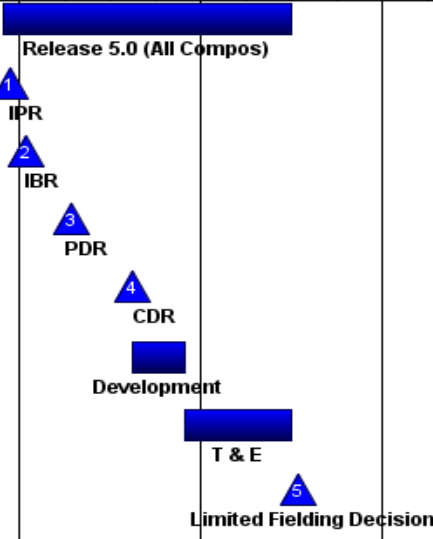
Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
(1) Release 3.0 - Critical Design Review (CDR)									▲ 1 CDR																				
Release 3.0 - Configuration, Development, and Integration									Development																				
Release 3.0 - T & E									T & E																				
(2) Release 3.0 - Limited Fielding Decision													▲ 2 Limited Fielding Decision																
Release 4.0 - Pay Services (All Compos)									Release 4.0 (All Compos)																				
(3) Release 4.0 - In Progress Review (IPR)									▲ 3 IPR																				
(4) Release 4.0 - Integrated Baseline Review (IBR)									▲ 4 IBR																				
(5) Release 4.0 - Preliminary Design Review (PDR)									▲ 5 PDR																				
(6) Release 4.0 - Critical Design Review (CDR)									▲ 6 CDR																				
Release 4.0 - Configuration, Development, and Integration									Development																				
Release 4.0 - T & E													T & E																
(7) Increment II MS C Equivalent													▲ 7 MS C																
(8) Release 4.0 - Full Deployment Decision (FDD)													▲ 8 FDD																

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>	Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Release 5.0 - Personnel Service (All Compos)																												
(1) Release 5.0 - In Progress Review (IPR)																												
(2) Release 5.0 - Integrated Baseline Review (IBR)																												
(3) Release 5.0 - Preliminary Design Review (PDR)																												
(4) Release 5.0 - Critical Design Review (CDR)																												
Release 5.0 - Configuration, Development, and Integration																												
Release 5.0 - T & E																												
(5) Release 5.0 - Limited Fielding Decision																												



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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>	Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Release 2.0 - SIDPERS Functionality (ARNG)	4	2015	2	2018
Release 2.0 - System Req Review (SRR)	1	2016	1	2016
Release 2.0 - System Functional Review (SFR)	2	2016	2	2016
Release 2.0 - Integrated Baseline Review (IBR)	3	2016	3	2016
Release 2.0 - Preliminary Design Review (PDR)	4	2016	4	2016
Release 2.0 - Critical Design Review (CDR)	3	2017	3	2017
Release 2.0 - Configuration, Development, and Integration	3	2017	4	2017
Release 2.0 - T & E	4	2017	2	2018
Release 2.0 - Limited Fielding Decision	3	2018	3	2018
Release 3.0 - Accountability and Essential Personnel Services (Active and AR)	3	2017	2	2019
Release 3.0 - In Progress Review (IPR)	3	2017	3	2017
Release 3.0 - Integrated Baseline Review (IBR)	3	2017	3	2017
Release 3.0 - Preliminary Design Review (PDR)	4	2017	4	2017
Release 3.0 - Critical Design Review (CDR)	3	2018	3	2018
Release 3.0 - Configuration, Development, and Integration	3	2018	4	2018
Release 3.0 - T & E	1	2019	2	2019
Release 3.0 - Limited Fielding Decision	3	2019	3	2019
Release 4.0 - Pay Services (All Compos)	1	2018	1	2020
Release 4.0 - In Progress Review (IPR)	1	2018	1	2018
Release 4.0 - Integrated Baseline Review (IBR)	1	2018	1	2018
Release 4.0 - Preliminary Design Review (PDR)	3	2018	3	2018
Release 4.0 - Critical Design Review (CDR)	1	2019	1	2019

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605018A / <i>Integrated Personnel and Pay System-Army (IPPS-A)</i>	Project (Number/Name) ED9 / <i>Integrated Personnel and Pay System - Army Inc 2</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Release 4.0 - Configuration, Development, and Integration	1	2019	3	2019
Release 4.0 - T & E	3	2019	1	2020
Increment II MS C Equivalent	4	2019	4	2019
Release 4.0 - Full Deployment Decision (FDD)	1	2020	1	2020
Release 5.0 - Personnel Service (All Compos)	4	2018	2	2020
Release 5.0 - In Progress Review (IPR)	4	2018	4	2018
Release 5.0 - Integrated Baseline Review (IBR)	1	2019	1	2019
Release 5.0 - Preliminary Design Review (PDR)	2	2019	2	2019
Release 5.0 - Critical Design Review (CDR)	3	2019	3	2019
Release 5.0 - Configuration, Development, and Integration	3	2019	4	2019
Release 5.0 - T & E	4	2019	2	2020
Release 5.0 - Limited Fielding Decision	3	2020	3	2020

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605028A / <i>Armored Multi-Purpose Vehicle (AMPV)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	213.034	184.221	199.778	-	199.778	123.264	94.850	94.132	0.000	0.000	909.279
EB5: <i>Armored Multi-Purpose Vehicle</i>	-	213.034	184.221	199.778	-	199.778	123.264	94.850	94.132	0.000	0.000	909.279

A. Mission Description and Budget Item Justification

The Armored Multi-Purpose Vehicle (AMPV) is the materiel solution for replacement of the Army's Armored Personnel Carrier (M113) Family of Vehicles (FoV) within the Armored Brigade Combat Team (ABCT). It will mitigate current and future capability gaps in force protection, mobility, reliability, and interoperability across the Spectrum of Conflict. The AMPV will replace five mission roles currently performed by the M113 FoV by transferring the current M113 Mission Equipment Packages (MEP) to a new Military Vehicle Derivative (MVD) platform. In total, the AMPV FOV will account for approximately 30% of the ABCT's tracked fleet and consists of the following five variants:

1. Mission Command (MCmd) Vehicle: This platform enables effective mission command planning and execution for both the Tactical Operations Center (TOC) and Tactical Command Vehicle (TAC) versions of the MCmd. It will host current Battle Command Systems, future replacements, and upgrades of hardware and software.
2. Medical Treatment (MT) Vehicle: This platform will provide a protected surgical environment, with adequate lighting and accessible medical equipment. It will provide a capability for immediate medical care for one patient by a medical crew of four.
3. Medical Evacuation (ME) Vehicle: This platform will conduct ambulance type activities and provide casualty evacuation for up to four litter or six ambulatory patients, with a crew of three medical attendants.
4. General Purpose (GP) Vehicle: This platform will operate throughout the battle space by conducting re-supply, maintenance, casualty evacuation, and other tasks within the formation.
5. Mortar Carrier (MC) Vehicle: This platform will provide immediate responsive fire support to conduct fast-paced offensive operations.

The AMPV program has been initiated on the basis of a Capability Development Document (CDD) that was approved on 21 June 2013. The CDD reflects a set of stable, technologically achievable requirements. A Milestone B (MS B) Defense Acquisition Board (DAB) was held on 9 December 2014 and it was followed by an Acquisition Decision Memorandum (ADM) that was signed on 22 December 2014. The ADM approved MS B for the AMPV program and entry into the Engineering and Manufacturing Development (EMD) phase. In addition, the ADM authorized the Army to proceed with award of the EMD prime contract, which occurred on 23 December 2014 to BAE Systems Land & Armaments, L.P. (BAE). The FY2016 Accomplishments described below largely reflect the lead-up to the Critical Design Review (CDR) and initiation of activities related to procurement of prototype hardware. Included are efforts that are associated with the preparation and review of all CDR artifacts, as well as efforts related to CPR close-out. The FY2017 Planned Program is related to the integration, assembly, and delivery of 29 full system prototypes, further development of logistics products, and the initiation of the AMPV development test program. The FY2018 Planned Program consists of Production Prove Out Testing (including performance and reliability testing), completion of the Interim Design Review (IDR) and the Functional Configuration Audit (FCA), Logistics Demonstration, and initiation of the Limited User Test (LUT).

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0605028A / <i>Armored Multi-Purpose Vehicle (AMPV)</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	226.210	184.221	200.809	-	200.809
Current President's Budget	213.034	184.221	199.778	-	199.778
Total Adjustments	-13.176	0.000	-1.031	-	-1.031
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-4.200	-			
• SBIR/STTR Transfer	-8.976	-			
• Other Adjustments 1	0.000	0.000	-1.031	-	-1.031

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605028A / <i>Armored Multi-Purpose Vehicle (AMPV)</i>				Project (Number/Name) EB5 / <i>Armored Multi-Purpose Vehicle</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EB5: <i>Armored Multi-Purpose Vehicle</i>	-	213.034	184.221	199.778	-	199.778	123.264	94.850	94.132	0.000	0.000	909.279
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Armored Multi-Purpose Vehicle (AMPV) is the materiel solution for replacement of the Army's Armored Personnel Carrier (M113) Family of Vehicles (FoV) within the Armored Brigade Combat Team (ABCT). It will mitigate current and future capability gaps in force protection, mobility, reliability, and interoperability across the Spectrum of Conflict. The AMPV will replace five mission roles currently performed by the M113 FoV by transferring the current M113 Mission Equipment Packages (MEP) to a new Military Vehicle Derivative (MVD) platform. In total, the AMPV FOV will account for approximately 30% of the ABCT's tracked fleet and consists of the following five variants:

1. Mission Command (MCmd) Vehicle: This platform enables effective mission command planning and execution for both the Tactical Operations Center (TOC) and Tactical Command Vehicle (TAC) versions of the MCmd. It will host current Battle Command Systems, future replacements, and upgrades of hardware and software.
2. Medical Treatment (MT) Vehicle: This platform will provide a protected surgical environment, with adequate lighting and accessible medical equipment. It will provide a capability for immediate medical care for one patient by a medical crew of four.
3. Medical Evacuation (ME) Vehicle: This platform will conduct ambulance type activities and provide casualty evacuation for up to four litter or six ambulatory patients, with a crew of three medical attendants.
4. General Purpose (GP) Vehicle: This platform will operate throughout the battle space by conducting re-supply, maintenance, casualty evacuation, and other tasks within the formation.
5. Mortar Carrier (MC) Vehicle: This platform will provide immediate responsive fire support to conduct fast-paced offensive operations.

The AMPV program has been initiated on the basis of a Capability Development Document (CDD) that was approved on 21 June 2013. The CDD reflects a set of stable, technologically achievable requirements. A Milestone B (MS B) Defense Acquisition Board (DAB) was held on 9 December 2014 and it was followed by an Acquisition Decision Memorandum (ADM) that was signed on 22 December 2014. The ADM approved MS B for the AMPV program and entry into the Engineering and Manufacturing Development (EMD) phase. In addition, the ADM authorized the Army to proceed with award of the EMD prime contract, which occurred on 23 December 2014 to BAE Systems Land & Armaments, L.P. (BAE). The FY2016 Accomplishments described below largely reflect the lead-up to the Critical Design Review (CDR) and initiation of activities related to procurement of prototype hardware. Included are efforts that are associated with to the preparation and review of all CDR artifacts, as well as efforts related to CDR close-out. The FY2017 Planned Program is related to the integration, assembly, and delivery of 29 full system prototypes, further development of logistics products, and the initiation of the AMPV development test program. The FY2018 Planned Program consists of Production Prove Out Testing (including performance and reliability testing), completion of the Interim Design Review (IDR) and the Functional Configuration Audit (FCA), Logistics Demonstration, and initiation of the Limited User Test (LUT).

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605028A / Armored Multi-Purpose Vehicle (AMPV)	Project (Number/Name) EB5 / Armored Multi-Purpose Vehicle

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Title: Armored Multi-Purpose Vehicle (AMPV) Product Development</p> <p>Description: AMPV Product Development costs include all efforts provided under the AMPV EMD prime contract along with Government Furnished Material (GFM). Significant examples of prime contract effort include: development engineering, system engineering/program management, prototype hardware procurement, prototype system level fabrication and integration, software development, support to the government test program, and oversight of subcontractors/suppliers. Also included are all efforts performed by subcontractors/suppliers who are under contract to the AMPV EMD prime contractor. This element also includes the recurring manufacturing cost to procure the vehicles that will support Full-Up System Level (FUSL) live fire testing.</p> <p>FY 2016 Accomplishments: The prime contractor continued to operate in an Integrated Product Team (IPT) environment consisting of eight unique teams. The prime contractor supported team meetings and reviews and reported program progress through the use of Earned Value Management (EVM) and Technical Performance Measures (TPMs). Based on successful completion of the PDR, activities transitioned to detailed design of components and subsystems in FY2016. These detailed design efforts were focused on integration of existing components into the AMPV chassis, which were tailored to the five mission roles. Final prototype designs and related drawings were completed in FY2016. In addition, as nearly all of the subsystems that will be integrated into the prototype structures will be existing designs, most of the hardware at a component level was ordered 3-4QFY2016. Integration of these components into subsystems commenced 4QFY2016 and were mostly complete by 1-2QFY2017. Prototype final integration, assembly, and checkout were initiated to allow full vehicle prototypes to begin to be delivered late 1QFY2017. In addition to prototype development and fabrication, the engineering work was focused on the Critical Design Review (CDR), which took place 21-23 June 2016. All artifacts that supported CDR were delivered to the government prior to the review. Approximately 50 artifacts were delivered in support of CDR. Government Furnished Material for the system prototypes, mainly consisting of Mission Equipment Packages and communication hardware, was procured 2-3QFY2016. Final builds for armor coupons and ballistic hull test articles were completed to support live fire/survivability testing in FY17.</p> <p>FY 2017 Plans: Prototype efforts in FY2017 will consist of the integration, assembly, checkout, and shipment of 29 full system prototype vehicles. The prime contractor will support the de-processing, functional testing, instrumentation, training, fielding and maintenance of the prototypes at government test sites. In addition, for each of the first 5 prototype vehicles, the prime contractor will conduct 1,500 miles of shakedown testing prior to beginning government run system level tests. Also related to the prototype vehicles, the prime contractor will deliver</p>	182.201	134.033	141.000	-	141.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605028A / <i>Armored Multi-Purpose Vehicle (AMPV)</i>	Project (Number/Name) EB5 / <i>Armored Multi-Purpose Vehicle</i>

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>and manage System Support Packages (SSPs) that consist of the necessary spare parts required to facilitate government testing. From an engineering perspective, the prime contractor will make informed design changes to respond to hardware and software upgrades and CDD updates, as well as utilize knowledge gained from system level testing to update vehicle designs, as required. Any updates will be presented in an Interim Design Review (IDR), currently planned for early 2QFY2018. In addition, the Vehicle Tactical Integration Lab (VTIL) and the Computer Software Integration Lab (CSIL) will continue to be used to trouble-shoot any emerging issues and, if necessary, verify design updates. During FY2017, the final three software builds will be delivered. These builds are primarily expected to be clean-up builds that will resolve any problems uncovered during system level testing. The prime contractor will perform significant work related to Logistics/Product Support in FY2017. This will include an update to the Level of Repair Analysis (LORA), provisioning of repair parts, development of packaging information, training at test sites, and the validation of technical manual tasks in preparation for the Logistics Demonstration starting in 2QFY2018. Logistics related documentation to be completed by BAE in FY2017 includes the Logistics Demonstration Plan, System Demilitarization and Disposal Plan, Preservation and Storage of Unique Tooling, Core Logistics Assessment, Core Depot Assessment, Depot Source of Repair, and Analysis of Product Support Alternatives.</p> <p><i>FY 2018 Base Plans:</i> Prime contractor activities in FY2018 will consist of efforts that support the conduct of system level tests and efforts that are necessary as a result of the tests. In addition, the contractor will continue work related to Logistics/Product Support. All 29 prototypes will undergo testing in FY2018, with tests often occurring simultaneously at multiple locations. The contractor will support these tests by providing Field Service Representatives (FSRs) to assist in repairing and maintaining the prototypes and by providing Subject Matter Experts (SMEs) to troubleshoot any issues that might arise during testing. As required, the contractor will update the AMPV designs to address any shortcomings that are uncovered during testing or to incorporate any updates to government performance requirements. A Corrective Action Period (CAP) is planned for late 1QFY2018 through late 2QFY2018. During the CAP, the contractor will incorporate any design changes that are deemed necessary. An Interim Design Review (IDR) will be conducted at the conclusion of the CAP. The IDR will demonstrate that design changes made after the CDR are baselined and the system design is ready for manufacturing. A minimum of seventeen (17) artifacts will be generated by the contractor in support of IDR. Additional system level testing will take place following the CAP. At least 9,950 miles (not including contractor shakedown testing) will accrue during formal government testing prior to the CAP and at least an additional 9,500 miles will accrue following the CAP. Following completion of the post-CAP system level tests, a Functional Configuration Audit (FCA) will occur 4QFY2018. During the FCA, the contractor will demonstrate that the as-</p>					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605028A / <i>Armored Multi-Purpose Vehicle (AMPV)</i>	Project (Number/Name) EB5 / <i>Armored Multi-Purpose Vehicle</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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tested performance of the vehicles complies with design and interface requirements. Immediately following the FCA, the contractor will support the Limited User Test (LUT) in 4QFY2018. Eighteen (18) of the prototypes will be used during the LUT and the contractor will support the test by having FSRs and Test Engineers (TEs) on site and SMEs on call. Besides ensuring that the prototypes are adequately supported before and during testing, the contractor will provide all facilities, parts, tools, and other support items necessary to conduct a Logistics Demonstration (Log Demo) 2-4QFY2018. The contractor will validate the logistics support package prior to the Log Demo and will ensure that the nine (9) primary objectives of the Log Demo are achieved. The first Low Rate Initial Production (LRIP) contract option covers 52 vehicles, 10 of which (2 of each variant type) will support Full-Up System Level (FUSL) live fire testing. The recurring manufacturing cost associated with these 10 live fire assets will be Research, Development, Test, and Evaluation (RDT&E) funded, while the remaining 42 vehicles will be Procurement funded. Further, the live fire testing is scheduled to begin 2QFY2020 and the lead times associated with select hardware, such as electronic components, is expected to be such that some items must be procured as early as 3QFY2018. In accordance with the Full Funding Policy, the entire procurement cost of the live fire test assets is being budgeted in the fiscal year in which select items are initially procured. Accordingly, the FY2018 cost in this element includes the full recurring manufacturing cost necessary to procure 10 FUSL live fire test assets.

<p>Title: AMPV Government Program Management Costs</p> <p>Description: AMPV Government Program Management costs include efforts to provide Government oversight of the AMPV program. This includes Systems Engineering and Program Management. Government and support Contractor salaries are included, as well as travel and other support costs that are required to effectively manage the program. Costs in this category do not include Government Furnished Material or efforts that are specific and unique to end item testing that is performed at Government test locations.</p> <p>FY 2016 Accomplishments: Provided integrated program management for all development activities, to include providing oversight to the Engineering Manufacturing and Development (EMD) contractor. Eight AMPV Integrated Product Teams (Program Management; Business Management; Engineering; Product Assurance and Test; Reliability, Availability, Maintainability (RAM) Product Support; Product Support Management; Manpower and Personnel Integration; and Government Furnished Material) continued to oversee the technical development efforts of the EMD contractor in order to monitor and track technical progress related to the development of the various subsystems. This included review and acceptance of all formal contract deliverables. The AMPV Earned Value Management (EVM) team continued to evaluate cost and schedule performance against the established</p>	23.847	25.414	24.564	-	24.564
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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605028A / <i>Armored Multi-Purpose Vehicle (AMPV)</i>	Project (Number/Name) EB5 / <i>Armored Multi-Purpose Vehicle</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
Performance Measurement Baseline (PMB) and Integrated Master Schedule (IMS). An emphasis for the Government team in FY2016 was on supporting the contractor's Critical Design Review (CDR), which took place 21-23 June 2016.					
FY 2017 Plans: Provide integrated program management for all development activities, to include providing oversight to BAE. Eight Integrated Product Teams will continue to oversee the technical development efforts of BAE in order to monitor and track technical progress related to the development of the various subsystems. This includes review and acceptance of all formal contract deliverables. The AMPV Earned Value Management (EVM) team will continue to evaluate cost and schedule performance against the established Performance Measurement Baseline (PMB) and Integrated Master Schedule (IMS). Areas of emphasis for the Government team in FY2017 include inspection and acceptance of 29 full system vehicle prototypes, management and oversight of the system level testing program, and preparation for the Logistics Demonstration in early FY2018. Significantly, Government efforts in FY2017 will begin to transition from being engineering focused to being focused on testing and product support.					
FY 2018 Base Plans: Provide integrated program management for all development activities, to include providing oversight to BAE. Eight Integrated Product Teams will continue to oversee the technical development efforts of BAE in order to monitor and track progress related to the achievement of overall system performance requirements. This includes review and acceptance of all formal contract deliverables and test reports. The AMPV Earned Value Management (EVM) team will continue to evaluate cost and schedule performance against the established Performance Measurement Baseline (PMB) and Integrated Master Schedule (IMS). There will be two overarching areas of emphasis for the Government Project Management team in FY2018: continuing to manage and oversee the EMD effort and preparing to transition the program into the Low Rate Initial Production (LRIP) phase. For the EMD effort, the team will provide oversight to the test program, ensure the successful completion of the Logistics Demonstration, and complete the Interim Design Review (IDR) and the Functional Configuration Audit (FCA). In preparation for the transition to LRIP, the team will prepare the approximately forty (40) documents that will be necessary to support the 2QFY2019 Milestone C review and will also execute the option to the EMD contract that covers LRIP 1.					
Title: Government Test Costs					
Description: Government Test costs are for efforts required to perform and validate system-related tests. This element includes costs of the detailed planning, conduct, support, data reduction, and reports from such testing.					
	6.986	24.774	34.214	-	34.214

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605028A / <i>Armored Multi-Purpose Vehicle (AMPV)</i>	Project (Number/Name) EB5 / <i>Armored Multi-Purpose Vehicle</i>

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

Also included are costs necessary to acquire data during the conduct of the Government tests. The actual test articles (i.e., functionally configured systems) are excluded from this element. Also excluded are prime contractor costs incurred in support of the Government system level test.

FY 2016 Accomplishments:

Acquired Government Furnished Material (GFM) and constructed/integrated three base stations for use at Government test sites. Base stations consist of radios, displays, input devices and other related hardware necessary to monitor tests and to collect data. GFM was on-hand by 3-4QFY2016 and base stations were available at test sites by 4QFY2016 so that tests can commence 2QFY2017.

FY 2017 Plans:

System level detailed planning will conclude with the Developmental Test Readiness Review (DTRR) in 3QFY2017. Other system level test milestones include the Blue Team Vulnerability Assessment in 3QFY2017 and the Reliability, Availability, and Maintainability (RAM) In-Process Review (IPR) in 4QFY2017. System level Live Fire Test & Evaluation will begin with Ballistic Hull testing that will be conducted 1Q-2QFY2017. EMD Prototypes will be delivered to Army proving grounds and Government Developmental Testing will begin 3QFY2017. Government full system prototype vehicle testing will commence with mortar carrier ballistic firing tests. In addition to the prototype vehicles utilized for Technical Manual validation, another 12 prototype vehicles will begin system level testing in FY2017. Besides mortar carrier ballistic similitude tests, initial system level testing will focus on system reliability and automotive performance. The Government will begin requirements verification efforts with emerging prototype test data and failure review boards will be initiated, as needed. Test ammunition and test threat management, forecasting, and procurement will continue for future test efforts.

FY 2018 Base Plans:

System level performance, reliability, and operational testing will take place throughout FY2018. Twenty one (21) of the twenty nine (29) prototypes will be part of the formal government testing program. The remaining eight (8) prototypes will remain at the contractor's location and will support trouble shooting and the Logistics Demonstration. The Government testing will occur at three primary locations: the Aberdeen Test Center (ATC) will complete reliability, automotive and vehicle performance, software, and safety testing; the Yuma Test Center (YTC) will complete reliability, sand and dust, hot and cold weather climatic performance, full load cooling, toxic fume firing evaluation, and hot and cold gunnery testing; and the Electronic Proving Ground (EPG) will conduct C4ISR performance, intra-vehicular electromagnetic interference, and information assurance testing. The exact site for the Limited User Test (LUT) in 4QFY2018 has not yet been determined, but will likely take place in the Southwest United States. The majority of the costs in FY2018 are for the actual conduct of the tests at the

FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605028A / Armored Multi-Purpose Vehicle (AMPV)	Project (Number/Name) EB5 / Armored Multi-Purpose Vehicle
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
aforementioned locations. This includes the costs related to facility/range usage and data collection. In addition, dedicated personnel from a variety of Army organizations outside of the Project Management Office (i.e., Army Test and Evaluation Command, Army Environmental Command, Army Research Laboratory, Army Materiel Systems Analysis Activity, Army Combined Arms Support Command, Army Threat Systems Management Office, and Army Operational Test Command) will be required and are included in this element. The Army test community will commence Test and Evaluation Master Plan (TEMP) updates and coordination in support of Milestone C.					
Accomplishments/Planned Programs Subtotals	213.034	184.221	199.778	-	199.778

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• Armored Multi Purpose Vehicle(AMPV): <i>Armored Multi Purpose Vehicle(AMPV) G80819</i>	-	-	193.715	253.903	447.618	397.355	495.713	569.216	572.400	10,388.698	12,871.000

Remarks

D. Acquisition Strategy

The Armored Multi-Purpose Vehicle (AMPV) program entered the acquisition process at Milestone B. This was accomplished via an Acquisition Decision Memorandum (ADM) that was signed on 22 December 2014. The ADM also authorized the Army to proceed with award of the Engineering and Manufacturing Development (EMD) prime contract with three Low Rate Initial Production (LRIP) options. The contract was awarded on 23 December 2014 to BAE Systems Land & Armaments, L.P. (BAE). The award was on a competitive basis utilizing formal Source Selection Evaluation Board (SSEB).

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army											Date: May 2017				
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0605028A / Armored Multi-Purpose Vehicle (AMPV)					Project (Number/Name) EB5 / Armored Multi-Purpose Vehicle				

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Development Engineering	C/CPIF	BAE : Sterling Heights, MI	64.439	45.886	Dec 2015	48.283	Dec 2016	23.574	Dec 2017	-		23.574	13.751	195.933	0.000
Prototype Material Contractor	C/CPIF	BAE : Sterling Heights, MI	0.000	68.998	Dec 2015	18.444	Dec 2016	-		-		-	0.000	87.442	0.000
Prototype Material Government Furnished	Various	Various : .	0.000	21.192	Dec 2015	-		4.026	Dec 2017	-		4.026	0.000	25.218	0.000
Contractor System Engineering, Data, Test and Program Management	C/CPIF	BAE : Sterling Heights, MI	0.000	46.125	Dec 2015	67.306	Dec 2016	83.122	Dec 2017	-		83.122	161.937	358.490	0.000
Procurement of Live Fire Test Assets	Option/ FPIF	BAE : York, PA	0.000	-		-		30.278	Dec 2017	-		30.278	0.000	30.278	0.000
Subtotal			64.439	182.201		134.033		141.000		-		141.000	175.688	697.361	0.000

Remarks
Armored Multi Purpose Vehicle Tech data and system level product development costs.

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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	MIPR	PMO : Warren, MI	51.703	23.847	Dec 2015	25.414	Dec 2016	24.564	Dec 2017	-		24.564	27.774	153.302	0.000
Subtotal			51.703	23.847		25.414		24.564		-		24.564	27.774	153.302	0.000

Remarks
Armored Multi Purpose Vehicle Support Costs.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017				
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0605028A / Armored Multi-Purpose Vehicle (AMPV)				Project (Number/Name) EB5 / Armored Multi-Purpose Vehicle						
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 System Testing	MIPR	Various : .	0.000	6.986	Dec 2015	24.774	Dec 2016	34.214	Dec 2017	-		34.214	108.784	174.758	0.000	
Subtotal			0.000	6.986		24.774		34.214		-		34.214	108.784	174.758	0.000	
			Prior Years	FY 2016	FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals			116.142	213.034	184.221	199.778	-	199.778	312.246	1,025.421	0.000					

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605028A / Armored Multi-Purpose Vehicle (AMPV)	Project (Number/Name) EB5 / Armored Multi-Purpose Vehicle
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
(1) Critical Design Review																																
Production Prove Out Test																																
Limited User Test																																
(2) Milestone C																																
(3) Low Rate Initial Production 1																																
Initial Operational Test & Evaluation																																

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605028A / <i>Armored Multi-Purpose Vehicle (AMPV)</i>	Project (Number/Name) EB5 / <i>Armored Multi-Purpose Vehicle</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Critical Design Review	3	2016	3	2016
Production Prove Out Test	3	2017	3	2018
Limited User Test	4	2018	1	2019
Milestone C	2	2019	2	2019
Low Rate Initial Production 1	2	2019	2	2019
Initial Operational Test & Evaluation	2	2021	3	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605029A / Integrated Ground Security Surveillance Response Capability (IGSSR-C)
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	4.980	4.418	-	4.418	1.324	0.000	0.000	0.000	0.000	10.722
EQ2: <i>IntegGrdSecSurvRespC(IGSSR-C)</i>	-	0.000	4.980	4.418	-	4.418	1.324	0.000	0.000	0.000	0.000	10.722

Note

Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) was previously funded in Integrated Base Defense (IBD) Program Element: 0205402A EF2. This is not a new start program in FY17.

A. Mission Description and Budget Item Justification

IGSSR-C: The Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) is an Automated Information System (AIS) program. IGSSR-C has a requirement to provide a layered approach to integrate sensors, sensor systems and unmanned systems with automated fusion capabilities. The system will provide a Force Protection (FP) Common Operational Picture (COP) capability for CONUS fixed, OCONUS semi-fixed or expeditionary elements in all Operating Environments (OE).

This capability will enable rapid decision analysis, speed the response process as well as increase information dissemination horizontally and vertically along the chain of command and with outside supporting organizations. IGSSR-C is a software centric fusion engine that connects legacy and emerging FP systems, legacy Chemical, Biological, Radiological, and Nuclear (CBRN), unmanned systems, biometric identification and forensic data systems. The desired end state is to achieve interoperability and COP with current and emerging FP systems used by Joint Forces, Department of Defense (DoD) agencies and multi-national forces.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	4.980	2.100	-	2.100
Current President's Budget	0.000	4.980	4.418	-	4.418
Total Adjustments	0.000	0.000	2.318	-	2.318
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	2.318	-	2.318

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605029A / <i>Integrated Ground Security Surveillance Response Capability (IGSSR-C)</i>	

Change Summary Explanation

FY 2018 increase is due to an adjustment required to align funding with planned acquisition strategy.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605029A / <i>Integrated Ground Security Surveillance Response Capability (IGSSR-C)</i>				Project (Number/Name) EQ2 / <i>IntegGrdSecSurvRespC(IGSSR-C)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EQ2: <i>IntegGrdSecSurvRespC(IGSSR-C)</i>	-	0.000	4.980	4.418	-	4.418	1.324	0.000	0.000	0.000	0.000	10.722
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) was previously funded in Integrated Base Defense (IBD) Program Element: 0205402A EF2. This is not a new start program in FY17.

A. Mission Description and Budget Item Justification

IGSSR-C: The Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) is an Automated Information System (AIS) program. IGSSR-C has a requirement to provide a layered approach to integrate sensors, sensor systems and unmanned systems with automated fusion capabilities. The system will provide a Force Protection (FP) Common Operational Picture (COP) capability for CONUS fixed, OCONUS semi-fixed or expeditionary elements in all Operating Environments (OE).

This capability will enable rapid decision analysis, speed the response process as well as increase information dissemination horizontally and vertically along the chain of command and with outside supporting organizations. IGSSR-C is a software centric fusion engine that connects legacy and emerging FP systems, legacy Chemical, Biological, Radiological, and Nuclear (CBRN), unmanned systems, biometric identification and forensic data systems. The desired end state is to achieve interoperability and COP with current and emerging FP systems used by Joint Forces, Department of Defense (DoD) agencies and multi-national forces.

FY 2018 Base Funding in the amount of \$4.418 million supports the development of builds 3 and 4 of the Integrated Ground Security, Surveillance and Response – Capability (IGSSR-C) software baseline which are focused on continuing the implementation of all the technical requirements for the system. This funding also supports completion of the Preliminary Design Review (PDR) and participation in Technical Support Operational Analysis (TSOA) events that provide user feedback and capability assessments. Funding also supports modeling and simulation efforts and provides for Program Management Office (PMO) support.

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

	FY 2016	FY 2017	FY 2018
Title: IGSSR-C Design and Development	-	4.980	4.418
Description: Completes IGSSR-C design efforts and initiates software integration activities.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605029A / <i>Integrated Ground Security Surveillance Response Capability (IGSSR-C)</i>	Project (Number/Name) EQ2 / <i>IntegGrdSecSurvRespC(IGSSR-C)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Complete IGSSR-C design efforts and initiates software integration activities.			
<i>FY 2018 Plans:</i> Continue development and implementation of all technical requirements. Completes Preliminary Design Review (PDR) and supports participation in Technical Support Operational Analysis (TSOA) events. Provides for Program Management Support (PMO) support and modeling and simulation efforts.			
Accomplishments/Planned Programs Subtotals	-	4.980	4.418

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• IGSSR-C (M90106): <i>IGSSR-C (M90106)</i>	-	-	-	-	-	1.249	4.684	2.955	5.664	Continuing	Continuing
• Integrated Base Defense (0205402A): <i>Integrated Base Defense (0205402A)</i>	10.324	3.450	-	-	-	-	-	-	-	0	13.774

Remarks
Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) was previously funded in Integrated Base Defense (IBD) Program Element: 0205402A EF2, which was a shared funding line between IGSSR-C, Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E), and Integrated Base Defense (IBD). IGSSR-C portion was \$3.376 million in FY 2016.

D. Acquisition Strategy
The Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) provides a layered approach to integrate sensors, sensor systems and unmanned systems. The IGSSR-C Capability Design Document (CDD) was approved September 2013. IGSSR-C is made up of a suite of software that achieves integration, fusion and interoperability in support of the Army Acquisition Executive's Common Operating Environment (COE) Command Post Compute Environment (CPCE) and Sensor CE efforts.

In FY 2014, the Department of Defense (DoD) Physical Security Enterprise and Analysis Group (PSEAG) provided funds to conduct pre-milestone B activities. IGSSR-C received an approved Materiel Development Decision (MDD) from the Milestone Decision Authority (MDA) on 4 December 2015. The acquisition strategy for IGSSR-C was approved on 5 December 2016 by the MDA, which approved plans to leverage a Night Vision and Electronic Sensors Directorate (NVESD), Fort Belvoir, Virginia delivery order to develop, integrate and test the Initial Capability (IC). No production activities are planned for FY 2018. Milestone C is planned for FY 2020 to align Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E), Tactical Security System (TSS) and Integrated Ground Security, Surveillance and Response Capability (IGSSR-C) in order to gain programmatic efficiencies.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605029A / <i>Integrated Ground Security Surveillance Response Capability (IGSSR-C)</i>	Project (Number/Name) EQ2 / <i>IntegGrdSecSurvRespC(IGSSR-C)</i>

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605030A / <i>Joint Tactical Network Center (JTNC)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	12.834	15.041	15.877	-	15.877	5.857	5.963	6.080	6.087	Continuing	Continuing
EA8: <i>Joint Tactical Network Center (JTNC)</i>	-	12.834	15.041	15.877	-	15.877	5.857	5.963	6.080	6.087	Continuing	Continuing

Note

JTNC funding for FY2015 and beyond is executed from Army PE 0605030. Under the Joint budget strategy, each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E funds for joint efforts. Out year funding is held in PE 0605030 by the Army, Navy and Air Force. FY2016-FY2018 reflects the full JTNC requirement with the consolidated funding from the other Services.

A. Mission Description and Budget Item Justification

The JTNC is responsible for ensuring interoperable, secure, and affordable waveform and wireless communications by recommending standards, conducting compliance and certification analyses in accordance with Department of Defense (DoD) policies, and maintaining a DoD Waveform Information Repository (IR). The JTNC provides: (1) DoD Waveform IR management and configuration control, (2) DoD waveform standards and Software Communications Architecture (SCA), (3) technical analyses of DoD Waveform IR products, and (4) serves as Technical Advisor to the JTNC Board of Directors (BoD).

This mission is executed in conjunction with other government agencies to include the National Security Agency (NSA), the Joint Interoperability Test Command (JITC), and the National Telecommunication and Information Administration (NTIA), as well as the Services. Particular attention is paid to ensuring that interagency work is collaborative and eliminates duplicative capability. The JTNC enables a common software baseline that is hardware agnostic leading to increased competition for Software Defined Radios.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	13.357	15.041	5.393	-	5.393
Current President's Budget	12.834	15.041	15.877	-	15.877
Total Adjustments	-0.523	0.000	10.484	-	10.484
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.523	-			
• Adjustments to Budget Years	0.000	0.000	10.484	-	10.484

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605030A / <i>Joint Tactical Network Center (JTNC)</i>	
<u>Change Summary Explanation</u> FY18 increase of \$10.484 million reflects other services funding realigned into the program in the Budget Year to meet approved JTNC requirement with consolidated funding from the other Services.		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605030A / <i>Joint Tactical Network Center (JTNC)</i>				Project (Number/Name) EA8 / <i>Joint Tactical Network Center (JTNC)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EA8: <i>Joint Tactical Network Center (JTNC)</i>	-	12.834	15.041	15.877	-	15.877	5.857	5.963	6.080	6.087	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

JTNC funding for FY2015 and beyond is executed from Army PE 0605030. Under the Joint budget strategy, each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E funds for joint efforts. Out year funding is held in PE 0605030 by the Army, Navy and Air Force. FY2016-FY2017 reflects the full JTNC requirement with the consolidated funding from the other Services. FY2018 and out reflects only the Army portion of the JTNC budget.

A. Mission Description and Budget Item Justification

The JTNC is responsible for ensuring interoperable, secure, and affordable waveform and wireless communications by recommending standards, conducting compliance and certification analyses in accordance with Department of Defense (DoD) policies, and maintaining a DoD Waveform Information Repository (IR). The JTNC provides: (1) DoD Waveform IR management and configuration control, (2) DoD waveform standards and Software Communications Architecture (SCA), (3) technical analyses of DoD Waveform IR products, and (4) serves as Technical Advisor to the JTNC Board of Directors (BoD).

This mission is executed in conjunction with other government agencies to include the National Security Agency (NSA), the Joint Interoperability Test Command (JITC), and the National Telecommunication and Information Administration (NTIA), as well as the Services. Particular attention is paid to ensuring that interagency work is collaborative and eliminates duplicative capability. The JTNC enables a common software baseline that is hardware agnostic leading to increased competition for Software Defined Radios.

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

	FY 2016	FY 2017	FY 2018
Title: JTNC IR Engineering Development and Program Management Support	12.834	15.041	15.877
Description: Joint Tactical Networking Center (JTNC) aligns with the JTNC BoD, USD(AT&L), DoD CIO, Joint Staff, the Services, and other key stakeholders for those JTNC chartered processes that ensure interoperable, secure, and affordable waveform and wireless communications. The JTNC: (1) Facilitates the reuse of waveform and wireless communications and fosters product capability improvements by making government owned waveform and wireless communications products available to developers, (2) provides open architecture DoD Waveform Standards in support of service, multi-service, and coalition forces, (3) provides certification recommendations on wireless communications products in support of service, multiservice, and coalition forces.			
FY 2016 Accomplishments: Completed analyses on three waveforms to include: Single Channel Ground and Airborne Radio System (SINCGARS) v2.0, Mobile User Objective System (MUOS) v3.1.3 and Wideband Networking Waveform (WNW) v4.2. Initiated analysis of Link 16 v1.05.0.1. Validated requirements for Highband Networking Waveform (HNW) 3.0 in preparation for analysis in FY17. Evolved			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605030A / <i>Joint Tactical Network Center (JTNC)</i>	Project (Number/Name) EA8 / <i>Joint Tactical Network Center (JTNC)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
DoD Waveform Standards to facilitate common development, interoperability and re-use. Supported export requests and analyses of products for exportability. FY 2017 Plans: Completed analyses on three waveforms to include: Link 16 v1.05.0.1, Highband Networking Waveform (HNW) v3.0, and Soldier Radio Waveform (SRW) v1.2.2.1. Began analysis of Wideband Networking Waveform (WNW) v4.2.2. Evolved DoD Waveform Standards to facilitate common development, interoperability and re-use. Supported export requests and analyses of products for exportability. FY 2018 Plans: Complete analyses of WNW v4.2.2 and three additional waveforms to be determined by the JTNC Board of Directors. The JTNC will commence collecting relevant software, technical documentation, cataloging and inducting other DoD Communication Waveforms listed in the DoD Communication Waveform Inventory. The JTNC will continue to enhance DoD Waveform IR capability and Software Communications Architecture (SCA) 4.1 promulgation. The JTNC will continue to evolve DoD Waveform Standards to facilitate common development, interoperability and re-use. The JTNC will support export requests and analyses of products for exportability.			
Accomplishments/Planned Programs Subtotals	12.834	15.041	15.877

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0605030N: 0605030N: JTNC, RDTE,N	-	-	-	-	-	4.591	4.682	4.788	4.883	Continuing	Continuing
• 0605030F: 0605030F: JTNC, RDTE,F	-	-	-	-	-	5.857	5.963	6.080	6.087	Continuing	Continuing

Remarks
The Joint Tactical Networking Center is funded by all the Services. The Joint Funding Strategy requires each of the three Service Military Departments (MILDEPs) to budget for one-third of the total program approved requirement.

Other Funding: 0605030N represents Navy allocated funding for JTNC from FY2019-2022. 0605030F represents Air Force allocated funding for JTNC from FY2019-2022. FY2016-FY2018 amounts are zero due to Joint Funding Strategy. Prior to the year of execution, the JTNC funding is consolidated in Army PE 0605030A for execution. In accordance with the Joint Tactical Networking Center Charter updated and approved on 29 March 2016, the JTNC will remain under a Joint Budget Strategy funded by the three MILDEPs.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605030A / Joint Tactical Network Center (JTNC)	Project (Number/Name) EA8 / Joint Tactical Network Center (JTNC)

D. Acquisition Strategy

Joint Tactical Networking Center (JTNC) is classified as a Joint Support Program to Acquisition, Technology & Logistics (AT&L), DoD Chief Information Officer (CIO), and the Services. JTNC core functions as defined in the JTNC Acquisition Decision Memorandum and Charter signed on 20 January 2014 and re-approved on 29 March 2016 include: Department of Defense (DoD) Waveform Information Repository (IR) management and configuration control, DoD waveform standards and Software Communications Architecture (SCA), technical analyses of DoD Waveform IR products. The services derived from these core functions reinforce an acquisition environment where wireless communications products are interoperable, secure, and affordable.

The FY2018 Budget supports continued development/maturation of the DoD Waveform IR, analysis of directed software and artifacts, support of the National Security Agency (NSA) Commercial Communications Security (COMSEC) Evaluation Program (CCEP), and the JTNC Standards Interface Control Working Group (ICWG).

E. Performance Metrics

Performance metrics are tracked and reported as part of the JTNC annual management plan. The goals, objectives, actions, targets and measurements are coordinated with stakeholders. Results are reported at regular intervals. Final accomplishments are reported to the JTNC Board of Directors.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605030A / Joint Tactical Network Center (JTNC)	Project (Number/Name) EA8 / Joint Tactical Network Center (JTNC)
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Multiple Contract Awards : Various	6.190	0.211	Oct 2015	0.244	Oct 2016	0.294	Oct 2017	-		0.294	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	G2 Software Systems 01/04 : San Diego, CA	0.426	0.736	Nov 2015	0.849	Nov 2016	0.960	Nov 2017	-		0.960	Continuing	Continuing	Continuing
Program Management Support	Allot	Aberdeen Proving Grounds : Aberdeen. MD	0.178	0.343	Oct 2015	0.403	Oct 2016	0.173	Oct 2017	-		0.173	Continuing	Continuing	Continuing
Program Management Support	MIPR	SSC PACIFIC : San Diego, CA	0.092	0.125	Oct 2015	0.147	Oct 2016	-		-		-	0.000	0.364	0.000
Program Management Support	FFRDC	MITRE : McLean, VA	0.000	-		0.058	Dec 2016	-		-		-	0.000	0.058	0.058
Subtotal			6.886	1.415		1.701		1.427		-		1.427	-	-	-

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JTNC Product Development Support	MIPR	SSC PACIFIC : San Diego, CA	0.662	1.335	Nov 2015	1.542	Nov 2016	0.822	Nov 2017	-		0.822	Continuing	Continuing	Continuing
JTNC Product Development Support	C/CPFF	G2 Software Systems 01 : San Diego, CA	0.000	1.212	Oct 2015	1.441	Oct 2016	2.950	Oct 2017	-		2.950	Continuing	Continuing	Continuing
JTNC Product Development Support	MIPR	SSC ATLANTIC : Charleston, SC	0.000	-		-		0.053	Nov 2017	-		0.053	Continuing	Continuing	Continuing
JTNC Product Development Support	MIPR	Various : Aberdeen. MD	0.000	-		-		1.160	Nov 2017	-		1.160	Continuing	Continuing	Continuing
JTNC Product Development Support	C/CPFF	G2 Software Systems 04 : San Diego, CA	0.562	1.097	Oct 2015	1.285	Nov 2016	-		-		-	0.000	2.944	2.988

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605030A / Joint Tactical Network Center (JTNC)	Project (Number/Name) EA8 / Joint Tactical Network Center (JTNC)
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JTNC Product Development	C/CPFF	Booz Allen Hamilton : San Diego, CA	1.184	-		-		-		-		-	0.000	1.184	1.184
JTNC Product Development - Other	Allot	Aberdeen Proving Grounds : Aberdeen, MD	0.382	-		-		-		-		-	0.000	0.382	0.382
Joint Tactical Networks (JTN) Legacy Development - MIPR	MIPR	Various : Various	19.868	-		-		-		-		-	0.000	19.868	19.868
Joint Tactical Networks (JTN) Legacy Development - Contracts	C/CPIF	Various : Various	24.890	-		-		-		-		-	0.000	24.890	24.890
Subtotal			47.548	3.644		4.268		4.985		-		4.985	-	-	-

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JTNC Engineering/ Technical Support	C/CPFF	G2 Software Systems 01/04 : San Diego, CA	1.214	1.486	Oct 2015	1.795	Oct 2016	0.975	Oct 2017	-		0.975	Continuing	Continuing	Continuing
JTNC Engineering/ Technical Support	FFRDC	MITRE Corporation : McLean, VA	0.357	0.143	Oct 2015	0.167	Oct 2016	0.159	Oct 2017	-		0.159	Continuing	Continuing	Continuing
JTNC Engineering/ Technical Support	MIPR	Aberdeen Proving Grounds : Aberdeen, MD	0.274	0.465	Oct 2015	0.545	Oct 2016	0.741	Oct 2017	-		0.741	Continuing	Continuing	Continuing
JTNC Engineering/ Technical Support	MIPR	SSC PACIFIC : San Diego, CA	0.000	0.595	Nov 2015	0.639	Nov 2016	0.605	Nov 2017	-		0.605	Continuing	Continuing	Continuing
JTNC Engineering/ Technical Support	MIPR	Various : San Diego, CA	0.000	-		-		0.877	Nov 2017	-		0.877	0.000	0.877	0.877
JTNC Engineering/ Technical Support	C/CPFF	Booz Allen Hamilton : San Diego	14.965	-		-		-		-		-	0.000	14.965	14.965

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605030A / Joint Tactical Network Center (JTNC)	Project (Number/Name) EA8 / Joint Tactical Network Center (JTNC)
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Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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			16.810	2.689		3.146		3.357		-		3.357	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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/Test & Evaluation	MIPR	SSC PACIFIC : San Diego, CA	1.286	1.266	Oct 2015	1.476	Oct 2016	1.477	Oct 2017	-		1.477	Continuing	Continuing	Continuing
Development/Test & Evaluation	C/CPFF	G2 Software Systems 01 : San Diego, CA	0.000	0.892	Oct 2015	1.032	Oct 2016	4.315	Oct 2017	-		4.315	Continuing	Continuing	Continuing
Development/Test & Evaluation	C/CPFF	Multiple Awards : Various	0.221	0.449	Oct 2015	0.526	Oct 2016	0.144	Oct 2017	-		0.144	Continuing	Continuing	Continuing
Development/Test & Evaluation	MIPR	National Security Agency : Ft. Meade, MD	0.000	0.277	Dec 2015	0.326	Nov 2016	0.172	Nov 2017	-		0.172	Continuing	Continuing	Continuing
Development/Test & Evaluation	C/CPFF	G2 Software Systems 04 : San Diego, CA	0.471	2.129	Nov 2015	2.479	Nov 2016	-		-		-	0.000	5.079	5.163
Development/Test & Evaluation	MIPR	SSC ATLANTIC : Charleston, SC	0.000	0.073	Dec 2015	0.087	Nov 2016	-		-		-	0.000	0.160	0.164
Development/Test & Evaluation	C/CPFF	Booz Allen Hamilton : San Diego, CA	1.242	-		-		-		-		-	0.000	1.242	1.242
Subtotal			3.220	5.086		5.926		6.108		-		6.108	-	-	-

			Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			74.464	12.834	15.041	15.877	-	15.877	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605030A / <i>Joint Tactical Network Center (JTNC)</i>	Project (Number/Name) EA8 / <i>Joint Tactical Network Center (JTNC)</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Waveform and Wireless Communication Product Compliance and Certification	JTNC Waveform and Wireless Certification																											
DoD Waveform Information Repository	JTNC Information Repository																											
Evolve Waveform Standards and Software Communications Architecture	JTNC Standards and SCA																											
Analyze Waveforms and Associated Artifacts	JTNC Analyses																											

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605030A / <i>Joint Tactical Network Center (JTNC)</i>	Project (Number/Name) EA8 / <i>Joint Tactical Network Center (JTNC)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Waveform and Wireless Communication Product Compliance and Certification	1	2016	4	2022
DoD Waveform Information Repository	1	2016	4	2022
Evolve Waveform Standards and Software Communications Architecture (SCA)	1	2016	4	2022
Analyze Waveforms and Associated Artifacts	1	2016	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	20.790	16.014	44.150	-	44.150	41.175	27.353	25.051	25.350	Continuing	Continuing
EF5: <i>Joint Tactical Network (JTN)</i>	-	20.790	10.038	14.210	-	14.210	12.723	4.521	3.604	3.368	Continuing	Continuing
EX6: <i>Waveforms</i>	-	0.000	5.976	29.940	-	29.940	28.452	22.832	21.447	21.982	Continuing	Continuing

Note

In FY 2013, Joint Tactical Networks (JTN) was funded in the Navy Program Element (PE) 0604280N (Joint Tactical Radio System (JTRS)), Project No.3076 (formally known as JTRS Network Enterprise Domain (JNED)). JNED was renamed JTN and the Joint Executive Program Office (JPEO) JTRS transitioned to the JTNC in FY 2013, in accordance with the Acquisition Decision Memorandum (ADM) dated 11 July 2012. FY 2013 and FY 2014 JTNC funding was provided by the JTN Program via PE 0604280N and PE 0605030A, respectively.

As per the JTNC ADM dated 20 January 2014, JTN and JTNC became separate entities and PE 0605031A (Project Code EF5) was created for JTN. The 2014 ADM also directed that the waveform development and sustainment responsibilities transition to the Services in 4QFY15. PdM Waveforms (SRW, WNW) transitioned to PM TR; PdM Joint Enterprise Network Manager (JENM) transitioned to PEO C3T PM Warfighter Information Network-Tactical (WIN-T) PdM Tactical Cyber and Network Operations (TCNO); and Mobile User Objective System (MUOS) and Link16 transitioned to the Navy. For FY 2015 and out, the Army PE 0605031 contains only the JTN (Waveforms & JENM) RDT&E funding. As part of the joint program budget strategy for JENM, each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E funds for joint efforts. Joint funding is held at the Navy PE 0605030N and Air Force PE 0605030F. Prior to the year of execution, the funding is consolidated in the Army PE (0605031A) for execution.

A. Mission Description and Budget Item Justification

Join Tactical Networks (JTN) efforts are executed by PdM Waveforms and JENM .They are responsible for the portable, interoperable, mobile ad hoc networking waveforms and network enterprise services to enhance tactical warfighting capabilities. PdM Waveforms and JENM applications are: (1) Interoperable - among all Services, capable of operating in a variety of hardware items, for both Program of Record and commercial Non-Developmental Item (NDI) radios; (2) Secure - meet all DoD and US Government information assurance requirements; (3) Operationally relevant - quickly and effectively meet evolving network mission requirements of Combatant Commanders and the Services; (4) Affordable - drive down procurement and support costs via a robust, competitive Non-Developmental Item (NDI) market which adheres to open government standards.

In accordance with the Joint Tactical Networking Center (JTNC) Acquisition Decision Memorandum (ADM) and Charter dated 20 January, 2014, the JTN active efforts include the Soldier Radio Waveform (SRW), the Wideband Networking Waveform (WNW) and JENM. Due to the PdM Waveforms extensive knowledge and expertise, PdM Waveforms will also enhance, update, and sustain the following Legacy Waveforms on a reimbursable basis: the High Frequency (HF) waveform, the merged HAVE QUICK II (HQII) and Very High Frequency (VHF)/Ultra High Frequency (UHF) Line of Sight (VULOS) waveforms, the Joint Tactical Radio System (JTRS) Bowman waveform (JBW), the Single Channel Ground and Airborne Radio System (SINCGARS) waveform and the UHF Satellite Communications (SATCOM) waveform.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605031A / Joint Tactical Network (JTN)
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FY2018 Base RDTE dollars in the amount of \$44.150 million supports the continued development of the Waveforms and JENM, testing support and the program management office.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	18.055	16.014	24.258	-	24.258
Current President's Budget	20.790	16.014	44.150	-	44.150
Total Adjustments	2.735	0.000	19.892	-	19.892
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.715	-			
• Other Adjustments 1	0.000	0.000	10.021	-	10.021
• Other Adjustments 2	0.000	0.000	9.871	-	9.871
• Other Adjustments 3	3.450	0.000	0.000	-	0.000

Change Summary Explanation

\$3.450 million of FY 2016 RDT&E funds were added to PdM Tactical Cyber and Network Operations (TCNO) - JENM Software Real-Time Frequency Management development requirement.

\$10.021 million of FY 2018 RDT&E funds were identified to support PdM TCNO - JENM development requirements identified.

\$9.867 million of FY 2018 RDT&E funds were identified to support PdM Waveforms Soldier Radio Waveform (SRW) Cyber Electro-Magnetic Activities (CEMA) and enterprise Over The Air Management (eOTAM) development requirements identified.

In accordance with the signed JTNC ADM and Charter dated 20 January 2014, Program Element (PE) 0605031A was established to execute JTN requirements in PB2015. FY 2015 was the first year funds were aligned to that PE. The Army has aligned their Service share of JENM and Waveform funding fully within the JTN PE for PB 2016. The Navy and Air Force funding for the JENM joint requirements remains in Navy PE 0605030N (shared) and Air Force PE 0605030F (shared). As part of the joint program budget strategy, each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E funds for joint efforts. Prior to the year of execution, the funding is consolidated in the Army PE for execution.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605031A / Joint Tactical Network (JTN)				Project (Number/Name) EF5 / Joint Tactical Network (JTN)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EF5: Joint Tactical Network (JTN)	-	20.790	10.038	14.210	-	14.210	12.723	4.521	3.604	3.368	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

For FY 2018 and out, the continuing JTN efforts are funded in Army PE 0605031A (JTN), Navy PE 0605031N (shared), Air Force PE 0605031F (shared) and USMC (Marine Corps Communications Systems – MCPC: 112107). As part of the JENM joint program budget strategy, the Air Force and Army budget for approximately one-third each of the total program funds for JENM efforts. The Navy and USMC funding combined equal the other third of the JENM program funding. Prior to the year of execution, Navy and Air Force funding is consolidated in the Army PE (0605031A) and software sustainment funds are realigned from RDT&E to O&M,A PE (4326750A) to support the joint program acquisition strategy. USMC funding will be provided on an annual basis via Military Interdepartmental Purchase Request (MIPR). USMC funding projections are as follows: FY18 - \$1.407M; FY19 - \$1.118M; FY20 - \$1.121M; FY21 - \$1.139M and FY22 - \$1.064M.

A. Mission Description and Budget Item Justification

The Joint Enterprise Network Manager (JENM) software provides the ability to plan, monitor, configure and control the Army's Software Defined Radio (SDR) communication networks. JENM configures numerous SDR radios such as the Manpack, MNVR and Rifleman, enabling them to utilize the Mobile Ad Hoc Networking (MANET) waveforms such as the Soldier Radio Waveform (SRW), Wideband Networking Waveform (WNW), Mobile User Objective System (MUOS), Satellite Communications (SATCOM) Demand Assigned Multiple Access (DAMA), Integrated Waveform (IW), and Single Channel Ground and Airborne Radio System (SINCGARS) waveforms. Furthermore, JENM provides the Commander the ability to quickly reconfigure critical networks using its' Over the Air Management (OTAM) functionality. JENM enhances the S6's ability to conduct Course of Action (COA) Analysis and the Military Decision Making Process (MDMP) providing commanders critical information regarding their ability to effectively communicate.

In accordance with the JTNC ADM and Charter dated 20 January 2014, the JTN active efforts include the SRW, the WNW and the JENM.

FY 2016, Army PE 0605031.EF5 contains only the JTN (Waveforms & JENM) RDT&E funding. Starting in FY17, PdM Waveforms is executing from Project Code EX6 and JENM is executing from Project Code EF5.

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

	FY 2016	FY 2017	FY 2018
Title: SRW Development	2.066	-	-
Description: SRW will operate on tactical radio sets to provide a networked battlefield communications capability for users engaged in land combat operations and will support voice, data, and video communications on the immediate battlefield. These forces include vehicles, rotary wing, dismounted soldiers, munitions, sensors, and unmanned air vehicles (UAV). Functional software applications will use SRW radio enabled sets over Internet Protocol (IP) capable networks and sub-networks. SRW will be interoperable with higher throughput, IP based network waveforms, such as Wideband Networking Waveform (WNW). As			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EF5 / <i>Joint Tactical Network (JTN)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>applicable, these IP-based networking waveforms will enable information exchanges through the Global Information Grid (GIG) to the soldier and provide entirely new capabilities for battlefield communications and information sharing. SRW is currently ported on 21 different radio platforms with 9 different vendors.</p> <p>FY15 effort: JTN Enterprise Over-the-Air Management (OTAM) design provides Non-Developmental Integration (NDI) vendors a portable Operating Environment (OE)-centric OTAM approach extensible to SRW, WNW, and future networking waveforms. The Enterprise OTAM is platform and waveform agnostic and provides remote Unit Task Reorganization and radio management capabilities.</p> <p>FY 2016 Accomplishments: Continue to develop, evolve and enhance SRW to provide improved performance. Maintain test facility to conduct SRW test and evaluation. Release of SRW v1.2.2 will provide Emissions Control (EMCON) with Push to Talk (PTT) capability, and network performance. Begin SRW v2.0 efforts.</p>				
<p>Title: WNW Development</p> <p>Description: WNW is a high data rate Mobile Adhoc NETworking (MANET) waveform application that provides the mid tier tactical Internet backbone and connects tactical forces across the battle sphere. WNW will provide high throughput, dynamically adaptable connectivity for the exchange of IP based voice, data, and video traffic. WNW will feature two signals-in-space (SiS), which are the Orthogonal Frequency Division Multiplexing (OFDM) and Anti-Jam (AJ). WNW will support network nodes on mobile, airborne, and maritime platforms. WNW includes networking services, security, High Assurance IP Equipment (HAPE) capabilities, red black switching, and internal routing of other WNW signals. WNW is currently ported on 7 different radio platforms with 5 different vendors.</p> <p>FY 2016 Accomplishments: Orient on an agile software approach to support the System of Systems Risk Reduction of the WNW dependent system at NIE 16.2 and a positive Milestone C decision for MNVR; deliver security updates and an optimized parametric package for Army Aviation WNW subnets, higher order modulation, and Anti-Jam subnets (WNW 4.2.1).</p>		5.440	-	-
<p>Title: JENM Program Office Support</p> <p>Description: Program Management Office support in the development of the JENM system.</p> <p>FY 2017 Plans: Funding will provide for JENM program office support to develop the JENM system as well as Dynamic Network Connectivity, a STARNET objective.</p> <p>FY 2018 Plans:</p>		-	1.551	1.534

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EF5 / <i>Joint Tactical Network (JTN)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
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<p>Program Office funding will support JENM design, engineering, integration and test of mid and lower tier planning and management application for the Software Defined Radio (SDR) network. To align with the emerging Integrated Network Operations (INO) vision, JENM will lower and mid-tier Network Management with that of WIN-T to enable Soldiers the ability to manage the entire, consolidated, tactical network. JENM will also work to extend our Over-The-Air-Management (OTAM) capabilities to the mounted environment through our participation with Dynamic Network Connectivity development. Program Office Support funding will also support US Navy Digital Modular Radio (DMR) enhancements, ARC 210/231 development, USMC and USAF 117G MUOS deployment, full-rate production HMS Radios, AMF airborne radio, and the integration of USMC terrestrial based waveform planning and management capability.</p>			
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Title: JENM Development	7.722	8.487	9.946
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<p>Description: JENM provides consolidated communications planning, network configuration, network activation, position reporting, fault management, security management, and network health and status reporting needed to establish and maintain a mobile wireless network comprised of JTN network waveforms. JENM can interface with other external network managers, mission planning systems, network planning systems, key management systems, and spectrum planning systems. JENM is considered a mission essential system. JENM is also considered a critical element within the J-TNT configuration management tool kit.</p>			
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<p>FY 2016 Accomplishments: Conducted JENM Functional Qualification Tested (FQT) of JENM v3.3. Will be released in 1QFY17 to support MUOS MOT&E, Mid-Tier Networking Evaluation, JENM supported radio platform Operational Test (OT) and Network Integration Evaluation (NIE) 16.2.</p>			
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<p>FY 2017 Plans: JENM will develop software products for Capability Set Fielding Team and support systems engineering for Navy Digital Modular Radio (DMR) for the MUOS system to include the Airborne Radio Communication (ARC) 210, and the Army/Navy Portable Radio Communications (PRC) 117G. JENM will initiate development of Dynamic Network Connectivity as part of the STARNET objective. JENM continues to provide software support to PdM HMS for Manpack and Rifleman Radio's full and open competition.</p>			
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<p>FY 2018 Plans: JENM will support systems design, engineering, and integration of mid and lower tier radio planning and management application for the SDR network. JENM will provide support to the Unit Task Reorganization (UTR) systems integration effort to enable the S-6 to quickly transform the tactical network based upon the Commander's intent and associated mission analysis. JENM will support US Navy Digital Modular Radio (DMR) enhancements, ARC 210/231 development, full-rate production HMS Radios, Aviation Small Tactical Terminal (STT), and Small Airborne Networking Radio (SANR) and the integration of USMC terrestrial based waveform planning and management capability. JENM will continue to support modifications to the SRW, WNW, SINGARS, SATCOM, and Integrated Waveforms. JENM will also incorporate enhanced over the air management (OTAM)</p>			
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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EF5 / <i>Joint Tactical Network (JTN)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
capabilities for U.S. Army mid and lower tier waveforms along with continued integration of JENM capability within the WIN-T Network Management System (NMS) including automating critical interface for planning and configuring crypto solutions.			
Title: Legacy Radio Waveforms/Program Office Support	5.562	-	-
Description: Legacy Radio Waveforms/Program Office Support: Includes the continued development, incremental upgrades, and software efficiencies of legacy software and other related activities to support the legacy waveform integration into hardware solutions in the field.			
FY 2016 Accomplishments: Locked control for PdM JENM and PdM Waveforms Program office and Legacy Radio Waveforms support. Shared costs.			
Title: Test and Evaluation	-	-	2.730
FY 2018 Plans: JENM will provide direct support to the FY-18 Developmental and Operational Test (DT/OT) of the PdM HMS Full and Open Competition (FOC) for the next generation Manpack and Rifleman/Leader radios. During this planned Network Integration Exercise (NIE) 18.2 event JENM will also undergo an Operational Test assessment to ensure it continues to meet the needs of today's Soldiers.			
Accomplishments/Planned Programs Subtotals	20.790	10.038	14.210

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 0605031N: 0605031N; JTN, RDTE,N	-	-	3.284	-	3.284	1.291	1.296	1.318	1.229	Continuing	Continuing
• 0605031F: 0605031F; JTNC, RDTE,F	-	6.427	4.691	-	4.691	3.725	3.735	3.798	3.874	Continuing	Continuing
• 4326750A: 4326750A: JTN, O&M,A	8.993	-	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

In FY 2015 and beyond PE 0605031A contains only the JTN (PdM Waveforms and PdM TCNO (JENM)) RDTE funding.

In accordance with the Acquisition Decision Memorandum (ADM) dated 11 July 2012, the Joint Tactical Radio System (JTRS) Program of Records (PORs) transitioned to Military Department (MILDEP) managed programs. As per the ADM dated 20 January 2014, JTN and JTNC became separate entities. FY 2015 and out, Army PE 0605031 contains only the JTN RDT&E funding. For FY2018 and out, the continuing JTN efforts are funded in Army PE 0605031A (JTN), Navy PE 0605031N (shared), Air Force PE 0605031F (shared) and USMC (Marine Corps Communications Systems – MCPC: 112107). As part of the joint program budget strategy, the Air Force

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EF5 / <i>Joint Tactical Network (JTN)</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
<p>and Army budget for approximately one-third each of the total program funds for JENM efforts. The Navy and USMC funding combined equal the other third of the JENM program funding. Prior to the year of execution, Navy and Air Force funding is consolidated in the Army PE (0605031A) and software sustainment funds are realigned from RDT&E to O&M,A PE (4326750A) to support the joint program acquisition strategy. USMC funding will be provided on an annual basis via Military Interdepartmental Purchase Request (MIPR). USMC funding projections are as follows: FY18 - \$1.407M; FY19 - \$1.118M; FY20 - \$1.121M; FY21 - \$1.139M and FY22 - \$1.064M.</p> <p>In FY 2017 and out Waveform funding will be on the Army PE 0605031A, Project Code EX6. JENM funding will remain under Army PE 0605031A Project Code EF5.</p>											

D. Acquisition Strategy

Joint Tactical Network Center (JTNC) Acquisition Decision Memorandum (ADM) (July 2012) (JENM Supporting Role). Per the December 2014 Joint Tactical Network (JTN) Select Acquisition Report (SAR), JTN was 90% expended and changed to inactive. Defense Acquisition Management Information Retrieval (DAMIR) reflected the inactive status on 3 June 2015 JTN APB (13 October 2015) (JENM Supporting Role).

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EF5 / <i>Joint Tactical Network (JTN)</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JENM Program Management Support	C/CPFF	G2 Software Systems : San Diego, CA	0.000	-		0.909	Nov 2016	-		-		-	0.000	0.909	0.000
JENM Program Management Support	C/CPIF	Pending Contract Award : Aberdeen, MD	0.000	-		0.448	Nov 2016	-		-		-	0.000	0.448	0.000
JENM Program Management Support	Allot	USAASC : Aberdeen, MD	0.000	-		0.238	Oct 2016	0.898	Oct 2017	-		0.898	Continuing	Continuing	Continuing
JENM Program Management Support	MIPR	SSC PACIFIC : San Diego, CA	0.000	-		0.347	Oct 2016	-		-		-	0.000	0.347	0.000
Program Management Support	C/CPFF	Booz Allen Hamilton : San Diego, CA	0.336	0.337	Oct 2015	-		0.635		-		0.635	0.000	1.308	0.673
Program Management	C/CPFF	G2 Software Systems : San Diego, CA	0.840	0.843	Oct 2015	-		-		-		-	0.000	1.683	1.683
Subtotal			1.176	1.180		1.942		1.533		-		1.533	-	-	-

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JENM NMRIL Development	C/CPFF	G2 Software Systems : San Diego, CA	0.000	-		0.992	Nov 2016	-		-		-	0.000	0.992	0.000
JENM NMRIL Development	C/CPFF	Pending Contract Award : Aberdeen, MD	0.000	-		0.875	Nov 2016	-		-		-	0.000	0.875	0.000
JENM NMRIL Development	MIPR	SSC PACIFIC : San Diego, CA	0.000	-		1.741	Oct 2016	9.736	Oct 2017	-		9.736	Continuing	Continuing	Continuing
Post Formal Qualification Testing-JENM	C/CPIF	Boeing : Huntington Beach, CA	1.876	4.263		-		-		-		-	0.000	6.139	4.991
Post Formal Qualification Testing-WNW	C/CPIF	General Dynamics : Scottsdale, AZ	1.217	1.540	Oct 2015	-		-		-		-	0.000	2.757	2.976

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EF5 / <i>Joint Tactical Network (JTN)</i>
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Post Formal Qualification Testing-SRW	C/CPIF	Harris : Rochester, NY	1.225	1.329	Oct 2015	-		-		-		-	0.000	2.554	2.554
Software Communications Architecture (SCA) Compliance	MIPR	NSA : Fort Meade, MD	0.476	0.477	Oct 2015	-		-		-		-	0.000	0.953	0.953
Post FQT/Software Support	MIPR	SSC PAC : San Diego, CA	3.670	3.808	Oct 2015	-		-		-		-	0.000	7.478	7.604
Post FQT/Software Support	MIPR	CERDEC : APG, MD	0.305	0.306		-		-		-		-	0.000	0.611	0.611
Post FQT/Software Support	MIPR	SSC LANT : Charleston, SC	2.610	2.619	Oct 2015	-		-		-		-	0.000	5.229	5.229
Post Formal Qualification Testing-MUOS	C/CPIF	Lockheed Martin Corp. : Sunnyvale, CA	0.660	-		-		-		-		-	0.000	0.660	0.660
Post Formal Qualification Testing-Link 16	C/CPIF	BAE : Wayne, NJ	0.332	-		-		-		-		-	0.000	0.332	0.332
Subtotal			12.371	14.342		3.608		9.736		-		9.736	-	-	-

Remarks

FY 2016 PE 0605031A represents the total JTN RDTE budget. FY 2017 and beyond reflect JENM budget only.

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JENM v3 Software Support	C/CPFF	G2 Software Systems : San Diego, CA	0.000	-		0.442	Nov 2016	-		-		-	0.000	0.442	0.000
JENM v3 Software Support	C/CPFF	Pending Contract Award : Aberdeen, MD	0.000	-		0.607	Nov 2016	-		-		-	Continuing	Continuing	Continuing
JENM v3 Software Support	MIPR	SSC PACIFIC : San Diego, CA	0.000	-		0.694	Oct 2016	-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / Joint Tactical Network (JTN)	Project (Number/Name) EF5 / Joint Tactical Network (JTN)
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Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development/Engineering/Technical Support	C/CPFF	Various : various	0.861	0.994	Oct 2015	-		-		-		-	0.000	1.855	1.985
Subtotal			0.861	0.994		1.743		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JENM v3 System Engineering and Test	MIPR	SSC PACIFIC : San Diego, CA	0.000	-		1.104	Oct 2016	1.193	Oct 2017	-		1.193	Continuing	Continuing	Continuing
JENM v3 System Engineering and Test	MIPR	NM RIL : San Diego, CA	0.000	-		1.641	Nov 2016	1.748	Nov 2017	-		1.748	0.000	3.389	0.000
JTN Test and Evaluation Support	C/CPFF	Booz Allen Hamilton : San Diego, CA	0.702	1.160	Oct 2015	-		-		-		-	0.000	1.862	1.406
JTN Test and Evaluation	FFRDC	MITRE : San Diego, CA	1.600	2.061	Oct 2015	-		-		-		-	0.000	3.661	3.205
JTN Test and Evaluation Support	C/CPFF	G2 Software Systems : San Diego, CA	0.595	1.053	Oct 2015	-		-		-		-	0.000	1.648	1.192
Subtotal			2.897	4.274		2.745		2.941		-		2.941	-	-	-

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	17.305	20.790	10.038	14.210	-	14.210	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EF5 / <i>Joint Tactical Network (JTN)</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Wideband Networking Waveform (WNW)	WNW Software Enhancement and Version Drops				Version Drops																							
Soldier Radio Waveform (SRW)	SRW Software Enhancement and Version Drops				Version Drops																							
FY2018 JENM Software Development and Release					FY2018 JENM Software Development and Release																							
FY2020 JENM Software Development and Release									FY2020 JENM Software Development and Release																			
FY2022 JENM Software Development and Release													FY2022 JENM Software Development and Release															

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EF5 / <i>Joint Tactical Network (JTN)</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Wideband Networking Waveform (WNW)	1	2015	4	2016
Soldier Radio Waveform (SRW)	1	2015	4	2016
FY2018 JENM Software Development and Release	2	2017	2	2018
FY2020 JENM Software Development and Release	2	2018	1	2020
FY2022 JENM Software Development and Release	1	2020	1	2022

Note

In FY17 and out Waveform funding will now be on the Army PE 0605031A, Project Code EX6. Starting in FY17, Waveforms Software Enhancements and Versions Drops will reflect on the Project Code EX6 Exhibit R4 and R4A.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>				Project (Number/Name) EX6 / <i>Waveforms</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EX6: <i>Waveforms</i>	-	0.000	5.976	29.940	-	29.940	28.452	22.832	21.447	21.982	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Prior to FY17, PdM Waveforms was funded under JTN Army Program Element (APE) 0605031A (Project Code EF5). Starting in FY17, PdM Waveforms will be executing from Project Code EX6.

For FY17 and prior, PdM Waveforms utilized OMA funding to support annual engineering releases. Beginning in FY18, PdM Waveforms' refocused strategy eliminates annual engineering releases and replaces them with five year version upgrades to incorporate fixes and emerging threats to the warfighter. This strategy will eliminate the need for OMA funding.

A. Mission Description and Budget Item Justification

PdM Waveforms delivers, maintains, and upgrades portable, interoperable, mobile ad hoc networking waveforms and network enterprise services to enhance tactical warfighting capabilities. PdM Waveforms provides the Lower Tactical Internet with a suite of waveforms and network services that are: (1) Interoperable - used by all Services; (2) Capable of operating on a variety of hardware platforms, both Program of Record and non-developmental commercial radios; (3) Secure - meet all Department of Defense and US Government information assurance requirements; (4) Operationally relevant - quickly and effectively meet evolving network mission requirements of Combatant Commanders and the Services; and (5) Affordable - drive down procurement and support costs via a robust, competitive market which adheres to open government standards.

Project code EX6 funds the continued development of PdM Waveforms. FY2015-FY2016 requirements were executed from JTN APE 0605031A (Project Code EF5).

FY18 Base RDTE dollars in the amount of \$29.940 million supports the continued development of the waveforms, testing support, and the program management office.

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

	FY 2016	FY 2017	FY 2018
Title: Program Management Office Support	-	0.793	3.975
Description: Provides Program Management Office (PMO) support for Waveforms enhancements.			
FY 2017 Plans: Continues the program management support for PdM Waveforms.			
FY 2018 Plans: Continue program management support for PdM Waveforms.			
Title: Wideband Networking Waveform (WNW) Development	-	2.537	12.709

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EX6 / <i>Waveforms</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
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Description: WNW is a high data rate Mobile Adhoc Networking (MANET) waveform application that provides the Army's mid-tier tactical Internet backbone (transit network) and connects tactical forces during Unified Land Operations, particularly in Denied, Degraded, Disrupted, Space Operational Environment (D3SOE). WNW provides high throughput, dynamically adaptable connectivity for the secure exchange of IP based voice, data, and video traffic. WNW has two signals-in-space (SiS), which are the Orthogonal Frequency Division Multiplexing (OFDM) and Anti-Jam (AJ), each with multiple bandwidths. WNW supports network nodes on mobile, airborne, and maritime platforms. WNW includes Type 1 Encryption, networking services, High Assurance IP Equipment (HAIPE) capabilities, red/black switching, and internal routing of other WNW signals. WNW is currently ported on 7 radio platforms with 5 different vendors.

FY 2017 Plans:

Integrate HAIPE 4.2 interoperable core and designated extensions in collaboration with Joint Enterprise Net Manager (JENM) and Warfighter Information Network-Tactical (WIN-T) high efficiency routing deployments and enhanced electronic protection requirements assessments. Develop capability for expanded scale and high mobility subnets, continued electronic protection enhancements as well as Disruption Tolerant and Virtualized Networking functionality for WNW. Develop, test, and deploy a security enhanced, non-proprietary development environment. Evolve an expanded test bed for validation of performance and interoperability of waveform applications and radio platform services to support to Mid-tier Networking Vehicular Radio (MNVR) and Small Airborne Networking Radio (SANR) milestones. Support WNW evaluation as part of the MNVR Analysis of Alternatives (AoA).

FY 2018 Plans:

Continue development of the WNW 5.0 capability as described above and perform unit lead testing of interim engineering releases. Continue to expand the test bed for validation of performance and interoperability of waveform applications and radio platform services to support Mid-tier Networking Vehicular Radio (MNVR) and Small Airborne Networking Radio (SANR) milestones.

Title: Soldier Radio Waveform (SRW)

Description: Soldier Radio Waveform (SRW) will operate on tactical radio sets to provide a networked battlefield communications capability for users engaged in land combat operations and will support voice, data, and video communications on the immediate battlefield. These forces include vehicles, rotary wing aircraft, dismounted Soldiers, and unmanned aerial vehicles (UAV). Functional software applications will use SRW radio enabled sets over Internet Protocol (IP) capable networks and sub-networks. SRW will be interoperable with higher throughput, IP based network waveforms, such as Wideband Networking Waveform (WNW). As applicable, these IP-based networking waveforms will enable information exchanges through the Global Information Grid (GIG) to the Soldier and provide entirely new capabilities for battlefield communications and information sharing. SRW is currently ported on 21 different radio platforms with 9 different vendors.

	-	2.646	13.256

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EX6 / <i>Waveforms</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p><i>FY 2017 Plans:</i> Continue to develop, evolve and enhance SRW to provide improved performance. Maintain test facility to conduct SRW test and evaluation. Release of v2.0 will provide Enhanced Electronic Protection (EEP), network performance and scalability improvements, and address SRW Narrowband requirements.</p> <p><i>FY 2018 Plans:</i> Continue to develop, evolve and enhance SRW to provide improved performance. Maintain test facility to conduct SRW test and evaluation. Continue development of SRW version 2.0.</p> <p>a. Provide improved cyber robustness for SRW, including a mode that is robust to modern EW devices, synchronizes with blue force Defense Electronic Attack (DEA) devices, and operates in a congested RF environment to support the SRW CEMA effort.</p> <p>b. Develop an eOTAM radio service to provide updates over the air for operational parameters and maintenance functions across the radio network.</p>			
Accomplishments/Planned Programs Subtotals	-	5.976	29.940

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 4326750A: 4326750A: <i>JTN, O&M, A</i>	8.993	10.278	-	-	-	-	-	-	-	0	19.271

Remarks

In FY2014, the JTN (PdM Waveforms) was funded in the APE 0605030A. This was a shared line with JTNC. In FY2016 and beyond APE 0605030A will be JTNC only.

In FY2015 and FY2016 APE 0605031A (Project Code EF5) contains only the JTN (PdM Waveforms and PdM JENM) RDTE funding. Starting in FY2017, PdM Waveforms will be executing from Project Code EX6.

Prior to the year of execution, software sustainment funds are realigned from RDTE to OMA APE 4326750A to support the PdM Waveforms program acquisition strategy.

D. Acquisition Strategy

PdM Waveforms is responsible for common core activities including developing and updating legacy and networking waveforms that operate on multiple radios sets and in all operational environments that support network-centric operational warfare. Waveform developments (upgrading, developing, and maintaining) will generally be procured through full and open contract competitions.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0605031A / <i>Joint Tactical Network (JTN)</i>	EX6 / <i>Waveforms</i>

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EX6 / <i>Waveforms</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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	MIPR	CERDEC : APG, MD	0.000	-		0.232		0.678		-		0.678	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	Various/TBD : Aberdeen, MD	0.000	-		-		0.489		-		0.489	Continuing	Continuing	Continuing
Program Management Support	MIPR	MITRE : Aberdeen, MD	0.000	-		0.561		2.808		-		2.808	Continuing	Continuing	Continuing
Subtotal			0.000	-		0.793		3.975		-		3.975	-	-	-

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development-SRW	C/CPFF	Harris : Rochester, NY	0.000	-		0.997		3.176		-		3.176	Continuing	Continuing	Continuing
Software Development-SRW	C/CPFF	Various/TBD : APG, MD	0.000	-		0.920		3.175		-		3.175	Continuing	Continuing	Continuing
Software Development - WNW	MIPR	SSC Atlantic : Charleston, SC	0.000	-		0.567		2.486		-		2.486	Continuing	Continuing	Continuing
Software Development - WNW	C/CPFF	Various/TBD : APG, MD	0.000	-		-		3.603		-		3.603	Continuing	Continuing	0.000
Subtotal			0.000	-		2.484		12.440		-		12.440	-	-	-

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Support - SRW	MIPR	CERDEC : APG, MD	0.000	-		0.194		2.314		-		2.314	Continuing	Continuing	Continuing
Software Support - SRW	C/CPFF	Harris : Rochester, NY	0.000	-		0.421		3.861		-		3.861	Continuing	Continuing	Continuing
Software Support - WNW	MIPR	SSC Atlantic : Charleston, SC	0.000	-		0.729		1.947		-		1.947	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EX6 / <i>Waveforms</i>
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Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Support - WNW	C/CPFF	Various/TBD : APG, MD	0.000	-		0.862		2.932		-		2.932	Continuing	Continuing	Continuing
Subtotal			0.000	-		2.206		11.054		-		11.054	-	-	-

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation Support (SRW RIL)	MIPR	CERDEC : APG, MD	0.000	-		0.146		0.730		-		0.730	Continuing	Continuing	Continuing
Test and Evaluation Support (WNW RIL)	MIPR	SSC Atlantic : Charleston, SC	0.000	-		0.347		1.741		-		1.741	Continuing	Continuing	Continuing
Subtotal			0.000	-		0.493		2.471		-		2.471	-	-	-






			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		5.976		29.940		-		29.940	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EX6 / <i>Waveforms</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
(1) Wideband Networking Waveform 4.2.1	 WNW 4.2.1				 WNW 4.2.2																											
(2) Wideband Networking Waveform 4.2.2																																
(3) Wideband Networking Waveform 5.0																													 WNW 5.0			
(4) Soldier Radio Waveform 1.2.2																													 SRW 1.2.2			
(5) Soldier Radio Waveform 2.0																													 SRW 2.0			

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605031A / <i>Joint Tactical Network (JTN)</i>	Project (Number/Name) EX6 / <i>Waveforms</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Wideband Networking Waveform 4.2.1	2	2016	2	2016
Wideband Networking Waveform 4.2.2	1	2017	1	2017
Wideband Networking Waveform 5.0	1	2020	1	2020
Soldier Radio Waveform 1.2.2	3	2016	3	2016
Soldier Radio Waveform 2.0	2	2020	2	2020

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605032A / TRACTOR TIRE
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	10.677	27.254	34.670	5.000	39.670	35.795	51.702	42.482	41.347	Continuing	Continuing
ET3: Tractor Trick	-	10.677	27.254	34.670	5.000	39.670	35.795	51.702	42.482	41.347	Continuing	Continuing

Note

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

FY 2017 OCO Amendment funding in the amount of \$10.0 million supports JUONS ST-0007. Details are classified. Effort is not executing Rapid Acquisition Authority for this program line at this time. Total Rapid Acquisition Authority (RAA) being executed against this effort in OPA/RDTE lines is \$37.96 million. An additional \$.5 million is for OMA requirements, for a total RAA effort of \$38.46 million. RAA was sourced with OMA OCO.

A. Mission Description and Budget Item Justification

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

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	5.677	27.254	26.945	-	26.945
Current President's Budget	10.677	27.254	34.670	5.000	39.670
Total Adjustments	5.000	0.000	7.725	5.000	12.725
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	7.725	5.000	12.725
• ATR FY16-19 PA	5.000	0.000	0.000	-	0.000

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: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605033A / Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	5.032	5.207	-	5.207	3.529	0.000	0.000	0.000	0.000	13.768
EQ3: Grnd-Based Opnl Surv Sys -Exped (GBOSS-E)	-	0.000	5.032	5.207	-	5.207	3.529	0.000	0.000	0.000	0.000	13.768

Note

Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E) was previously funded in Integrated Base Defense (IBD) Program Element: 0205402A EF2. This is not a new start program in FY17.

A. Mission Description and Budget Item Justification

Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E) will replace the interim Persistent Surveillance System-Ground (PSS-G) Increment 1 towers with improved persistent surveillance capabilities and will provide network integration and better mobility utilizing modular configurations. GBOSS-E will replace obsolete, quick reaction capability (QRC) surveillance and force protections systems utilizing modular configurations: Light variant (man transportable/detachable) for extra small base camps or small outpost/company, Medium variant (mid sensor height) for small to medium size base, and Heavy variant (high level sensor height) for large contingency base camps. GBOSS-E will operate in a stand-alone mode or as part of an integrated network utilizing government owned software, be easily operated and maintained, and be rugged enough to support employment in expeditionary operations worldwide.

B. Program Change Summary (\$ in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	5.032	1.720	-	1.720
Current President's Budget	0.000	5.032	5.207	-	5.207
Total Adjustments	0.000	0.000	3.487	-	3.487
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	3.487	-	3.487

Change Summary Explanation

FY 2018 increase is due to an adjustment required to align funding with planned acquisition strategy.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605033A / <i>Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)</i>				Project (Number/Name) EQ3 / <i>Grnd-Based Opnl Surv Sys -Exped (GBOSS-E)</i>				
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EQ3: <i>Grnd-Based Opnl Surv Sys -Exped (GBOSS-E)</i>	-	0.000	5.032	5.207	-	5.207	3.529	0.000	0.000	0.000	0.000	13.768
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E) was previously funded in Integrated Base Defense Program Element: 0205402A EF2. This is not a new start program in FY17.

A. Mission Description and Budget Item Justification

Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E) will replace the interim Persistent Surveillance System-Ground (PSS-G) Increment 1 towers with improved persistent surveillance capabilities and will provide network integration and better mobility utilizing modular configurations. GBOSS-E will replace obsolete, quick reaction capability (QRC) surveillance and force protections systems utilizing modular configurations: Light variant (man transportable/detachable) for extra small base camps or small outpost/company, Medium variant (mid sensor height) for small to medium size base, and Heavy variant (high level sensor height) for large contingency base camps. GBOSS-E will operate in a stand-alone mode or as part of an integrated network utilizing government owned software, be easily operated and maintained, and be rugged enough to support employment in expeditionary operations worldwide.

FY 2018 Base Funding in the amount of \$5.207 million supports the continued development efforts for GBOSS-E to include the Technical Data Package (TDP) and Product Support Analysis for all system configurations and participation in Technical Support Operational Analysis (TSOA) events that will provide user feedback and capability assessments. This funding also supports acquisition of Engineering Development Models for the following components, Heavy Tower Trailer, Electro Optic Infrared (EOIR) sensor, and Radio Frequency (RF) Sensor. In addition, funding supports technical testing and program management activities.

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

	FY 2016	FY 2017	FY 2018
Title: GBOSS-E Design and Build	-	5.032	5.207
Description: GBOSS-E completes building of Prototype/Engineering Development Models (EDMs) and starts Development Testing (DT).			
FY 2017 Plans: G-BOSS(E) completes building of Engineering Development Models (EDMs) and starts Development Testing (DT)/Early Operational Assessment (OA).			
FY 2018 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605033A / <i>Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)</i>	Project (Number/Name) EQ3 / <i>Grnd-Based Opnl Surv Sys -Exped (GBOSS-E)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Funding supports continued development of Engineering Development Models, integration testing, and program management activities.			
Accomplishments/Planned Programs Subtotals	-	5.032	5.207

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• M90212: <i>G-BOSS(E) (M90212)</i>	-	26.572	-	-	-	3.668	3.668	3.668	3.668	Continuing	Continuing
• Integrated Base Defense (0205402A): <i>Integrated Base Defense (0205402A)</i>	10.324	3.450	-	-	-	-	-	-	-	0	13.774

Remarks
 Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E) was previously funded in Integrated Base Defense (IBD) Program Element: 0205402A EF2, which was a shared funding line between Integrated Ground Security, Surveillance and Response Capability (IGSSR-C), GBOSS-E and Integrated Base Defense (IBD). GBOSS-E portion was \$5.507 million in FY 2016. OPA funding of \$26.572 million in FY 2017 are Overseas Contingency Operations (OCO) funds to procure components for Integrated Base Defense –Kits (IBD-K) for 9 remote operating bases supporting Operation Inherent Resolve above the PB 2017 Request. The IBD-Ks will provide integrated and interoperable capability for persistent surveillance, entry control, perimeter security, data fusion and warn and alert to increase force protection and situational awareness in base camps.

D. Acquisition Strategy
 Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E) will replace the interim Persistent Surveillance System – Ground (PSS-G) Increment 1 towers with improved persistent surveillance capabilities along with network integration and better mobility utilizing modular configurations. The GBOSS-E Capability Design Document (CDD) was AROC approved May 2014. In FY 2013, FY 2014 & FY 2015, the Department of Defense (DoD) Physical Security Enterprise and Analysis Group (PSEAG) provided funds to conduct pre-milestone B activities.

GBOSS-E received an approved Materiel Development Decision (MDD) from the Milestone Decision Authority (MDA) on 4 December 2015. Pending successful Milestone B decision in FY 2017, the existing United States Marine Corps (USMC) tower's design (Ground Based Operational Surveillance System) (GBOSS) will be leveraged and modified to meet the Army's GBOSS-E program requirements.

The acquisition strategy for GBOSS-E was approved by the Milestone Decision Authority (MDA) on 11 December 2016, which approved plans to leverage the Naval Surface Warfare Center (NSWC) at Crane, Indiana and the Night Vision and Electronic Sensors Directorate (NVESD), Fort Belvoir, Virginia to provide system design, development, and integration support, as well as a Technical Data Package (TDP) to support future procurements. The Heavy Tower Trailer, EO/IR, and RF Sensor

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605033A / <i>Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)</i>	Project (Number/Name) EQ3 / <i>Grnd-Based Opnl Surv Sys -Exped (GBOSS-E)</i>

which are the main cost drivers for the system will be competitively awarded through the product office and provided to a prime integrator with the TDP to construct future GBOSS-E systems.

Milestone C is planned for FY 2020 and will align GBOSS-E, IGSSR-C, and Tactical Security System (TSS) in order to gain programmatic efficiencies.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0605034A / <i>Tactical Security System (TSS)</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	2.904	4.727	-	4.727	3.957	0.000	0.000	0.000	0.000	11.588
EQ4: <i>Tactical Security System (TSS)</i>	-	0.000	2.904	4.727	-	4.727	3.957	0.000	0.000	0.000	0.000	11.588

A. Mission Description and Budget Item Justification

The Tactical Security System (TSS) is a modular, scalable, lightweight, rapidly deployable, ground based security and surveillance Family of Systems (FoS). The design of TSS allows for hasty emplacement, is tailorable to support short and long term security, surveillance and detection missions. The TSS and its components are designed to be employed as a stand-alone system, in a layered effort or integrated with additional force protection (FP) systems. Integration with additional sensors will be obtained through network communications and software in line with Net-Ready requirements. TSS will address four of the five base camp core protection/security capabilities identified in the Integrated Base Defense (IBD) Concept of Operations (CONOPS) which are perimeter security, entry control, persistent surveillance, warning and alerting. The TSS will be compliant with the Common Operating Environment (COE) Architecture and Implementation Plan. TSS is designed to be employed as a stand-alone system in a layered effort or integrated with additional force protection systems including motion, acoustic, seismic, surface, and detection technologies.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	2.904	5.576	-	5.576
Current President's Budget	0.000	2.904	4.727	-	4.727
Total Adjustments	0.000	0.000	-0.849	-	-0.849
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	-0.849	-	-0.849

Change Summary Explanation

Decrease to FY 2018 funding is due to an adjustment required to align with planned acquisition strategy.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605034A / <i>Tactical Security System (TSS)</i>				Project (Number/Name) EQ4 / <i>Tactical Security System (TSS)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EQ4: <i>Tactical Security System (TSS)</i>	-	0.000	2.904	4.727	-	4.727	3.957	0.000	0.000	0.000	0.000	11.588
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start program in FY 2017.

A. Mission Description and Budget Item Justification

The Tactical Security System (TSS) is a modular, scalable, lightweight, rapidly deployable, ground based security and surveillance Family of Systems (FoS). The design of TSS allows for hasty emplacement, is tailorable to support short and long term security, surveillance and detection missions. The TSS and its components are designed to be employed as a stand-alone system, in a layered effort or integrated with additional force protection (FP) systems. Integration with additional sensors will be obtained through network communications and software in line with Net-Ready requirements. TSS will address four of the five base camp core protection/security capabilities identified in the Integrated Base Defense (IBD) Concept of Operations (CONOPS) which are perimeter security, entry control, persistent surveillance, warning and alerting. The TSS will be compliant with the Common Operating Environment (COE) Architecture and Implementation Plan. TSS is designed to be employed as a stand-alone system in a layered effort or integrated with additional force protection systems including motion, acoustic, seismic, surface, and detection technologies.

FY 2018 Base Funding in the amount of \$4.727 million supports the system level Preliminary Design Review (PDR), establishment of the TSS capabilities in the System Integration Lab (SIL), completes the development, integration, and production of the TSS Engineering & Manufacturing Development (EMD) assets (production representative articles). The funding will also support the development of the Technical Data Package (TDP) and Product Support Analysis and Package, as well as component selection and integration testing for the Engineering Development Models (EDMs).

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

	FY 2016	FY 2017	FY 2018
Title: TSS Design and Build	-	2.904	4.727
Description: TSS completes building of Engineering Development Model (EDM), integration with Integrated Ground Security Surveillance and Response Capability (IGSSR-C) and Common Operating Environment (COE), and Developmental Testing (DT) of prototype.			
FY 2017 Plans: TSS completes building of Engineering Development Model (EDM), integration with Integrated Ground Security Surveillance and Response Capability (IGSSR-C) and Common Operating Environment (COE), and Developmental Testing (DT) of prototype.			
FY 2018 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605034A / <i>Tactical Security System (TSS)</i>	Project (Number/Name) EQ4 / <i>Tactical Security System (TSS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
TSS completes building of the Engineering Development Model (EDM), support Program Management Office (PMO), PDR and component selection integration testing of the EDM.			
Accomplishments/Planned Programs Subtotals	-	2.904	4.727

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• TSS (M90220): TSS (M90220)	-	-	-	-	-	5.809	9.352	10.859	11.356	Continuing	Continuing

Remarks

D. Acquisition Strategy
Tactical Security System (TSS) will eliminate the Non-Standard Equipment (NSE) currently used in the Force Protection System (FPS) under the Base Expeditionary Targeting and Surveillance System – Combined (BETSS-C) Quick Reaction Program (QRC) with improved surveillance capabilities in modular configurations along with enhanced network integration across the command and control system and Common Operating Environment (COE). In FY2016, the Department of Defense (DoD) Physical Security Enterprise and Analysis Group (PSEAG) will provide funding to support pre-milestone B activities and risk reduction activities.

TSS received Materiel Development Decision (MDD) approval on 6 January 2017. The acquisition concept and contracting strategy for TSS is pending approval from the Milestone Decision Authority (MDA) with plans to leverage the Night Vision and Electronic Sensors Directorate (NVESD), Fort Belvoir, Virginia to provide programmatic and developmental support and existing RDT&E contracts for the system design, development, and integration of Engineering and Manufacturing Development (EMD) systems and to support Operational Assessments (OA). Key efforts include system design and engineering efforts, development of two engineering development models (EDMs), testing and evaluation for TSS Key Performance Parameters (KPPs)/Key System Attributes (KSAs)/Additional Performance Parameters (APAs), and Developmental and Operational Test and Evaluation.

Milestone C is planned for FY 2020 to align Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E), Integrated Ground Security, Surveillance and Response Capability (IGSSR-C), and TSS in order to gain programmatic efficiencies.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	98.496	107.877	105.778	21.540	127.318	52.410	75.909	40.179	1.470	Continuing	Continuing
EB4: <i>CIRCM</i>	-	98.496	107.877	105.778	21.540	127.318	52.410	75.909	40.179	1.470	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Common Infrared Countermeasure (CIRCM) budget line includes CIRCM (EB4), and funding to counter emerging technology as identified in Joint Urgent Operational Needs Statement (JUONS) SO-0010 Phase 2a and the Headquarters Department of the Army (HQDA) Directed Requirement for the Advanced Threat Warner Common Infrared Countermeasures Quick Reaction Capability (ATW & CIRCM QRC).

CIRCM (EB4)

The Common Infrared Countermeasure (CIRCM) is the next generation lightweight, laser-based Infrared Countermeasure (IRCM) component that will interface with both the Army's Common Missile Warning System (CMWS) and future missile warning systems (MWS) to defeat current and emerging missile threats that use multispectral technology for rotary-wing, tilt-rotor and small fixed-wing aircraft across the DoD. CIRCM receives an angular bearing hand-off from the MWS, employs a pointing and tracking system which acquires the handed-over threat and tracks the incoming missile during and after motor burnout. CIRCM jams the missile by using modulated laser energy in the missile seeker band, thus degrading the tracking capability of the missile and causing it to miss the aircraft. CIRCM is utilizing Open Systems Architecture which allows flexibility with software and hardware refreshes to keep pace with future threats.

The CIRCM A-Kit includes mounting hardware, wiring harnesses, and other components necessary to install and interface the mission kit on host aircraft. The A-Kit ensures the mission kit is functionally and physically operational with a specific host aircraft type. The CIRCM B-Kit is the mission kit (laser, pointer tracker, and controller) required to achieve near spherical coverage for an aircraft.

JUONS SO-0010 and ATW & CIRCM QRC

Initially, a select number of aircraft in the threat area of responsibility will be outfitted with a Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system. However, this approach came with a Space, Weight and Power - Cooling (SWaP-C) penalty which is being addressed as a follow-on HQDA Directed Requirement with a Quick Reaction Capability (QRC) using Advanced Threat Warner (ATW) and CIRCM. The intent of the ATW & CIRCM QRC program is to reduce the SWaP-C associated with the Phase 2a solution.

FY 2018 Base Research, Development, Test, and Evaluation (RDT&E) funding in the amount of \$106.699 million completes the Engineering and Manufacturing Development (EMD) phase to include continued A-Kit and B-Kit development/Low Rate Initial Production (LRIP), and developmental testing.

FY 2018 RDT&E Overseas Contingency Operations (OCO) funding in the amount of \$21.540 million will support efforts related to the HQDA Directed Requirement to include CIRCM QRC integration with the Army ATW processor and associated follow-on Test and Evaluation (T&E) efforts.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	101.570	107.877	106.699	-	106.699
Current President's Budget	98.496	107.877	105.778	21.540	127.318
Total Adjustments	-3.074	0.000	-0.921	21.540	20.619
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-3.074	0.000	-0.921	21.540	20.619

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

Project: EB4: *CIRCM*

Congressional Add: *Advanced Threat Warner (ATW) CIRCM Quick Reaction Capability (QRC) Congressional Add*

Congressional Add Subtotals for Project: EB4

Congressional Add Totals for all Projects

	FY 2016	FY 2017
	24.000	-
	24.000	-
	24.000	-

Change Summary Explanation

FY 2018 funding increase will support efforts related to the HQDA Directed Requirement for ATW & CIRCM QRC.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	Project (Number/Name) EB4 / <i>CIRCM</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EB4: <i>CIRCM</i>	-	98.496	107.877	105.778	21.540	127.318	52.410	75.909	40.179	1.470	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funds in the program are a realignment of funds from program VU8, PE 0604270A (Electronic Warfare Development) for more efficient and effective program management.

A. Mission Description and Budget Item Justification

The Common Infrared Countermeasure (CIRCM) budget line includes CIRCM (EB4), and funding to counter emerging technology as identified in Joint Urgent Operational Needs Statement (JUONS) SO-0010 Phase 2a and the Headquarters Department of the Army (HQDA) Directed Requirement for the Advanced Threat Warner Common Infrared Countermeasures Quick Reaction Capability (ATW & CIRCM QRC).

CIRCM (EB4)

The Common Infrared Countermeasure (CIRCM) is the next generation lightweight, laser-based Infrared Countermeasure (IRCM) component that will interface with both the Army's Common Missile Warning System (CMWS) and future missile warning systems (MWS) to defeat current and emerging missile threats that use multispectral technology for rotary-wing, tilt-rotor and small fixed-wing aircraft across the DoD. CIRCM receives an angular bearing hand-off from the MWS, employs a pointing and tracking system which acquires the handed-over threat and tracks the incoming missile during and after motor burnout. CIRCM jams the missile by using modulated laser energy in the missile seeker band, thus degrading the tracking capability of the missile and causing it to miss the aircraft. CIRCM is utilizing Open Systems Architecture which allows flexibility with software and hardware refreshes to keep pace with future threats.

The CIRCM A-Kit includes mounting hardware, wiring harnesses, and other components necessary to install and interface the mission kit on host aircraft. The A-Kit ensures the mission kit is functionally and physically operational with a specific host aircraft type. The CIRCM B-Kit is the mission kit (laser, pointer tracker, and controller) required to achieve near spherical coverage for an aircraft.

JUONS SO-0010 and ATW & CIRCM QRC

Initially, a select number of aircraft in the threat area of responsibility will be outfitted with a Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system. However, this approach came with a Space, Weight and Power - Cooling (SWaP-C) penalty which is being addressed as a follow-on HQDA Directed Requirement with a Quick Reaction Capability (QRC) using Advanced Threat Warner (ATW) and CIRCM. The intent of the ATW & CIRCM QRC program is to reduce the SWaP-C associated with the Phase 2a solution.

FY 2018 Base Research, Development, Test, and Evaluation (RDT&E) funding in the amount of \$105,778 million completes the Engineering and Manufacturing Development (EMD) phase to include continued A-Kit and B-Kit development/Low Rate Initial Production (LRIP), and developmental testing.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	Project (Number/Name) EB4 / <i>CIRCM</i>
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FY 2018 RDT&E Overseas Contingency Operations (OCO) funding in the amount of \$21.540 million will support efforts related to the HQDA Directed Requirement to include CIRCM QRC integration with the Army ATW processor and associated follow-on Test and Evaluation (T&E) efforts.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Title: CIRCM Product Development</p> <p>Description: CIRCM Product Development, Support Costs, & Management Services</p> <p>FY 2016 Accomplishments: RDT&E dollars support the CIRCM Engineering and Manufacturing Development (EMD) phase to include Critical Design Review (CDR) Risk Reduction Activities, B-Kit ship set prototype deliveries, A-Kit integration, prototype A-Kit Modification Work Order (MWO) development, Training Support Plan (TSP), Technical Manual (TM) development, and non-recurring engineering (NRE).</p> <p>FY 2017 Plans: RDTE dollars support the CIRCM EMD phase to include continued B-Kit and A-Kit development, CDR and A-Kit prototype procurement/deliveries. Other RDTE activities will support systems engineering/program management (SEPM) and Logistics Activities (Core Depot Assessment, Performance Based Logistics Business Case Analysis and Technical Manual updates).</p> <p>FY 2018 Base Plans: RDT&E dollars support completion of EMD phase and start of the Production and Deployment phase, start of Low Rate Initial Production (LRIP) 1, and multi-platform A-Kit and B-Kit development and integration.</p>	63.039	56.755	54.687	-	54.687
<p>Title: CIRCM Test & Evaluation (T&E)</p> <p>Description: CIRCM Test & Evaluation (T&E) Activities</p> <p>FY 2016 Accomplishments: RDT&E dollars support the CIRCM EMD phase to include software testing, tower testing, and Reliability Growth Testing (RGT). "Other Testing" includes funds to develop IRCM solutions to defeat newly acquired threats.</p> <p>FY 2017 Plans: Supports CIRCM developmental testing to include A-kit testing for MH-60M, HH-60M, and AH-64E. This funding also includes test efforts to provide required lab capabilities such as in a system integration lab and procure test assets. Also continues efforts to develop IRCM solutions to defeat newly acquired threats.</p> <p>FY 2018 Base Plans:</p>	11.457	40.222	51.091	-	51.091

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	Project (Number/Name) EB4 / <i>CIRCM</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
RDT&E dollars support completion of Reliability Demonstration Testing (RDT), and continue A-Kit and B-Kit testing to include developmental/operational T&E.					
Title: ATW & CIRCM QRC OCO Description: ATW & CIRCM QRC Integration FY 2017 Plans: Continue the ATW and CIRCM QRC A-Kit development and integration for the H-60, H-47, & H-64 platform variants and integration and integration with other ASE systems. FY 2018 Base Plans: N/A FY 2018 OCO Plans: RDT&E dollars will support the Army ATW Processor, B-Kit development, integration, and associated T&E efforts. This effort will integrate the ATW and CIRCM systems to reduce Space, Weight and Power - Cooling (SWaP-C) in support of JUONS SO-0010.	-	10.900	0.000	21.540	21.540
Accomplishments/Planned Programs Subtotals	74.496	107.877	105.778	21.540	127.318

	FY 2016	FY 2017
Congressional Add: Advanced Threat Warner (ATW) CIRCM Quick Reaction Capability (QRC) Congressional Add FY 2016 Accomplishments: RDT&E dollars support the ATW CIRCM QRC A-Kit development, integration, and associated Test and Evaluation (T&E) efforts. The ATW & CIRCM QRC effort will integrate the ATW and CIRCM systems to reduce Space, Weight and Power - Cooling (SWaP-C) in support of JUONS SO-0010.	24.000	-
Congressional Adds Subtotals	24.000	-

C. Other Program Funding Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APA Funding: SSN AZ3537; BA4; CIRCM	-	108.721	6.337	43.440	49.777	62.460	106.500	120.851	148.498	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	Project (Number/Name) EB4 / <i>CIRCM</i>

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

None

D. Acquisition Strategy

The December 28, 2011, Defense Acquisition Executive (DAE) Acquisition Decision Memorandum (ADM) authorized entry into the Technology Maturation and Risk Reduction (TMRR) phase, designated the program a pre-Major Defense Acquisition Program (MDAP), and approved the updated exit criteria. The August 25, 2015, DAE ADM authorized entry into the Engineering and Manufacturing Development (EMD) phase and designated the program as a MDAP. The EMD contract was awarded to Northrup Grumman Systems Corporation (NGSC) on August 28, 2015. The EMD contract includes priced options for Other Platform A-Kit Development, A-Kit Engineering Support, Low Rate Initial Production (LRIP) 1 and 2 Prototypes (Hardware and Installs), LRIP 1 and 2 Engineering and Test Support, Software Technical Data Package (TDP), Navy funded requirements, and Defense Exportability Features (DEF). Upon CIRCM MS C approval planned for the second quarter of FY18, the LRIP and Engineering Support options may be exercised and the program may immediately enter the Production & Deployment phase with First Unit Equipped (FUE) planned for first quarter of FY20, and a Full Rate Production Decision Review (FRPDR) planned for the first quarter of FY20.

Due to the urgency of addressing the SWaP-C penalty issues related to the JUONS SO-0010 initial DoN LAIRCM material solution, the Army approved a Directed Requirement for the ATW and CIRCM systems, which will be a sole source QRC effort with Northrop Grumman. Northrop Grumman has the required technical capabilities, knowledge and special equipment needed to meet the urgent and compelling need for the ATW CIRCM QRC effort.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605035A / Common Infrared Countermeasures (CIRCM)				EB4 / CIRCM							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering Program Management	Various	Various : -	6.762	7.742		9.371		9.978	Jan 2018	-		9.978	Continuing	Continuing	Continuing
ATW CIRCM QRC System Engineering & Program Management	Various	Various : -	0.000	-		1.100		0.000		2.154	Jan 2018	2.154	Continuing	Continuing	Continuing
Subtotal			6.762	7.742		10.471		9.978		2.154		12.132	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Non-recurring Engineering (NRE)	C/CPFF	Various : -	23.671	22.235	Mar 2016	35.303	Nov 2016	18.125	Jan 2018	-		18.125	Continuing	Continuing	Continuing
Prototype Manufacturing	C/FPIF	Various : -	25.334	-		-		11.892	Jan 2018	-		11.892	Continuing	Continuing	Continuing
Development - System Integration Lab (SIL) Capability Improvements	Various	Various : -	0.000	-		3.000	Apr 2017	2.000	Apr 2018	-		2.000	Continuing	Continuing	Continuing
Other - Threat Management	Various	Various : -	9.777	5.882	Mar 2016	5.081	Mar 2017	6.692	Mar 2018	-		6.692	Continuing	Continuing	Continuing
Data - Logistics Support	Various	Various : -	0.000	0.267	May 2016	1.000	May 2017	1.000	May 2018	-		1.000	Continuing	Continuing	Continuing
ATW CIRCM QRC NRE	C/CPFF	Various : -	0.000	-		3.280	Nov 2016	0.000		3.231	Jan 2018	3.231	Continuing	Continuing	Continuing
ATW CIRCM QRC Prototype Manufacturing	C/CPFF	Various : -	0.000	-		2.120	Nov 2016	-		-		-	Continuing	Continuing	Continuing
ATW CIRCM QRC A-Kit Development & Integration	Various	Various : -	0.000	22.390	Apr 2016	-		0.000		5.385	Jan 2018	5.385	Continuing	Continuing	Continuing
Subtotal			58.782	50.774		49.784		39.709		8.616		48.325	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605035A / Common Infrared Countermeasures (CIRCM)				EB4 / CIRCM							
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Equipment	Various	Various : -	0.500	4.546	Jul 2016	3.000	Jul 2017	5.000	Jul 2018	-		5.000	Continuing	Continuing	Continuing
Subtotal			0.500	4.546		3.000		5.000		-		5.000	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 System Test and Evaluation	Various	Various : -	28.986	23.907	Apr 2016	17.251	Apr 2017	42.417	Apr 2018	-		42.417	Continuing	Continuing	Continuing
Other Testing - Threat Assets	Various	Various : -	6.283	9.917	May 2016	22.971	May 2017	8.674	May 2018	-		8.674	Continuing	Continuing	Continuing
ATW CIRCM QRC Government System Test & Evaluation	Various	Various : -	0.000	1.610	Apr 2016	4.400	Mar 2017	0.000		10.770	Jan 2018	10.770	Continuing	Continuing	Continuing
Subtotal			35.269	35.434		44.622		51.091		10.770		61.861	-	-	-
Project Cost Totals			101.313	98.496		107.877		105.778		21.540		127.318	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	Project (Number/Name) EB4 / <i>CIRCM</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022																															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																												
EMD Contract Award/Protest																																																								
EMD Phase																																																								
Critical Design Review (CDR) Risk Reduction Activities																																																								
(1) CDR																																									▲															
Developmental Test Activity																																																								
Prototype Deliveries																																																								
Reliability Demonstration Test (RDT)																																									▲															
(2) MS C																																																								
Multi-Platform A-Kit Development and Integration																																																								
LRIP 1																																									▲															
Initial Operational Test and Evaluation (IOT&E)	▲																																																							
(3) FUE	▲																																																							
(4) FRPDR	▲																																																							

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	Project (Number/Name) EB4 / <i>CIRCM</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	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 Operating Capability (IOC)																												



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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605035A / <i>Common Infrared Countermeasures (CIRCM)</i>	Project (Number/Name) EB4 / <i>CIRCM</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMD Contract Award/Protest	4	2015	1	2016
EMD Phase	1	2016	2	2018
Critical Design Review (CDR) Risk Reduction Activities	1	2016	1	2017
CDR	1	2017	1	2017
Developmental Test Activity	1	2016	1	2018
Prototype Deliveries	1	2016	2	2017
Reliability Demonstration Test (RDT)	3	2017	1	2018
MS C	2	2018	2	2018
Multi-Platform A-Kit Development and Integration	3	2018	4	2021
LRIP 1	3	2018	2	2019
Initial Operational Test and Evaluation (IOT&E)	3	2019	3	2019
FUE	1	2020	1	2020
FRPDR	1	2020	1	2020
Initial Operating Capability (IOC)	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605036A / <i>Combating Weapons of Mass Destruction (CWMD)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	2.089	6.927	-	6.927	5.548	9.195	4.181	0.000	0.000	27.940
EQ5: <i>Combating Weapons of Mass Destruction (CWMD)</i>	-	0.000	2.089	6.927	-	6.927	5.548	9.195	4.181	0.000	0.000	27.940

A. Mission Description and Budget Item Justification

The Man-Portable Radiological Detection System (MRDS) capability will provide increased radiological and nuclear (RN) detection, localization, presumptive identification and field-confirmatory identification capabilities that are networked to provide situational awareness at the tactical level. The MRDS will support Countering Weapons of Mass Destruction (CWMD) Interdiction and Elimination operations, specifically RN Sensitive Site Assessments and Sensitive Site Exploitation. Future increments of this capability may also support Reconnaissance and Surveillance across the full range of CWMD operations. This capability supports Radiological and Nuclear Interdiction (RNI) and Weapons of Mass Destruction - Elimination (WMD-E) operations to: systematically locate, secure, characterize, and disable WMD programs and related capabilities.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	2.089	6.543	-	6.543
Current President's Budget	0.000	2.089	6.927	-	6.927
Total Adjustments	0.000	0.000	0.384	-	0.384
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	0.384	-	0.384

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605036A / <i>Combating Weapons of Mass Destruction (CWMD)</i>				Project (Number/Name) EQ5 / <i>Combating Weapons of Mass Destruction (CWMD)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EQ5: <i>Combating Weapons of Mass Destruction (CWMD)</i>	-	0.000	2.089	6.927	-	6.927	5.548	9.195	4.181	0.000	0.000	27.940
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Man-Portable Radiological Detection System (MRDS) capability will provide increased radiological and nuclear (RN) detection, localization, presumptive identification and field-confirmatory identification capabilities that are networked to provide situational awareness at the tactical level. The MRDS will support Countering Weapons of Mass Destruction (CWMD) Interdiction and Elimination operations, specifically RN Sensitive Site Assessments and Sensitive Site Exploitation. Future increments of this capability may also support Reconnaissance and Surveillance across the full range of CWMD operations. This capability supports Radiological and Nuclear Interdiction (RNI) and Weapons of Mass Destruction - Elimination (WMD-E) operations to: systematically locate, secure, characterize, and disable WMD programs and related capabilities.

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

	FY 2016	FY 2017	FY 2018
Title: Acquisition Documentation Development	-	0.260	-
Description: Provide the acquisition documentation for the MRDS program MS-C.			
FY 2017 Plans: Initiate the development of the acquisition documentation.			
Title: Program Management	-	0.299	1.550
Description: Provide Program Management			
FY 2017 Plans: MRDS: Initiate Government program management and Integrated Product Team (IPT) support.			
FY 2018 Plans: Continue Government program management and Integrated Product Team support.			
Title: Test & Evaluation Planning	-	0.090	0.158
Description: Provides test & evaluation support (ATEC/JTIC).			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605036A / <i>Combating Weapons of Mass Destruction (CWMD)</i>	Project (Number/Name) EQ5 / <i>Combating Weapons of Mass Destruction (CWMD)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Provide Developmental Test and Evaluation for the MRDS program. FY 2018 Plans: Provide TEMP development and test coordination planning.				
Title: System Engineering Description: Provide system engineering support to the MRDS program. FY 2017 Plans: Initiate the system engineering planning and support for the MRDS program.		-	0.470	-
Title: Cybersecurity/Integration Description: Provides cybersecurity thru integration of COTS. FY 2017 Plans: Initiate cybersecurity planning and support to the MRDS program. FY 2018 Plans: Initiate work on the Situational Awareness Tool and Networking capability.		-	0.200	0.858
Title: Acquisition Logistics Description: Provides Acquisition Logistics support to the MRDS program. FY 2017 Plans: Initiate acquisition logistics planning and support to the MRDS program. FY 2018 Plans: Initiate work on the level of repair analysis, provisioning, Army standard training material and Army standard technical manuals.		-	0.300	0.300
Title: Analytical Support Description: Provide analytical and technical support to the MRDS program. FY 2017 Plans: Provide analytical support and planning to the MRDS program. FY 2018 Plans:		-	0.470	0.671

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605036A / <i>Combating Weapons of Mass Destruction (CWMD)</i>	Project (Number/Name) EQ5 / <i>Combating Weapons of Mass Destruction (CWMD)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Provide support to the test strategy and logistical development.				
Title: Procure LRIP Prototypes Description: Purchases the systems FY 2018 Plans: Procure 12 COTS Systems (2 Types) to support testing and logistics evaluation.		-	-	2.479
Title: Component Testing Description: Provides component testing of the systems. FY 2018 Plans: Initiate testing with LRIP prototypes.		-	-	0.911
Accomplishments/Planned Programs Subtotals		-	2.089	6.927
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy Man-portable Radiological Detection System is a single step acquisition strategy starting at Milestone C to acquire Commercial-Off-The-Shelf equipment sets consisting of a Hands-Free search device, a Hand-Held Radioisotope Identification Device, an integrated tactical radio network, and a Situational Awareness tool in order to provide specialized Army units with a net-ready, rugged, and reliable system that can detect, identify, and characterize designated radionuclides and transmit that information securely to tactical, operational, and strategic command levels in near-real time. The contract approach will be a full and open fixed price incentive successive targets contract for LRIP systems to support post Milestone C testing, and an indefinite delivery indefinite quantity fixed price incentive successive targets contract for the full rate production task order.				
E. Performance Metrics N/A				

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605037A / Evidence Collection and Detainee Processing (ECDP)
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	0.214	-	0.214	0.000	0.000	0.000	0.000	0.000	0.214
EQ6: Evidence Collection and Detainee Processing	-	0.000	0.000	0.214	-	0.214	0.000	0.000	0.000	0.000	0.000	0.214

A. Mission Description and Budget Item Justification

This program element supports development of Law Enforcement Equipment Ensemble Kit (LEEKS). LEEKS consists of a Duty Belt, Belt Keeper, Pouch Handcuff, Surgical Glove Pouch and Flashlight Holder to be used by Military Law Enforcement personnel.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	0.214	-	0.214
Total Adjustments	0.000	0.000	0.214	-	0.214
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	0.214	-	0.214

Change Summary Explanation

FY 2018 supports Project EQ6, Evidence Collection and Detainee Processing for development of the Law Enforcement Equipment Ensemble Kit (LEEKS). LEEKS consists of a Duty Belt, Belt Keeper, Pouch Handcuff, Surgical Glove Pouch and Flashlight Holder to be used by Military Law Enforcement personnel

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605037A / Evidence Collection and Detainee Processing (ECPD)	Project (Number/Name) EQ6 / Evidence Collection and Detainee Processing
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EQ6: Evidence Collection and Detainee Processing	-	0.000	0.000	0.214	-	0.214	0.000	0.000	0.000	0.000	0.000	0.214
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

FY18 is the first year PM SPIE will receive these funds. This funding supports engineering and manufacturing development of Law Enforcement Equipment Ensemble Kit (LEEKs). LEEKs consists of the following: Duty Belt, Belt Keeper, Pouch Handcuff, Surgical Glove Pouch and Flashlight Holder to be used by Military Law Enforcement personnel.

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

	FY 2016	FY 2017	FY 2018
Title: LEEKs	-	-	0.214
FY 2018 Plans: Obtain MDD for the Law Enforcement Equipment Ensemble Kit (LEEK) and conduct Operational Testing to support a MS-C in FY20. Procure fully mature Commercial Off-the-Shelf (COTS) and Government Off the Shelf (GOTS) NDI test assets and conduct User Evaluations supporting the DA Law Enforcement mission evaluating interoperability and durability. Conduct tests on the interoperability, durability and shade on test assets.			
Accomplishments/Planned Programs Subtotals	-	-	0.214

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

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605038A / NBC Reconnaissance Veh (NBCRV) Sensor Suite
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	16.125	-	16.125	17.174	6.001	4.947	0.942	0.000	45.189
EQ7: NBC Reconnaissance Vehicle (NBCRV) Sensor Suite	-	0.000	0.000	16.125	-	16.125	17.174	6.001	4.947	0.942	0.000	45.189

Note

FY2016-17 Funding is reflected under PE0603627, Project Code E79

A. Mission Description and Budget Item Justification

This program upgrades the Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite (NBCRVSS). The NBCRVSS is the Mission Equipment Package for the Stryker Nuclear Biological Chemical (NBCRV) and consists of chemical point detectors, a standoff chemical vapor detector, a biological point detector, a chemical vapor sampling system, and a sensor processing group. The NBCRVSS provides the Stryker NBCRV the ability to detect, identify, collect, report, and mark, Nuclear Biological Chemical (NBC) Hazards. The NBCRVSS will explore transitioning mounted abilities to a dismounted environment. A Chemical Surface Detector (CSD) will be developed to replace the Dual Wheel Sampling System to increase maneuverability of the Stryker NBCRV and increase reliability, and Next Generation Chemical Detector Mounted (NGCD 3M) will replace the Chemical Biological Mass Spectrometer Block II to increase sensitivity, number of chemicals in the library, and reliability. In FY18 the CSD program will deliver final prototype systems and complete chemical, environmental, and on the- move testing. The NGCD 3M will begin development of Engineering and Manufacturing Development (EMD) phase systems and deliver prototypes for testing.

B. Program Change Summary (\$ in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	0.000	17.775	-	17.775
Current President's Budget	0.000	0.000	16.125	-	16.125
Total Adjustments	0.000	0.000	-1.650	-	-1.650
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	-1.650	-	-1.650

Change Summary Explanation

FY 2018 funding decrease of \$1,650K is due to the reduction in the Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite (NBCRVSS) efforts within this program.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605038A / NBC Reconnaissance Veh (NBCRV) Sensor Suite				Project (Number/Name) EQ7 / NBC Reconnaissance Vehicle (NBCRV) Sensor Suite			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EQ7: NBC Reconnaissance Vehicle (NBCRV) Sensor Suite	-	0.000	0.000	16.125	-	16.125	17.174	6.001	4.947	0.942	0.000	45.189
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY2016 and FY2017 Funding is reflected under PE0603627A, Project Code E79

A. Mission Description and Budget Item Justification

This program upgrades the Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite (NBCRVSS). The NBCRVSS is the Mission Equipment Package for the Stryker Nuclear Biological Chemical (NBCRV) and consists of chemical point detectors, a standoff chemical vapor detector, a biological point detector, a chemical vapor sampling system, and a sensor processing group. The NBCRVSS provides the Stryker NBCRV the ability to detect, identify, collect, report, and mark, Nuclear Biological Chemical (NBC) Hazards. The NBCRVSS will explore transitioning mounted abilities to a dismounted environment. A Chemical Surface Detector (CSD) will be developed to replace the Dual Wheel Sampling System to increase maneuverability of the Stryker NBCRV and increase reliability, and Next Generation Chemical Detector Mounted (NGCD 3M) will replace the Chemical Biological Mass Spectrometer Block II to increase sensitivity, number of chemicals in the library, and reliability. In FY18 the CSD program will deliver final prototype systems and complete chemical, environmental, and on the- move testing. The NGCD 3M will begin development of Engineering and Manufacturing Development (EMD) phase systems and deliver prototypes for testing.

FY16-FY17 funded under 0603627A E79, Smoke, Obscurant and Target Defeating Sys-Adv Dev

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

	FY 2016	FY 2017	FY 2018
Title: Product Development	-	-	9.975
FY 2018 Plans: Continue sensor suite upgrade development.			
Title: Test and Evaluation	-	-	4.100
FY 2018 Plans: Continue test and evaluation planning and support for sensor suite upgrade prototypes.			
Title: Integrated Logistics Support	-	-	0.250
FY 2018 Plans: Continue Integrated Logistics Support (ILS) and integration support to the sensor suite upgrades.			
Title: Project Management Personnel	-	-	1.800

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605038A / NBC Reconnaissance Veh (NBCRV) Sensor Suite	Project (Number/Name) EQ7 / NBC Reconnaissance Vehicle (NBCRV) Sensor Suite
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<i>FY 2018 Plans:</i> Continue Government program management, system engineering, and Integrated Product Team (IPT) support.			
Accomplishments/Planned Programs Subtotals	-	-	16.125

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

N/A

Remarks

D. Acquisition Strategy

The Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite (NBCRVSS) Upgrade is a single-step in the evolutionary acquisition strategy for the Stryker Nuclear Biological Chemical Reconnaissance Vehicle. The contract approach of the Chemical Surface Detector (CSD) will be a Full and Open Cost Plus Fixed Fee (CPFF) competitive prototyping contract. The contract approach of the Next Generation Chemical Detector 3 Mounted (NGCD 3M) will be Full and Open Cost-Plus Incentive Fee (CPIF) for the base EMD contract.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605038A / NBC Reconnaissance Veh (NBCRV) Sensor Suite				EQ7 / NBC Reconnaissance Vehicle (NBCRV) Sensor Suite							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Personnel	MIPR	JPM NBC CA : Edgewood, MD	0.000	-		-		1.800	Dec 2017	-		1.800	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		1.800		-		1.800	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development (CSD)	Option/CPIF	TBD : TBD	0.000	-		-		6.666	Dec 2017	-		6.666	Continuing	Continuing	Continuing
Product Development (NGCD 3M)	C/CPIF	TBD : TBD	0.000	-		-		3.309	Dec 2017	-		3.309	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		9.975		-		9.975	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support (ILS)	MIPR	ECBC : Edgewood, MD	0.000	-		-		0.250	Dec 2017	-		0.250	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.250		-		0.250	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	MIPR	ECBC : Edgewood, MD	0.000	-		-		4.100	Dec 2017	-		4.100	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		4.100		-		4.100	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army								Date: May 2017					
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0605038A / NBC Reconnaissance Veh (NBCRV) Sensor Suite				Project (Number/Name) EQ7 / NBC Reconnaissance Vehicle (NBCRV) Sensor Suite						
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		0.000		16.125		-		16.125	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605038A / NBC Reconnaissance Veh (NBCRV) Sensor Suite	Project (Number/Name) EQ7 / NBC Reconnaissance Vehicle (NBCRV) Sensor Suite
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CSD Design and Fabrication (Continued from PE0603627 E79)																												
CSD Developmental Testing																												
NGCD 3M Maturation																												
CSD Milestone B																												
CSD Maturation																												
NGCD 3M PQT																												
CSD Production Qualification Testing (PQT)																												
CSD Low Rate Initial Production (LRIP)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605038A / NBC Reconnaissance Veh (NBCRV) Sensor Suite	Project (Number/Name) EQ7 / NBC Reconnaissance Vehicle (NBCRV) Sensor Suite

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CSD Design and Fabrication (Continued from PE0603627 E79)	1	2018	2	2018
NGCD 3M Maturation	1	2018	2	2020
CSD Milestone B	4	2018	4	2018
CSD Maturation	1	2019	2	2020
NGCD 3M PQT	4	2019	1	2020
CSD Production Qualification Testing (PQT)	3	2020	1	2021
CSD Low Rate Initial Production (LRIP)	1	2022	2	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605041A / Defensive CYBER Tool Development
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	84.336	55.165	-	55.165	23.522	21.707	28.765	48.855	Continuing	Continuing
EV5: Defensive Cyber Operations	-	0.000	84.336	55.165	-	55.165	23.522	21.707	28.765	48.855	Continuing	Continuing

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

A. Mission Description and Budget Item Justification

The Defensive Cyber Tool Development group of programs designs, builds, and tests the advanced Cyber tools and infrastructure that enables active defense of the network from Home Station Mission Command to the deployed tactical Command Post (CP). This capabilities will enable integration of the Cyber Mission Force with the Regional and Local Cyber Network Defense elements. These tools will provide cutting edge hardware and software, integrated with existing infrastructure and tools to facilitate active Defensive Cyber operations. Cyber Tool Development will include Data Analytics solutions to enable the ability to correlate and analyze the massive amount of data coming across the network and provide timely situational awareness. It will also include development, integration, and testing of Defensive Cyber Tools and Infrastructure that will facilitate pushing Cyber sensor data to the Data analytics engine as well as support remote access to prevent or react to a Cyber incident. Cyber Tool Development includes creation of developmental environments for emerging commercial tool assessment as well as Army Cyber Soldier development of tools. Additionally, this Program Element supports the development of a Cyber Mission Planning tool that is an application-based, scalable, secure warfighting system to support cyberspace operations mission planning and command. The Mission Planning tool helps identify Cyberspace Key Terrain (KT-C) and determines probable attack vectors; and produces a set of relevant internal defense measures, triggers, and decision points.

This Program Element will support the start of several DCO programs beginning in FY19 and supports material solutions for the October 2016 JROC approved Defensive Cyberspace Operations Information Systems Initial Capabilities Document (IS ICD). The hardware and software capabilities enable Army Cyber defense forces to protect, search and discover, maneuver and engage, and mitigate and respond to enemy cyberspace operations. DCO programs will allow near real-time employment of defensive measures that will allow friendly cyber forces to maintain advantage. These programs directly support US Cyber Command Integrated Priority List #2 Produce Advanced Cyberspace Infrastructure and #5 Defensive Forces to execute passive and active defense operations at net-speed.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0605041A / <i>Defensive CYBER Tool Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	33.836	26.585	-	26.585
Current President's Budget	0.000	84.336	55.165	-	55.165
Total Adjustments	0.000	50.500	28.580	-	28.580
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• R1 Annex Update	0.000	50.500	28.580	-	28.580

Change Summary Explanation

FY 2018 Base funding in the amount of \$28.580 million was added to support transition of Defense Advanced Research Projects Agency (DARPA) Plan X (Mission Planning capability) to the Army, creation of a tools development and assessment environment, and reducing the size with expansion of capabilities of the Big Data Platform – Prototype.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>				Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EV5: <i>Defensive Cyber Operations</i>	-	0.000	84.336	55.165	-	55.165	23.522	21.707	28.765	48.855	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

- Defensive Cyberspace Operations - Infrastructure (DCO-I) Tactical - (PEO C3T)
- Defensive Cyberspace Operations (DCO) – Cyber Data Analytics - (PEO EIS)
- Defensive Cyberspace Operations - Mission Planning - (PEO EIS)
- Defensive Cyberspace Operations - Cyber Protection Team Support - (PEO EIS)

A. Mission Description and Budget Item Justification

DCO programs provide initial capabilities to Cyber Protection Teams. Teams enable passive and active cyberspace defensive operations to preserve friendly cyberspace capabilities, and protect data, networks, net-centric capabilities, and other designated systems. FY2018 RDT&E DCO efforts consists of four critical capabilities:

1. Tactical DCO Infrastructure: Tactical system (computing infrastructure) which resides within the Command Post, at BDE through Corps, for both organic Cyber Network Defenders as well as remote access by Cyber Protect Teams through the Local Area Network (LAN) to support defense of the Network (PEO C3T)
2. Cyber Data Analytics: analytics that leverage Defense Information Security Agency (DISA) Acropolis analytics (PEO EIS)
3. Cyber Mission Planning: the hardware and software baseline for remote cyber maneuver based on the Defense Advanced Research Projects Agency (DARPA) Plan X (PEO EIS)
4. DCO Tool Suite – The environment and tool development of software to enable Army Cyber forces to perform DCO missions (PEO EIS)

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

	FY 2016	FY 2017	FY 2018
Title: Defensive Cyberspace Operations - Infrastructure (DCO-I) Tactical (PEO C3T)	-	17.714	21.236
Description: Defensive Cyberspace Operations - Infrastructure (DCO-I) Tactical program integrates and delivers key hardware and software that enables the Cyber Mission Forces to protect, search and discover, maneuver and engage, and mitigate and respond to enemy cyberspace operations.			
FY 2017 Plans: FY17 initiates the Engineering Design and Development for Network Operations software in support of the Defensive Cyber Operations Infrastructure (DCO-I) Information IS ICD which further integrates existing capability and extends that capability down to the Battalion Level. This funding initializes the program and funds the development effort for the first build cycle. FY17 also			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
funds initial delivery of architecture products that help drive subsequent builds. DCO-I testing will include developmental events conducted on lab configurations and networks followed by an Operational Evaluation using Soldiers and live equipment. FY 2018 Plans: FY18 continues the Engineering Design and Development for Network Operations software in support of the Requirements Definition Package (RDP) for the Tactical Defensive Cyber Operations-Infrastructure (TDI), which further integrates existing capability and extends that capability down to the Battalion Level. This funding initializes the program and funds the development effort for the first build cycle. FY18 funding continues the delivery of architecture products that help drive subsequent builds. TDI testing will include developmental events conducted on lab configurations and networks followed by an Operational Evaluation using Soldiers and live equipment.				
Title: Defensive Cyberspace Operations (DCO) - Cyber Data Analytics (PEO EIS) Description: Cyber Data Analytics provides IT cyberspace threat and vulnerability hunting capability that will allow the Army Cyber Mission forces to ingest multitudes of data sources, correlate that data, perform analysis and then turn that data into visual information in order to detect and illuminate adversaries and vulnerabilities. Data between cyberspace defenders to detect and illuminate adversaries conducting reconnaissance and offensive cyber operations within designated key terrain in cyberspace. FY 2017 Plans: FY17 continues development of the Big Data Pilot encompassing design and development that was focused on getting the core platform to a threshold capability, additional interfaces, user interfaces, and security upgrades. FY 2018 Plans: FY18 transitions the Big Data Pilot to a data analytics capability for Cyber Protection Brigade and continues the Big Data Pilot Initiative. Initiative focus is on ingesting structured, semi-structured, and unstructured data from multiple data sources (e.g., Joint Regional Security Stacks (JRSS), intrusion detection systems, intrusion prevention systems, network device log files, trouble tickets, firewalls, proxies, web and applications server log files, etc) and providing situational awareness of cyberspace battlefield.		-	6.970	14.570
Title: Defensive Cyberspace Operations (DCO) – Mission Planning - (PEO EIS) Description: Mission Planning focuses on creating an Application-based, scalable, secure warfighting system to support cyberspace operations mission planning and command. Mission Planning Tools helps identify Cyberspace Key Terrain (KT- C) and determines probable attack vectors and produce a set of relevant internal defense measures, triggers, and decision points. FY 2017 Plans:		-	5.300	14.819

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Additional situational understanding capabilities were provided to the Army Cyber Operations Information Center and technology assessments for modules on the Defense Advanced Research Projects Agency (DARPA) Plan X capability. FY 2018 Plans: FY18 transitions the Defense Advanced Research Projects Agency (DARPA) Plan X capability from a Technology Readiness Level of 5 to 6 and enhances the systems abilities to collaborate with other DCO capabilities, providing the operator with a unified mission planning and execution capability. Specific focus will be placed on creating battlespace awareness (SA), mission planning, course of action development, wargaming and execution capabilities.				
Title: Cyber Protection Team Support (DCO Platforms) - (PEO EIS) Description: FY17 initiates the Defensive Cyberspace Operations - Infrastructure (DCO-I) Engineering Design, Development, and Software maintenance of standardized cloud infrastructure software to include deployment and build platforms for three primary environmental configurations (garrison, deployable and tactical). Additionally, providing advanced hypervisor, cloud deployment, security and integration and development. FY 2017 Plans: DCO Platforms provides advanced security of infrastructure software for government managed purposes. Government unique cloud environment and management for infrastructure software facilitating collaboration and enhanced security to protect the abstraction layer of the infrastructure. The foundational mission command platform for the conduct of cyberspace operations based on the transition of advanced technologies from the DARPA Foundational Cyberwarfare Program (Plan X). The platform includes battlespace Situational Awareness (SA), mission planning, course of action development, wargaming and execution capabilities. The platform will be developed in a continuous delivery methodology utilizing DevOps-like paradigms to ensure continued integration of new technological advances. Lastly, DevOps development for a centralized collaboration environment and repository including test and continuous delivery components. Facilitating license management, compilation and hosting of new platforms, centralized deployment/integration/hosting of products, synchronization of software tools developed by cyber forces; including tool development chain with integrated test capability and deployment by cyber mission effectiveness. FY 2018 Plans: This capability will continue to improve and provide advanced security of infrastructure software for government managed purposes. Government unique cloud environment and management for infrastructure software facilitating collaboration and enhanced security to protect the abstraction layer of the infrastructure. Also continuing Cyberspace Mission Command / Battle Management Platform efforts. The foundational mission command platform for the conduct of cyberspace operations based on the transition of advanced technologies from the Defense Advanced Research Projects Agency (DARPA) Foundational Cyberwarfare Program (Plan X). The platform includes battlespace awareness (SA), mission planning, course of action		-	3.852	4.540

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
development, wargaming and execution capabilities. The platform will be developed in a continuous delivery methodology utilizing DevOps-like paradigms to ensure continued integration of new technological advances. Lastly, DevOps development for a centralized collaboration environment and repository including test and continuous delivery components. Facilitating license management, compilation and hosting of new platforms, centralized deployment/integration/hosting of products, synchronization of software tools developed by cyber forces; including tool development chain with integrated test capability and deployment by cyber mission effectiveness (existing DCO systems to be managed within - Log Collector & Q-tip).			
Title: JUONS ST-0007 Description: Details are classified. FY 2017 Plans: Details are classified.	-	50.500	-
Accomplishments/Planned Programs Subtotals	-	84.336	55.165

C. Other Program Funding Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 52: OPA Defensive Cyber Operations (MDEP FFPF SSN B63103)	-	15.132	25.836	-	25.836	37.203	44.898	43.926	74.902	Continuing	Continuing
• 45: OPA Defensive Cyber Operations (MDEP FPMC SSN TA0600)	19.920	-	-	-	-	-	-	-	-	0	19.920
• N/A: OMA Defensive Cyber Operations (MDEP MU2Z SAG 432612)	-	-	0.640	-	0.640	3.000	5.000	5.000	5.000	Continuing	Continuing
• 52: OPA Defense Cyber Operations (MDEP MU2Z SSN B63103)	-	-	27.600	-	27.600	18.000	10.000	10.000	10.000	Continuing	Continuing

Remarks

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>

D. Acquisition Strategy

The Defensive Cyber Tool Development line will support multiple Information System - Requirement Development Packages that result in multiple programs. The Army will conduct a Materiel Development Decisions in FY17 based upon the Defensive Cyberspace Operations (DCO) Information System Initial Capabilities Document (IS ICD).

The Tactical Defensive Cyber Operations-Infrastructure (TDI) program is expected to be an Acquisition Category III program using the Department of Defense Instruction 5000.02 Model 4: Accelerated Acquisition approach. The capability will primarily use commercial off the shelf (or slightly modified commercial off the shelf) hardware and software integrated with components of the Warfighter Information Network – Tactical and Mission Command programs. TDI will integrate with the Command Post Computing Environment and is the pre-positioned infrastructure at Echelons Corps and Below (ECB) that enables global, regional, and local cyberspace defenders to conduct DCO mission planning and protection measures. Execution of the TDI program will be a combination of Government Labs (COMMUNICATIONS-ELECTRONICS RESEARCH, DEVELOPMENT AND ENGINEERING CENTER) and Contractor support.

The Defensive Cyberspace Operations-infrastructure (DCO-I) and Cyber Protection Tool suite will use contract approach for the program of record that permits development of capability to accommodate all infrastructures (Garrison Deployable Infrastructure (GDI), DCO-I Deployable (DDI), and TDI). It will primarily use commercial off the shelf (or slightly modified commercial off the shelf) hardware, software, and auxiliary services based on three prototype stacks fielded in FY16 at Redstone Arsenal, Fort Belvoir, and Fort Gordon Cyber Battle Lab to facilitate requirements refinement for program of record and initial capabilities.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army											Date: May 2017				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>				Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>							

Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Tactical Defensive Cyber Operations-Infrastructure (TDI) (PEO C3T)	C/TBD	Aberdeen Proving Ground : MD	0.000	-		1.732		3.820		-		3.820	Continuing	Continuing	Continuing
Defensive Cyberspace Operations (DCO) - Big Data Pilot (PEO EIS)	C/TBD	PEO EIS : Ft Belvoir, VA	0.000	-		0.131		3.400		-		3.400	Continuing	Continuing	Continuing
Defensive Cyberspace Operations -Infrastructure (DCO-I) Enterprise (PEO EIS)	C/TBD	PEO EIS : Ft Belvoir, VA	0.000	-		-		1.000		-		1.000	Continuing	Continuing	Continuing
Cyber Protection Team Support (DCO Platforms) (PEO EIS)	C/TBD	PEO EIS : Ft Belvoir, VA	0.000	-		-		0.002		-		0.002	Continuing	Continuing	Continuing
JUONS ST-0007	C/TBD	TBD : TBD	0.000	-		50.500		-		-		-	0.000	50.500	0.000
Subtotal			0.000	-		52.363		8.222		-		8.222	-	-	-

Remarks
TDI: Program Office and System Engineering Management and Services

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Tactical Defensive Cyber Operations-Infrastructure (TDI) (PEO C3T)	C/TBD	Aberdeen Proving Ground : MD	0.000	-		13.408		14.468		-		14.468	Continuing	Continuing	Continuing
Big Data Pilot (PEO EIS)	C/TBD	Ft. Belvoir : VA	0.000	-		6.839		12.500		-		12.500	Continuing	Continuing	Continuing
Defensive Cyberspace Operations -Infrastructure (DCO-I) Enterprise (PEO EIS)	C/TBD	ACC-RI : IL	0.000	-		5.300		13.180		-		13.180	Continuing	Continuing	Continuing
Cyber Protection Team (PEO EIS)	C/TBD	ACC-RI : IL	0.000	-		3.852		2.725		-		2.725	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			0.000	-		29.399		42.873		-		42.873	-	-	-

Remarks
TDI: Systems Engineering and tool integration

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Tactical Defensive Cyber Operations-Infrastructure (TDI) (PEO C3T)	C/TBD	Aberdeen Proving Ground : MD	0.000	-		2.574		1.570		-		1.570	Continuing	Continuing	Continuing
Defensive Cyberspace Operations (DCO) - Big Data Pilot (PEO EIS)	C/TBD	Aberdeen Proving Ground : MD	0.000	-		-		2.500		-		2.500	Continuing	Continuing	Continuing
Subtotal			0.000	-		2.574		4.070		-		4.070	-	-	-

Remarks
TDI: Developmental Testing of Systems Engineering and tool integration followed by an operational evaluation

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-	84.336	55.165	-	55.165	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022																																																			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																																																
(1) DCO IS ICD Approval					▲1																																																																							
									IS-ICD Approval																																																																			
(2) DCO MDD													▲2																																																															
																	DCO MDD																																																											
(3) Tactical DCO-I Requirements Definition Package																									▲3																																																			
																													TDI RDP																																															
(4) Tactical DCO-I Milestone C																																					▲4																																							
																																									TDI MS C																																			
(5) Tactical DCO-I Contract Award																																													▲5																															
																																																	TDI Contract Award																											
Tactical DCO-I Build																																																					TDI Build																							
Tactical DCO-I Developmental Test																																																					TDI DT																							
(6) Tactical DCO-I Initial Operational Test																																																									▲6																			
																																																									TDI IOT																			
(7) Tactical DCO-I Full Rate Production																																																													▲7															
																																																													TDI FRP															
(8) Tactical DCO-I Production Award																																																																	▲8											
																																																																	TDI Production Award											
(9) DCO - Cyber Analytics (CA)																																																																					▲9							
																																																																					DCO- Data Mining and Cyber Analytics (DMCA)							
(10) DCO - CA Materiel Development Decision																																																																					▲10							
																																																																					DCO-DMCA MDD							
(11) DCO - CA Milestone B																																																																									▲11			
																																																																									DCO - DMCA Milestone B			

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) DCO - CA Acquisition Decision Memorandum					▲ DCO - DMCA ADM																							
(2) DCO - CA Contract Award													▲ DCO - DMCA Contract Award															
(3) DCO - CA Build																	▲ DCO - DMCA Build											
(4) DCO - CA Developmental Test																	▲ DCO - DMCA DT											
DCO - CA - Initial Operational Test																	■ DCO - DMCA - IOT											
(5) DCO - CA - Full Deployment																					▲ DCO - DMCA - Full Deployment							
(6) DCO - CA - Production Award																					▲ DCO - DMCA - Production Award							
DCO-I Enterprise GDI Cloud Infrastructure																												
Plan X Transition From DARPA																												
DCO Platforms (garrison, deployable and tactical)																												
DCO-I Enterprise (Plan X) Milestone C																												
DCO-I Enterprise MDD																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605041A / <i>Defensive CYBER Tool Development</i>	Project (Number/Name) EV5 / <i>Defensive Cyber Operations</i>

Schedule Details

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

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605042A / Tactical Network Radio Systems (Low-Tier)
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	18.824	20.076	-	20.076	7.651	10.178	22.006	22.328	Continuing	Continuing
FA1: Manpack Radio	-	0.000	14.819	10.039	-	10.039	3.826	5.088	11.003	11.164	Continuing	Continuing
FA2: Rifleman Radio (RR)	-	0.000	4.005	10.037	-	10.037	3.825	5.090	11.003	11.164	Continuing	Continuing

Note
 In coordination with G8 and the Army Budget Office, HMS 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) beginning in FY 2017.

A. Mission Description and Budget Item Justification
 The Handheld, Manpack, and Small Form Fit (HMS) radio program is a materiel solution meeting requirements for Software Communications Architecture (SCA) compliant hardware system hosting SCA-compliant Government Purpose Rights software waveforms (applications). HMS is an Acquisition Category IC program that encompasses specific requirements to support the U.S. Army, Air Force, Navy, Marine Corps and Special Operations Command communications 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 radio systems are software reprogrammable, networkable, multi-mode systems capable of simultaneous voice and data communications.

HMS encompasses the Handheld Radios (one-channel Rifleman Radio (RR) and two-channel Leader Radio (LR)), Manpack Radio (MP), and Small Form Fit (SFF) radios. HMS radios will provide voice and support for data services such as text, control graphics, imagery, video, and telemetry to Warfighters and tactical end user devices including handheld, embedded, and larger computing devices, as well as unmanned systems.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	18.824	5.417	-	5.417
Current President's Budget	0.000	18.824	20.076	-	20.076
Total Adjustments	0.000	0.000	14.659	-	14.659
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	14.659	-	14.659

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity
2040: *Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0605042A / *Tactical Network Radio Systems (Low-Tier)*

Change Summary Explanation

The FY 2018 RDTE funding increase of \$14.659M for HMS is driven by the increase in testing requirements for both radio products.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>				Project (Number/Name) FA1 / <i>Manpack Radio</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FA1: <i>Manpack Radio</i>	-	0.000	14.819	10.039	-	10.039	3.826	5.088	11.003	11.164	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In coordination with G8 and the Army Budget Office, HMS 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) beginning in FY 2017.

A. Mission Description and Budget Item Justification

The MP radio is a NSA certified Type 1 radio used for transmission of up to SECRET information. MP is capable of providing two simultaneous channels of secure voice and data communications using SINCGARS, SRW, and Demand Assigned Multiple Access Satellite Communication. Future operational capabilities include the Mobile User Objective System (MUOS) waveform. The MP provides range extension and connects soldiers in the lower tier network to the mid-tier network. It is interoperable with legacy waveforms and capable of route and retransmission and cross-banding. The Manpack provides networking waveforms connectivity, Networked LOS / BLOS voice and data communications.

The SFF-B is a two-channel embedded radio. It is a NSA certified Type 1 radio used for transmission of up to SECRET information. SFF-B was originally designed to meet Nett Warrior Radio requirements. It would be embedded into the Nett Warrior leader ensemble (platoon leader, platoon sergeant, squad leader, and team leader). The current focus for SFF-B is for use in Unmanned Aerial Vehicles (UAVs).

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

	FY 2016	FY 2017	FY 2018
Title: Program Management	-	0.356	0.600
Description: Manpack's program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning and Integrated Product Team meetings.			
FY 2017 Plans: During this timeframe, will provide overall management and oversight to implement HMS acquisition strategy. Includes Core, Matrix, and Contractor support.			
FY 2018 Plans: During this timeframe, will provide overall management and oversight to implement HMS acquisition strategy. Includes Core, Matrix, and Contractor support.			
Title: HMS Engineering/Technical Support	-	1.142	0.700

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA1 / <i>Manpack Radio</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Description: Overall technical analysis support to PdM HMS' Manpack products.</p> <p>FY 2017 Plans: Provide technical systems engineering support to evaluate technical alternatives and perform communication architecture analysis to identify alternatives to reduce cost, improve performance, and achieve tactical radio objectives. Technical test support for the planning and execution of laboratory and field test events, including support for testing of prototypes, Engineering Design Models (EDMs), commercial radio solutions, Developmental and Operational Test events, and data collection/reduction/analysis of tactical radio performance.</p> <p>FY 2018 Plans: Provide technical systems engineering support to evaluate technical alternatives and perform communication architecture analysis to identify alternatives to reduce cost, improve performance, and achieve tactical radio objectives. Technical test support for the planning and execution of laboratory and field test events, including support for testing of prototypes, Engineering Design Models (EDMs), commercial radio solutions, Developmental and Operational Test events, and data collection/reduction/analysis of tactical radio performance.</p>				
<p>Title: Test and Evaluation</p> <p>Description: Manpack's Test and Evaluation focuses on the key technical and operational characteristics of the system: Radio Frequency performance, security, Reliability, Availability & Maintainability, and survivability requirements, in addition to operational environmental performance requirements as per the Capability Production Document. All radios awarded a contract will be required to go through the Qualification Test (QT) to qualify for a Customer Test (CT). Following CT there will be a Field Based Risk Reduction Test (FBRR) that will serve as risk reduction event prior to Operational Test (OT) to ensure the radio is operational at full capability and ready to be used by soldiers. The QT and CT will be executed by Electronic Proving Ground and will serve as risk reduction events prior to the OT as opposed to developmental test to support incremental system improvement.</p> <p>The QT will validate the manufacturer's ability to meet the minimum functional requirements identified in the Performance Requirements Document. Radios that successfully demonstrate key capabilities during QT will proceed to the CT. The CT will serve as a risk reduction event for FBRR as data from this event will be considered for manufacturer down-select and an initial buy decision. FBRR will serve as a risk reduction event for delayed thresholds and OT.</p> <p>The OT will include support from Army and DoD operational testers and will use communication scenarios based on the Operational Mode Summary / Mission Profile of the system(s) under test. The OT will be designed to validate that HMS products meets the users' needs in terms of effectiveness, suitability and survivability in an operationally realistic environment. Results from OT will facilitate the delivery orders for Full Rate Production.</p>		-	13.321	8.739

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA1 / <i>Manpack Radio</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<i>FY 2017 Plans:</i> The FY 2017 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; engineering and technical support at test events; and to fully fund the testing requirements on the MP candidate radios as laid out in the HMS Acquisition Strategy approved May 2014.			
<i>FY 2018 Plans:</i> The FY 2018 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; engineering and technical support at test events; and to fully fund the testing requirements on the MP candidate radios as laid out in the HMS Acquisition Strategy approved May 2014.			
Accomplishments/Planned Programs Subtotals	-	14.819	10.039

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: 0654280A: DZ5	4.415	-	-	-	-	-	-	-	-	0.000	4.415
• PE: 0605042A,	-	4.005	10.039	-	10.039	3.826	5.088	11.003	11.164	Continuing	Continuing
FA-2: Rifleman Radio											
• OPA: B90000,	29.509	-	-	-	-	-	-	-	-	0.000	29.509
B90210: Rifleman Radio											
• OPA: B90000,	25.131	-	-	-	-	-	-	-	-	0.000	25.131
B90215: Manpack Radio											
• OPA: B95004, B95006:	-	43.734	37.773	-	37.773	53.511	60.951	85.020	73.255	Continuing	Continuing
Handheld Radio											
• OPA: B95004,	-	229.911	317.578	-	317.578	305.005	338.962	317.760	401.571	Continuing	Continuing
B95007: Manpack Radio											

Remarks
HMS RDTE funding for FY 2016 and prior is held under PE 0604280A Joint Tactical Radios. HMS Procurement funding for FY 2016 and prior is held under Standard Study Number (SSN) B90210 JTRS Cluster 5 (Handheld) and SSN B90215 JTRS (Manpack). Due to a request to provide more transparency into the program, HMS RDTE funding beginning in FY 2017 will move to PE 0605042A Tactical Network Radio Systems (Low-Tier): FA1 Manpack Radio and FA2 Rifleman Radio. HMS Procurement funding beginning in FY 2017 will move to SSN B95004 Handheld Manpack Small Form Fit: SSN B95006 Handheld and SSN B95007 Manpack.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / Tactical Network Radio Systems (Low-Tier)	Project (Number/Name) FA1 / Manpack Radio

D. Acquisition Strategy

HMS is currently executing a May 2014 approved acquisition strategy to procure Non-Developmental Items (NDI). Utilizing a full and open competition strategy the Manpack (MP) base contract was awarded to all potential industry partners. The MP contract was awarded on 26 February 2016, and will procure NDI MP radios for use in a classified environment. The MP is capable of running the following waveforms: SRW, Single Channel Ground and Airborne Radio System (SINCGARS), Satellite Communications (SATCOM) - Army managed waveforms, and Mobile User Objective System (MUOS) - Navy managed waveform.

The Army has awarded Firm Fixed-Price (FFP) Indefinite Delivery Indefinite Quantity (IDIQ) Contracts and will procure radios through a multiple step selection process:

- a. Awarded FFP Contracts to all qualified vendors based on technical acceptability and demonstrations (26 February 2016)
- b. Awarded initial delivery orders based on Qualification Test results (19 December 2016)
- c. Award second delivery orders based on Customer Test results (4QFY17)
- d. Award FRP delivery orders based on Operational Test and best value trade off construct (3QFY19)

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA1 / <i>Manpack Radio</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Support	TBD	PEO C3T, CECOM, PM TR Alliant : Various; APG, MD	0.000	-		0.356		0.600		-		0.600	0.000	0.956	0.000
Subtotal			0.000	-		0.356		0.600		-		0.600	0.000	0.956	0.000

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HMS Engineering/ Technical Support	TBD	PEO C3T, ARL, ESP, CECOM, CERDEC, LCMC : Various	0.000	-		1.142		0.700		-		0.700	0.000	1.842	0.000
Subtotal			0.000	-		1.142		0.700		-		0.700	0.000	1.842	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Follow on Delta Development & Testing	RO	EPG : Ft. Huachuca	0.000	-		2.447		-		-		-	0.000	2.447	0.000
Follow on Delta Development & Testing (2)	RO	OTC : TBD	0.000	-		10.874		8.739		-		8.739	0.000	19.613	0.000
Subtotal			0.000	-		13.321		8.739		-		8.739	0.000	22.060	0.000

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		0.000	-	14.819	10.039	-	10.039	0.000	24.858	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA1 / <i>Manpack Radio</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Manpack (MP) Customer Test (CT)					■ MP CT																											
MP Field Base Risk Reduction Test (FBRR)									■ MP FBRR																							
MP Log Demo													■ MP Log Demo																			
MP Operational Test (OT)													■ MP OT																			
(1) MP Full Rate Production (FRP)																	▲ MP FRP															
MP Performance Verification Test (PVT) (FY19)																	■ MP PVT (FY19)															
PVT (FY20)																					■ MP PVT (FY20)											
MP PVT (FY21)																									■ MP PVT (FY21)							
MP PVT (FY22)																													■ MP PVT (FY22)			

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA1 / <i>Manpack Radio</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Manpack (MP) Customer Test (CT)	2	2017	4	2017
MP Field Base Risk Reduction Test (FBRR)	1	2018	2	2018
MP Log Demo	3	2018	3	2018
MP Operational Test (OT)	4	2018	2	2019
MP Full Rate Production (FRP)	3	2019	3	2019
MP Performance Verification Test (PVT) (FY19)	4	2019	4	2019
PVT (FY20)	4	2020	4	2020
MP PVT (FY21)	3	2021	4	2021
MP PVT (FY22)	3	2022	3	2022

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>				Project (Number/Name) FA2 / <i>Rifleman Radio (RR)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FA2: <i>Rifleman Radio (RR)</i>	-	0.000	4.005	10.037	-	10.037	3.825	5.090	11.003	11.164	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In coordination with G8 and the Army Budget Office, HMS 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) beginning in FY 2017.

A. Mission Description and Budget Item Justification

HMS is structured as a single program of record. The HMS Handheld Radios encompass the one-channel Rifleman Radio (RR) and two-channel Leader Radio (LR). The RR is a handheld radio that connects soldiers at the lowest echelon of the Army network. It is a National Security Agency (NSA) certified Type 1 radio used for transmission of up to SECRET information. The RR provides one-channel secure voice and data communications using Soldier Radio Waveform (SRW). It is the primary squad level communication system. The LR is a Multiband two-channel handheld radio to be used at the Team, Squad, and Platoon level. The LR will simultaneously support Single Channel Ground and Airborne Radio System (SINCGARS) voice interoperability and SRW data and voice communications in one radio with both handheld and mounted configurations.

On 13 September 2016 the Army Acquisition Executive (AAE) determined to decrease the Basis of Issue (BOI) for the single channel Rifleman Radio (RR), increase the BOI for the two channel Leader Radio (LR) and move forward with acquisition activities for the two channel LR. Single channel RR procurement is being deferred.

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

	FY 2016	FY 2017	FY 2018
Title: Program Management	-	0.518	1.674
Description: Handheld's program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning and Integrated Product Team meetings.			
FY 2017 Plans: During this timeframe, will provide overall management and oversight to implement HMS acquisition strategy. Includes Core, Matrix, and Contractor support.			
FY 2018 Plans: During this timeframe, will provide overall management and oversight to implement HMS acquisition strategy. Includes Core, Matrix, and Contractor support.			
Title: HMS Engineering/Technical Support	-	0.067	0.300

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA2 / <i>Rifleman Radio (RR)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Description: Overall technical analysis support to PdM HMS' Handheld products.</p> <p>FY 2017 Plans: Provide technical systems engineering support to evaluate technical alternatives and perform communication architecture analysis to identify alternatives to reduce cost, improve performance, and achieve tactical radio objectives. Technical test support for the planning and execution of laboratory and field test events, including support for testing of prototypes, Engineering Design Models (EDMs), commercial radio solutions, Developmental and Operational Test events, and data collection/reduction/analysis of tactical radio performance.</p> <p>FY 2018 Plans: Provide technical systems engineering support to evaluate technical alternatives and perform communication architecture analysis to identify alternatives to reduce cost, improve performance, and achieve tactical radio objectives. Technical test support for the planning and execution of laboratory and field test events, including support for testing of prototypes, Engineering Design Models (EDMs), commercial radio solutions, Developmental and Operational Test events, and data collection/reduction/analysis of tactical radio performance.</p>				
<p>Title: Test and Evaluation</p> <p>Description: Handheld's Test and Evaluation focuses on the evaluation of key technical and operational characteristics of the system: Radio Frequency performance, security, Reliability, Availability & Maintainability, and survivability requirements, in addition to operational environmental performance requirements as per the Capability Production Document. All radios awarded a contract will be required to go through the Qualification Test (QT) to qualify for Verification Test (VT). Following VT HMS will perform an Operational Test (OT) to ensure the radio is operational at full capability and ready to be used by soldiers.</p> <p>The QT will validate the manufacturer's ability to meet the minimum functional requirements identified in the Performance Requirements Document. Radios that successfully demonstrate key capabilities during QT will proceed to VT. The VT will serve as a risk reduction event for OT. The OT will include support from Army and DoD operational testers and will use communication scenarios based on the Operational Mode Summary / Mission Profile of the system(s) under test. The OT will be designed to validate that the HMS products meets the users' needs in terms of effectiveness, suitability and survivability in an operationally realistic environment. Results from the OT will facilitate the delivery orders for Full Rate Production.</p> <p>FY 2017 Plans: Originally, the FY 2017 budget was to provide funding required for Performance Verification Testing (PVT) and any additional delta performance testing for the RR. The funding will also support program office support and other certifications necessary to prepare the products for fielding.</p>		-	3.420	8.063

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA2 / <i>Rifleman Radio (RR)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Given program direction, the FY 2017 funding is needed to conduct testing for the LR candidate products to demonstrate compliance with program requirements; assess effectiveness, suitability, and survivability; to obtain material release for FRP; and to fund the testing requirements on the LR candidate radios as laid out in the HMS Acquisition Strategy approved May 2014.			
<i>FY 2018 Plans:</i> The FY 2018 funding is needed to conduct testing for the LR candidate products to demonstrate compliance with program requirements; assess effectiveness, suitability, and survivability; to obtain material release for FRP; and to fund the testing requirements on the LR candidate radios as laid out in the HMS Acquisition Strategy approved May 2014.			
Accomplishments/Planned Programs Subtotals	-	4.005	10.037

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PE: 0605042A, FA-1: <i>Manpack Radio</i>	-	14.819	10.039	-	10.039	3.826	5.088	11.003	11.164	Continuing	Continuing
• RDTE: 0604280A: <i>DZ5</i>	4.415	-	-	-	-	-	-	-	-	0.000	4.415
• OPA: B90000, B90210: <i>JTRS Cluster 5 (Handheld)</i>	29.509	-	-	-	-	-	-	-	-	0.000	29.509
• OPA: B90000, B90215: <i>JTRS (Manpack)</i>	25.131	-	-	-	-	-	-	-	-	0.000	25.131
• OPA: B95004, B95006: <i>Handheld Radio</i>	-	43.734	37.773	-	37.773	53.511	60.951	85.020	73.255	Continuing	Continuing
• OPA: B95004, B95007: <i>Manpack Radio</i>	-	229.911	317.578	-	317.578	305.005	338.962	317.760	401.571	Continuing	Continuing

Remarks
HMS RDTE funding for FY 2016 and prior is held under PE 0604280A Joint Tactical Radios. HMS Procurement funding for FY 2016 and prior is held under Standard Study Number (SSN) B90210 JTRS Cluster 5 (Handheld) and SSN B90215 JTRS (Manpack). Due to a request to provide more transparency into the program, HMS RDTE funding beginning in FY 2017 will move to PE 0605042A Tactical Network Radio Systems (Low-Tier): FA1 Manpack Radio and FA2 Rifleman Radio. HMS Procurement funding beginning in FY 2017 will move to SSN B95004 Handheld Manpack Small Form Fit: SSN B95006 Handheld and SSN B95007 Manpack.

D. Acquisition Strategy
HMS is currently executing a May 2014 approved acquisition strategy to procure Non-Developmental Items (NDI) through full and open competition open to all potential industry partners. On 13 September 2016 the Army Acquisition Executive (AAE) determined to decrease the Basis of Issue (BOI) for the single channel Rifleman Radio

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA2 / <i>Rifleman Radio (RR)</i>
<p>(RR), increase the BOI for the two channel Leader Radio (LR) and move forward with acquisition activities for the two channel LR. Single channel RR procurement is being deferred however the contractual vehicles still exist.</p> <p>HMS is in the process of amending the currently approved acquisition strategy to include the two channel LR. The intent is to continue the multi-vendor approach utilizing the existing IDIQ RR base contract (awarded 29 April 2015) and lessons learned to award the LR competitive contracts. The LR effort will be a separate competition under the Handheld radio suite.</p> <p>The LR will simultaneously run the Soldier Radio Waveform (SRW) and Single Channel Ground and Airborne Radio System (SINCGARS) - Army managed waveforms.</p> <p>The Army will award Firm Fixed-Price (FFP) Indefinite Delivery Indefinite Quantity (IDIQ) Contracts and will procure radios through a multiple step selection process:</p> <ul style="list-style-type: none">a. Award FFP Contracts to all qualified vendors based on technical acceptability and demonstrations (4QFY17)b. Award initial delivery orders based on Qualification Test results (3QFY18)c. Award FRP delivery orders based on Operational Test and best value trade off construct (3QFY19) <p>E. Performance Metrics N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA2 / <i>Rifleman Radio (RR)</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Support	TBD	PEO C3T, CECOM, PM TR Alliant : Various; APG, MD	0.000	-		0.518		1.674		-		1.674	0.000	2.192	0.000
Subtotal			0.000	-		0.518		1.674		-		1.674	0.000	2.192	0.000

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HMS Engineering/ Technical Support	TBD	PEO C3T, ARL, ESP, CECOM, CERDEC, LCMC : Various	0.000	-		0.067		0.300		-		0.300	0.000	0.367	0.000
Subtotal			0.000	-		0.067		0.300		-		0.300	0.000	0.367	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Follow on Delta Development & Testing	RO	EPG : Fort Huachuca	0.000	-		2.770		2.100		-		2.100	0.000	4.870	0.000
Follow on Delta Development & Testing (2)	TBD	OTC : TBD	0.000	-		0.650		5.963		-		5.963	0.000	6.613	0.000
Subtotal			0.000	-		3.420		8.063		-		8.063	0.000	11.483	0.000

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		0.000	-	4.005		10.037	-	14.042	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA2 / <i>Rifleman Radio (RR)</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Leader Radio (LR) Release For Proposal (RFP)					▲ LR RFP																							
(2) LR Contract Award									▲ LR Contract Award				■ LR QT															
LR Qualification Test (QT)									■ LR VT																			
LR Verification Test													 LR Log Demo															
LR Log Demo													■ LR OT															
LR Operational Test (OT)													▲ LR FRP															
(3) LR Full Rate Production (FRP)																	■ LR PVT (FY20)											
LR Performance Verification Test (PVT)																					■ LR PVT (FY21)							
LR PVT FY2021																									■ LR PVT (FY22)			
LR PVT FY2022																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605042A / <i>Tactical Network Radio Systems (Low-Tier)</i>	Project (Number/Name) FA2 / <i>Rifleman Radio (RR)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Leader Radio (LR) Release For Proposal (RFP)	3	2017	3	2017
LR Contract Award	4	2017	4	2017
LR Qualification Test (QT)	2	2018	2	2018
LR Verification Test	3	2018	4	2018
LR Log Demo	1	2019	1	2019
LR Operational Test (OT)	4	2018	2	2019
LR Full Rate Production (FRP)	4	2019	4	2019
LR Performance Verification Test (PVT)	3	2020	4	2020
LR PVT FY2021	2	2021	3	2021
LR PVT FY2022	3	2022	3	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605047A / <i>Army Contract Writing System</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	20.663	20.322	-	20.322	28.227	22.698	15.322	7.531	0.000	114.763
FA7: <i>Contract Writing System</i>	-	0.000	20.663	20.322	-	20.322	28.227	22.698	15.322	7.531	0.000	114.763

A. Mission Description and Budget Item Justification

The Army Contract Writing System (ACWS) will be the Army's single, next-generation, enterprise-wide contract writing, management, execution, and close-out software system. ACWS will facilitate the standardization of Army Procurement business processes and streamline the integration with Army ERP systems. As a financial feeder system, ACWS will meet the compliance requirements of the Federal Financial Management Improvement Act of 1996 (FFMIA). The system will meet the full scope of Army Contracting requirements, including those in secure and non-secure locations, those supporting combat or non-combat contingencies, those within or outside the borders of the Continental United States, those supporting grants and assistance agreements, and those performing weapons systems, construction, installation, and other specialized contracting activities.

This is consistent with Undersecretary of Defense, Acquisition, Technology and Logistics Memorandum; Department of Defense (DoD) Functional Contract Writing and Administration, dated 21 October 2011, which directed each of the Services to develop a new contract writing system. Accordingly, Army received an OSD Deputy Chief Management Officer (DCMO) validated problem statement and the Army Acquisition Executive approved the ACWS Materiel Development Decision (MDD) on 29 October 2014. On 24 March 2016, the Undersecretary of Defense for Acquisition, Logistics and Technology re-designated the ACWS as an ACAT IAM (MAIS) program and authorized the release of the RFP to procure a Commercial-off-the-Shelf (COTS) system. ACWS just completed an aggressive Source Selection and conducted an Army Systems Acquisition Review Council (ASARC) meeting with the Army Acquisition Executive in March 2017, and received approval from the Defense Acquisition Executive to proceed to contract award in April 2017. Contract Award is anticipated in May 2017.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	20.663	31.607	-	31.607
Current President's Budget	0.000	20.663	20.322	-	20.322
Total Adjustments	0.000	0.000	-11.285	-	-11.285
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	-11.285	-	-11.285

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity
2040: *Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0605047A / *Army Contract Writing System*

Change Summary Explanation

FY18 funding rephrased to align with program schedule.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605047A / Army Contract Writing System				Project (Number/Name) FA7 / Contract Writing System			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FA7: Contract Writing System	-	0.000	20.663	20.322	-	20.322	28.227	22.698	15.322	7.531	0.000	114.763
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Army Contract Writing System (ACWS) will be the Army's single, next-generation, enterprise-wide contract writing, management, execution, and close-out software system. ACWS will facilitate the standardization of Army Procurement business processes and streamline the integration with Army ERP systems. As a financial feeder system, ACWS will meet the compliance requirements of the Federal Financial Management Improvement Act of 1996 (FFMIA). The system will meet the full scope of Army Contracting requirements, including those in secure and non-secure locations, those supporting combat or non-combat contingencies, those within or outside the borders of the Continental United States, those supporting grants and assistance agreements, and those performing weapons systems, construction, installation, and other specialized contracting activities.

This is consistent with Undersecretary of Defense, Acquisition, Technology and Logistics Memorandum; Department of Defense (DoD) Functional Contract Writing and Administration, dated 21 October 2011, which directed each of the Services to develop a new contract writing system. Accordingly, Army received an OSD Deputy Chief Management Officer (DCMO) validated problem statement and the Army Acquisition Executive approved the ACWS Materiel Development Decision (MDD) on 29 October 2014. On 24 March 2016, the Undersecretary of Defense for Acquisition, Logistics and Technology re-designated the ACWS as an ACAT IAM (MAIS) program and authorized the release of the RFP to procure a Commercial-off-the-Shelf (COTS) system. ACWS just completed an aggressive Source Selection and conducted an Army Systems Acquisition Review Council (ASARC) meeting with the Army Acquisition Executive in March 2017, and received approval from the Defense Acquisition Executive to proceed to contract award in April 2017. Contract Award is anticipated in May 2017.

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

	FY 2016	FY 2017	FY 2018
Title: Risk Reduction Phase	-	20.663	-
Description: The purpose of the Risk Reduction (RR) phase, is to fully assess the COTS solution procured as the results of the Full and Open Competition. The assessment will allow the program to award the initial development contract (Build 1) with a high degree of confidence that the program will successfully execute the development and deployment phase. RR will include several key activities conducted in parallel. First, the program will conduct Global Analysis and Business Blueprinting to optimize the Army's "To-Be," End-to-End, Procure-to-Pay processes and business scenarios. The program will define applicable Business Process Designs, identify any gaps between the COTS product and the ACWS requirements and determine how to resolve those gaps. This will all be done with the goal to align Army processes, as much as possible, to the COTS product processes. This will save significant development dollars. This phase will also include design of the required interfaces that are not included as part of the original COTS solution. The ultimate goal of this phase is to maintain the COTS baseline and reduce requirement for customization with a plan that allocates capabilities and interfaces across all software builds. The allocated baseline will be reviewed/ approved during a Preliminary Design Review.			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605047A / Army Contract Writing System	Project (Number/Name) FA7 / Contract Writing System

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>FY 2017 Plans: FY 2017 funds will be used to award Task Order (TO) 001, to procure a COTS contract writing system and to select a System Integrator (SI) to conduct a collaborative RR phase focusing on performing fit-gap analysis, blueprinting and business process reengineering activities, analysis of cyber security risks, and interfacing designs with 36 unique key system partners and stakeholders.</p> <p>Title: Development and Deployment Phase</p> <p>Description: During this phase the program will perform all development, integration, test, and deployment activities for a series of software builds to achieve full deployment of ACWS capabilities to 10,000 end users in approximately 300 locations worldwide.</p> <p>FY 2018 Plans: FY18 funds will be used to award TO 002, Build 1 of the Development and Deployment Phase. After contract award, the program will conduct software configuration; will develop interfaces required as part of this build, but not included in the COTS product; will execute developmental and operational testing; and will deploy Build 1 capabilities in order to achieve Initial Operational Capability (IOC) - initiating the ultimate objective for ACWS to achieve full deployment of capabilities to 10,000 end users in approximately 300 locations worldwide.</p>	-	-	20.322
Accomplishments/Planned Programs Subtotals	-	20.663	20.322

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• Contract Writing System: OPA: SSN B66001	-	0.986	1.001	-	1.001	15.527	16.902	8.573	6.040	0.000	49.029

Remarks

D. Acquisition Strategy

Through Full and Open Competition, the strategy for ACWS is to award the SI (at ATP-1) a Single Award ID/IQ Contract with a 10 year ordering period, and to perform all requisite RR activities concurrent with development of all regulatory and statutory ATP-2 (MS B) documentation required. These activities are conducted for the purpose of meeting the USD AT&L timeline goals to sunset SPS. The anticipated contract award date is 3Q FY 2017. The first task order (guaranteed minimum) will be the RR phase focusing on BPR, Global Analysis and Blueprinting. During the Risk Reduction phase, ACWS will continue to prepare for its ATP-2 (MS B) in FY 2018. The next 48 months will be development and deployment, followed by 60 months of sustainment activities.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605047A / <i>Army Contract Writing System</i>	Project (Number/Name) FA7 / <i>Contract Writing System</i>

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

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605047A / Army Contract Writing System	Project (Number/Name) FA7 / Contract Writing System
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Office	Various	PdM ACWS : Arlington, VA	0.000	-		-		7.260		-		7.260	0.000	7.260	0.000
Subtotal			0.000	-		-		7.260		-		7.260	0.000	7.260	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	C/IDIQ	Alexandria VA : Alexandria VA	0.000	-		20.663	May 2017	5.263	Aug 2018	-		5.263	0.000	25.926	0.000
Subtotal			0.000	-		20.663		5.263		-		5.263	0.000	25.926	0.000

Remarks
 The latest guidance from the Under Secretary of Defense, Acquisition, Technology and Logistics, updated on 12 Jan 2017, directs that the Standard Procurement System (SPS) be sunset by FY23. In order for the Army to meet appropriate legislative mandates, the new capability will provide improved functionality in general contract writing and contract administration while seamlessly operating in the NIPR, SIPR, CONUS, OCONUS, and in low/no bandwidth environments. In addition, the replacement capability will produce data that is traceable and auditable by the Army designated finance account system(s) and will be in compliance with the Secretary of Defense's mandate for implementing internal controls to facilitate full financial audit readiness and accountability.

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hosting/Security/ Knowledge Management	Various	TBD : TBD	0.000	-		-		7.599		-		7.599	0.000	7.599	0.000
Subtotal			0.000	-		-		7.599		-		7.599	0.000	7.599	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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	ATEC : TBD	0.000	-		-		0.200		-		0.200	0.000	0.200	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605047A / Army Contract Writing System					Project (Number/Name) FA7 / Contract Writing System						
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	-		-		0.200		-		0.200	0.000	0.200	0.000
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		20.663		20.322		-		20.322	0.000	40.985	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605047A / Army Contract Writing System	Project (Number/Name) FA7 / Contract Writing System
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) RFP Release ADM (Material Solution Analysis Phase)	▲ 1				▲ 2																							
(2) ATP-1 (MS A)/Contract Award- Task Order 001																												
Risk Reduction Phase									■																			
Development and Deployment Phase													■															
(3) ATP-2 (MS B)/Contract Award- Task Order 002 Build 1									▲ 3																			
(4) Contract Award- Task Order 003 Build 2													▲ 4															
(5) IOC																	▲ 5											
(6) Contract Award- Task Order 004 Build 3																					▲ 6							

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605047A / Army Contract Writing System	Project (Number/Name) FA7 / Contract Writing System

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
RFP Release ADM (Material Solution Analysis Phase)	3	2016	3	2016
ATP-1 (MS A)/Contract Award- Task Order 001	3	2017	3	2017
Risk Reduction Phase	3	2017	4	2018
Development and Deployment Phase	4	2018	2	2024
ATP-2 (MS B)/Contract Award- Task Order 002 Build 1	4	2018	4	2018
Contract Award- Task Order 003 Build 2	2	2020	2	2020
IOC	4	2020	4	2020
Contract Award- Task Order 004 Build 3	2	2021	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605049A / Missile Warning System Modernization (MWSM)
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	55.810	-	55.810	31.823	131.827	99.826	0.000	Continuing	Continuing
XT4: Advanced Threat Detection System (ATDS)	-	0.000	0.000	55.810	-	55.810	31.823	131.827	99.826	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Advanced Threat Detection Systems (ATDS) is anticipated to be an ACAT IC program. It is the next generation fleet-wide threat detection component to the Aircraft Survivability Equipment suite. ATDS will replace the Common Missile Warning System (CMWS). Primary capability achieved through ATDS is the agility necessary to more quickly react to new threats.

B. Program Change Summary (\$ in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	55.810	-	55.810
Total Adjustments	0.000	0.000	55.810	-	55.810
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	0.000	0.000	55.810	-	55.810

Change Summary Explanation

Funding was transferred from Program Element 0605051A project ER8 (Common Missile Warning System (CMWS)) to Program Element 0605049A project XT4 for FY18 and beyond for more efficient and effective program management.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605049A / <i>Missile Warning System Modernization (MWSM)</i>				Project (Number/Name) XT4 / <i>Advanced Threat Detection System (ATDS)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
XT4: <i>Advanced Threat Detection System (ATDS)</i>	-	0.000	0.000	55.810	-	55.810	31.823	131.827	99.826	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding was transferred from Program Element 0605051A project ER8 (Common Missile Warning System (CMWS)) to Program Element 0605049A project XT4 for FY18 and beyond for more efficient and effective program management.

A. Mission Description and Budget Item Justification

Advanced Threat Detection Systems (ATDS) is anticipated to be an ACAT IC program. It is the next generation fleet-wide threat detection component to the Aircraft Survivability Equipment suite. ATDS will replace the Common Missile Warning System (CMWS). Primary capability achieved through ATDS is the agility necessary to more quickly react to new threats.

Justification:

FY 2018 Base Research Development Test and Evaluation (RDTE) dollars in the amount of \$55.810 million fund development to include resources to support systems test and evaluation (ST&E) and program planning for an advanced missile warning system.

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

	FY 2016	FY 2017	FY 2018
Title: ATDS	-	-	55.810
Description: Develop, test, integrate, and field an advanced missile warning system.			
FY 2018 Plans: FY 2018 Base RDTE dollars in the amount of \$55.810 million will fund development to include resources to support systems test and evaluation (ST&E) and program planning for an advanced missile warning system.			
Accomplishments/Planned Programs Subtotals	-	-	55.810

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605049A / <i>Missile Warning System Modernization (MWSM)</i>	Project (Number/Name) XT4 / <i>Advanced Threat Detection System (ATDS)</i>

D. Acquisition Strategy

ATDS Program of Record (PoR) will pursue a tailored acquisition approach to expedite capability to the field. Current strategy assumes that mature technology exists and will enable entry at Milestone B. First Unit Equipped (FUE) is projected for FY2025.

Milestone Development Decision (MDD) is tentatively scheduled for 3QFY2017.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0605049A / Missile Warning System Modernization (MWSM)				XT4 / Advanced Threat Detection System (ATDS)								
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
ATDS Systems Engineering Program Management	TBD	PM ASE : HSV, AL	0.000	-		-		1.550	Jan 2018	-		1.550	0.000	1.550	Continuing	
Subtotal			0.000	-		-		1.550		-		1.550	0.000	1.550	-	
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
ATDS ST&E Development	TBD	PM ASE : HSV, AL	0.000	-		-		14.774	Mar 2018	-		14.774	0.000	14.774	Continuing	
ATDS Software for ST&E	TBD	PM ASE : HSV, AL	0.000	-		-		7.930	Mar 2018	-		7.930	0.000	7.930	Continuing	
Subtotal			0.000	-		-		22.704		-		22.704	0.000	22.704	-	
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
ATDS Matrix Support	TBD	PM ASE : HSV, AL	0.000	-		-		3.840	Jan 2018	-		3.840	0.000	3.840	Continuing	
Subtotal			0.000	-		-		3.840		-		3.840	0.000	3.840	-	
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
ATDS Government System Test and Evaluation	TBD	PM ASE : HSV, AL	0.000	-		-		19.930	Mar 2018	-		19.930	0.000	19.930	Continuing	
ATDS Threat Asset Acquisition	TBD	PM ASE : HSV, AL	0.000	-		-		2.930	Mar 2018	-		2.930	0.000	2.930	Continuing	
ATDS Lab Support	TBD	PM ASE : HSV, AL	0.000	-		-		2.926	Mar 2018	-		2.926	0.000	2.926	Continuing	
ATDS SIL Development	TBD	PM ASE : HSV, AL	0.000	-		-		1.930	Mar 2018	-		1.930	0.000	1.930	Continuing	

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605049A / <i>Missile Warning System Modernization (MWSM)</i>	Project (Number/Name) XT4 / <i>Advanced Threat Detection System (ATDS)</i>
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Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			0.000	-		-		27.716		-		27.716	0.000	27.716	-
Project Cost Totals			0.000	-		0.000		55.810		-		55.810	0.000	55.810	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605049A / <i>Missile Warning System Modernization (MWSM)</i>	Project (Number/Name) XT4 / <i>Advanced Threat Detection System (ATDS)</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EMD Phase																												
(1) MDD					▲ 1																							
(2) Milestone B					▲ 2																							
(3) CDR					▲ 3																							
(4) Prototype Deliveries					▲ 4																							

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605049A / <i>Missile Warning System Modernization (MWSM)</i>	Project (Number/Name) XT4 / <i>Advanced Threat Detection System (ATDS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMD Phase	3	2020	2	2023
MDD	3	2017	3	2017
Milestone B	3	2020	3	2020
CDR	4	2021	4	2021
Prototype Deliveries	2	2022	2	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605051A / <i>Aircraft Survivability Development</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	77.395	124.243	30.879	30.100	60.979	10.362	8.870	9.306	15.808	Continuing	Continuing
ER7: <i>Aircraft Survivability Equipment Development</i>	-	14.516	26.815	26.165	-	26.165	5.797	4.310	3.940	8.750	Continuing	Continuing
ER8: <i>Common Missile Warning System (CMWS)</i>	-	62.879	97.428	4.714	30.100	34.814	4.565	4.560	5.366	7.058	0.000	216.670

Note

Funds from projects EE3 (A/C Surv Equip Dev) and EE4 (Common Missile Warning System (CMWS)), Program Element (PE) 0605035A (Common Infrared Countermeasures (CIRCM)) are restructured to projects ER7 (Aircraft Survivability Equipment Development) and ER8 (Common Missile Warning System (CMWS)) respectively, PE 0605051A (Aircraft Survivability Development) for Fiscal Year (FY) 2016 and beyond for more efficient and effective program management.

A. Mission Description and Budget Item Justification

The Aircraft Survivability Development budget line includes Aircraft Survivability Equipment Development (ER7) and Common Missile Warning System (ER8). This budget line also includes funding for Joint Urgent Operational Needs Statement (JUONS) SO-0010 Phase 2a, Headquarters Department of the Army (HQDA) Directed Requirement for the Advanced Threat Warner and Common Infrared Countermeasures Quick Reaction Capability (ATW & CIRCM QRC), and the next generation missile warning system.

ER7: Aircraft Survivability Development.

The objective of the Aircraft Survivability Equipment (ASE) Development project is to improve Radio Frequency (RF) ASE for Army aviation. The APR-39 Radar Warning Receiver (RWR) detects, categorizes, and prioritizes RF emitters and provides a visual / aural alert to aircrew members warning them of targeting by RF-guided weapons. The Milestone Decision Authority (MDA) approved Phases 1 and 2 of a 3-phased path forward.

Phase 1 serves as an obsolescence / sustainment upgrade to the Processor Line Replaceable Unit (LRU) of the AN/APR-39A(V) RWR implemented to ensure that the currently fielded system remains viable until an affordable improved RF ASE capability can be pursued in Phases 2 and 3.

Phase 2, RWR Modernization, adopts the ongoing United States Navy Class I RWR Engineering Change Proposal (ECP), commonly referred to as the APR-39D(V)2 system. APR-39D(V)2 will significantly improve the RF threat coverage, automatic detection and identification of threat types, bearing, and lethality. Under Phase 2, the Army will develop enhancements to the APR-39D(V)2 as hardware upgrades needed to keep the APR-39D(V)2 technically relevant and address emerging Low Probability Intercept (LPI) and frequency agile threats.

Phase 3 adds active Electronic Countermeasures (ECM) jamming capability for selected aircraft; Materiel Development Decision (MDD) for this ECM jamming capability phase is not expected until later in the Future Years Defense Program (FYDP).

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605051A / <i>Aircraft Survivability Development</i>	
Justification: Fiscal Year (FY) 2018 Base RDT&E funding of \$26.165 million supports RWR software improvements and ECP development.		
<p>ER8: Common Missile Warning System (CMWS). The US Army operational requirements concept for Aviation Infrared (IR) countermeasure systems is known as the Suite of Integrated Infrared Countermeasures (SIIRCM). SIIRCM is an integrated warning and countermeasure system to enhance aircraft survivability against IR-guided threat missile systems. The CMWS is a core element of the SIIRCM concept. CMWS is an integrated ultraviolet (UV) missile warning system, with an Improved Countermeasure Dispenser (ICMD) serving as a subsystem to a host aircraft.</p> <p>The CMWS program is a UV missile warning system that cues both flare and laser-based countermeasures to defeat incoming IR-seeking missiles and will alert aircrews to the presence of certain incoming unguided munitions. The B-Kit consists of the components which perform the missile detection and aircrew notification, unguided munitions detection and aircrew notification, false alarm rejection, and countermeasure employment/cueing functions of the system. The CMWS Electronic Control Unit (ECU) receives UV missile detection data from Electro-Optic Missile Sensors (EOMS) and sends a missile alert signal to warn aircrews via on-board avionics. Tier 1 threat missiles detected and tracked by the CMWS are subsequently defeated by a combination of missile seeker countermeasures, including decoy flares and IR Laser Jamming (currently Advanced Threat Infrared Countermeasures (ATIRCM)-equipped CH-47 platform only). In addition, the CMWS ECU receives from the EOMS unguided munitions detection data which it also passes to the aircrew through aural and visual alerts. The aircrew then applies the appropriate Tactics, Techniques and Procedures (TTPs) to break contact or engage the enemy with own-ship ordnance. The CMWS Generation 3 (Gen 3) ECU in conjunction with ongoing software development efforts will address outstanding materiel release conditions to achieve a Full Materiel Release (FMR) for CMWS and ensure protection against emerging IR-guided missile threats.</p> <p>The A-Kit for CMWS includes mounting hardware, wiring harnesses, cables, and other components necessary to install and interface the mission kit on host aircraft. The A-Kit ensures the mission kit is functionally and physically operational with a specific host aircraft type.</p> <p>JUONS SO-0010 will integrate the Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system on a select number of Army and SOCOM aircraft in the threat area of responsibility. The purpose of this JUONS is to detect and defeat proliferate Surface-to-Air Missiles (SAM) threats. HQDA has provided a follow up Directed Requirement to this JUONS to reduce Space, Weight and Power (SWaP) and accelerate delivery of Common Infrared Countermeasures (CIRCMs).</p> <p>Justification: CMWS: FY 2018 Base Research, Development, Test, and Evaluation (RDTE) dollars in the amount of \$4.714 million fund development engineering of the Threat Analysis Database (TAD) and future sensor and algorithm analysis.</p> <p>ATW & CIRCM QRC: FY 2018 OCO RDTE dollars in the amount of \$30.100 million fund integration efforts to support the Advanced Threat Warner and Common Infrared Countermeasure Quick Reaction Capability (ATW & CIRCM QRC) in support of JUONS SO-0010 for the OIR theater of operations.</p> <p>Joint Staff, J-8 Deputy Director for Requirements (DDR) memorandum, April 24, 2015 SOCOM JUONs SO-0010, Joint Rapid Acquisition Cell (JRAC) memorandum, May 29, 2015</p>		

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605051A / <i>Aircraft Survivability Development</i>
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Directed Requirement for the Advanced Threat Warner and Common Infrared Countermeasure Quick Reaction Capability (ATW & CIRCM QRC) to Support Joint Urgent Operational Need (JUON) SO-0010, CIRCM Critical Intelligence Parameters Breach, 18 December 2015

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	78.112	114.243	98.447	-	98.447
Current President's Budget	77.395	124.243	30.879	30.100	60.979
Total Adjustments	-0.717	10.000	-67.568	30.100	-37.468
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-0.717	10.000	-67.568	30.100	-37.468

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

Project: ER8: *Common Missile Warning System (CMWS)*

Congressional Add: *JUONS SO-0010 Phase 2a Congressional Add*

Congressional Add: *ATW & CIRCM QRC Congressional Add*

Congressional Add Subtotals for Project: ER8

Congressional Add Totals for all Projects

	FY 2016	FY 2017
	43.300	-
	16.700	-
Congressional Add Subtotals for Project: ER8	60.000	-
Congressional Add Totals for all Projects	60.000	-

Change Summary Explanation

Funds were added due to emerging Man Portable Air Defense System (MANPADS) threat and Senior Leader and congressional interest in closing the gap between JUONS efforts and next Program of Record (PoR).

\$55.810 million was transferred from PE 0605051A ASD project ER8 CMWS to PE 0605049A MWSM project XT4 ATDS in FY18 for more efficient and effective program management..

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development				Project (Number/Name) ER7 / Aircraft Survivability Equipment Development			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
ER7: Aircraft Survivability Equipment Development	-	14.516	26.815	26.165	-	26.165	5.797	4.310	3.940	8.750	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funds from project EE3 (A/C Surv Equip Dev), Program Element (PE) 0605035A (Common Infrared Countermeasures (CIRCM)) are restructured to project ER7 (Aircraft Survivability Equipment Development), PE 0605051A (Aircraft Survivability Development) for Fiscal Year (FY) 2016 and beyond for more efficient and effective program management.

A. Mission Description and Budget Item Justification

The objective of the Aircraft Survivability Equipment (ASE) Development project is to improve Radio Frequency (RF) ASE for Army aviation. The APR-39 Radar Warning Receiver (RWR) detects, categorizes, and prioritizes RF emitters and provides a visual / aural alert to aircrew members warning them of targeting by RF-guided weapons. The Milestone Decision Authority (MDA) approved Phases 1 and 2 of a 3-phased path forward.

Phase 1 serves as an obsolescence / sustainment upgrade to the Processor Line Replaceable Unit (LRU) of the AN/APR-39A(V) RWR implemented to ensure that the currently fielded system remains viable until affordable improved RF ASE capability can be pursued in Phases 2 and 3.

Phase 2, RWR Modernization, adopts the ongoing United States Navy Class I RWR Engineering Change Proposal (ECP), commonly referred to as the APR-39D(V)2 system. APR-39D(V)2 will significantly improve the RF threat coverage, automatic detection and identification of threat types, bearing, and lethality. Under Phase 2, the Army will develop enhancements to the APR-39D(V)2 as hardware upgrades needed to keep the APR-39D(V)2 technically relevant and address emerging Low Probability Intercept (LPI) and frequency agile threats.

Phase 3 adds active Electronic Countermeasures (ECM) jamming capability for selected aircraft; Materiel Development Decision (MDD) for this ECM jamming capability phase is not expected until later in the Future Years Defense Program (FYDP).

Justification: Fiscal Year (FY) 2018 Base RDT&E funding of \$26.165 million supports RWR software improvements and ECP development.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Phase 2 Radio Frequency Countermeasure (CM)	14.516	26.815	26.165	-	26.165
Description: Phase 2 Product Development (Digital RWR).					
FY 2016 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development	Project (Number/Name) ER7 / Aircraft Survivability Equipment Development
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Will fund RWR software development and emerging threats. FY 2017 Plans: Will fund Product Development - RWR software development and SIL updates, Support Costs - Contractor Support and Matrix Support; Test and Evaluation - Multi-Service Developmental Testing/Operational Testing (DT/OT) and Government System Test and Evaluation; and Management Services - Threat Management and Project Management. FY 2018 Base Plans: Will fund software improvement and ECP development, platform integration, Government Test and Evaluation and Support/Management services.					
Accomplishments/Planned Programs Subtotals	14.516	26.815	26.165	-	26.165

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• AZ3511: Radio Frequency CM (AZ3511)	28.730	50.425	57.743	-	57.743	49.997	94.897	72.238	95.531	Continuing	Continuing

Remarks

D. Acquisition Strategy
 Army RF ASE is managed by Project Manager ASE (PM ASE) for development, testing, procurement, integration and installation on Army rotary wing and small fixed wing aviation platforms. PM ASE proposed a three-phased path forward commensurate with user priorities and affordability considerations. The Milestone Decision Authority (MDA) approved Phases 1 and 2 of a 3-phased path forward.

 Phase 1 addresses obsolescence/Diminishing Manufacturing Sources (DMS) issues associated with the currently fielded AN/APR-39A(V) RWR via sole source ECP awarded to the APR-39A manufacturer.

 Phase 2 adopts the on-going United States Navy (USN) RWR Class I Correction of Deficiencies ECP commonly referred to as the APR-39D(V)2 system, limiting service-unique design, test, and integration expenses. Full Army participation throughout the remaining development, testing, procurement, fielding, and sustainment of the APR-39D(V)2 Digital RWR will address the significant Army RF capability gap while avoiding additional costs associated with a single-Service solution. This multi-Service approach also fields an effective and suitable material solution sooner to support the re-balance of the National Defense Strategy to the RF threat-heavy Asia-Pacific Region and European Region.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development	Project (Number/Name) ER7 / Aircraft Survivability Equipment Development

Phase 3 will develop and integrate active Electronic Countermeasures jamming capability for select aircraft.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605051A / Aircraft Survivability Development				ER7 / Aircraft Survivability Equipment Development							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Threat Management	Various	Various : -	8.833	0.006		0.282		0.284	Jan 2018	-		0.284	Continuing	Continuing	Continuing
Project Management	Various	Various : -	0.429	-		0.253		0.258	Jan 2018	-		0.258	Continuing	Continuing	Continuing
Subtotal			9.262	0.006		0.535		0.542		-		0.542	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Digital Radar Warning Receiver (RWR)	Various	Lab Demo / Study : Various	10.634	-		-		-		-		-	Continuing	Continuing	Continuing
S/W Development	Various	OGA : Aberdeen Proving Grounds, MD	1.498	1.539		15.705		23.955	Jan 2018	-		23.955	Continuing	Continuing	Continuing
SIL Updates	MIPR	I2WD : Aberdeen Proving Grounds, MD	1.726	-		0.814		-		-		-	Continuing	Continuing	Continuing
Depot Standup	MIPR	Tobyhanna : Tobyhanna, PA	1.052	-		-		-		-		-	0.000	1.052	0.000
Platform Integration	Various	Multiple : -	1.844	2.672		-		0.036	Jan 2018	-		0.036	Continuing	Continuing	Continuing
Subtotal			16.754	4.211		16.519		23.991		-		23.991	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Support	Various	Various : -	2.803	0.329		1.206		0.503	Jan 2018	-		0.503	Continuing	Continuing	Continuing
Matrix Support	Various	Various : -	6.430	0.370		0.117		-		-		-	Continuing	Continuing	Continuing
Subtotal			9.233	0.699		1.323		0.503		-		0.503	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army											Date: May 2017				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development				Project (Number/Name) ER7 / Aircraft Survivability Equipment Development							
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Multi-Service DT/OT	Various	Various : -	1.582	1.405		0.255		0.379	Jan 2018	-		0.379	Continuing	Continuing	Continuing
Government System Test and Evaluation	Various	Various : -	5.916	8.195		8.183		0.750	Jan 2018	-		0.750	Continuing	Continuing	Continuing
Subtotal			7.498	9.600		8.438		1.129		-		1.129	-	-	-
Project Cost Totals			42.747	14.516		26.815		26.165		-		26.165	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development	Project (Number/Name) ER7 / Aircraft Survivability Equipment Development
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phase 2 APR-39D(V)2 DT/OT																												
Phase 2 APR-39D(V)2 Platform Integration																												
(1) Phase 2 APR-39D(V)2 Initial Procurement Cut-In																												
Phase 2 APR-39D(V)2 Procurement/Deployment																												
(2) Phase 2 APR-39D(V)2 FUE													▲															
Emerging Threats/SIL Updates																												
Software Development																												
(3) Phase 2 APR-39D(V)2 Procurement Transition													▲															

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development	Project (Number/Name) ER7 / Aircraft Survivability Equipment Development

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Phase 2 APR-39D(V)2 DT/OT	3	2016	3	2017
Phase 2 APR-39D(V)2 Platform Integration	1	2014	3	2016
Phase 2 APR-39D(V)2 Initial Procurement Cut-In	3	2017	3	2017
Phase 2 APR-39D(V)2 Procurement/Deployment	2	2017	4	2022
Phase 2 APR-39D(V)2 FUE	2	2019	2	2019
Emerging Threats/SIL Updates	3	2016	4	2022
Software Development	1	2015	4	2022
Phase 2 APR-39D(V)2 Procurement Transition	3	2018	3	2018

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development				Project (Number/Name) ER8 / Common Missile Warning System (CMWS)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
ER8: Common Missile Warning System (CMWS)	-	62.879	97.428	4.714	30.100	34.814	4.565	4.560	5.366	7.058	0.000	216.670
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funds from project EE4 (Common Missile Warning System (CMWS)), Program Element (PE) 0605035A (Common Infrared Countermeasures (CIRCM)) are restructured to project ER8 (Common Missile Warning System (CMWS)), PE 0605051A (Aircraft Survivability Development) for Fiscal Year (FY) 2016 and beyond for more efficient and effective program management.

A. Mission Description and Budget Item Justification

The US Army operational requirements concept for Aviation Infrared (IR) countermeasure systems is known as the Suite of Integrated Infrared Countermeasures (SIIRCM). SIIRCM is an integrated warning and countermeasure system to enhance aircraft survivability against IR-guided threat missile systems. The CMWS is a core element of the SIIRCM concept. CMWS is an integrated ultraviolet (UV) missile warning system, with an Improved Countermeasure Dispenser (ICMD) serving as a subsystem to a host aircraft.

The CMWS program is a UV missile warning system that cues both flare and laser-based countermeasures to defeat incoming IR-seeking missiles and will alert aircrews to the presence of certain incoming unguided munitions. The B-Kit consists of the components which perform the missile detection and aircrew notification, unguided munitions detection and aircrew notification, false alarm rejection, and countermeasure employment/cueing functions of the system. The CMWS Electronic Control Unit (ECU) receives UV missile detection data from Electro-Optic Missile Sensors (EOMS) and sends a missile alert signal to warn aircrews via on-board avionics. Tier 1 threat missiles detected and tracked by the CMWS are subsequently defeated by a combination of missile seeker countermeasures, including decoy flares and IR Laser Jamming (currently Advanced Threat Infrared Countermeasures (ATIRCM)-equipped CH-47 platform only). In addition, the CMWS ECU receives from the EOMS unguided munitions detection data which it also passes to the aircrew through aural and visual alerts. The aircrew then applies the appropriate Tactics, Techniques and Procedures (TTPs) to break contact or engage the enemy with own-ship ordnance. The CMWS Generation 3 (Gen 3) ECU in conjunction with ongoing software development efforts will address outstanding materiel release conditions to achieve a Full Materiel Release (FMR) for CMWS and ensure protection against emerging IR-guided missile threats.

The A-Kit for CMWS includes mounting hardware, wiring harnesses, cables, and other components necessary to install and interface the mission kit on host aircraft. The A-Kit ensures the mission kit is functionally and physically operational with a specific host aircraft type.

Joint Urgent Operational Needs Statement (JUONS) SO-0010 will integrate the Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system on a select number of Army and Special Operations Command (SOCOM) aircraft in the threat area of responsibility. The purpose of this JUONS is to detect and defeat proliferate Surface-to-Air Missiles (SAM) threats. Headquarters Department of the Army (HQDA) has provided a follow up Directed Requirement to this JUONS to reduce Space, Weight and Power (SWaP) and accelerate delivery of Common Infrared Countermeasures (CIRCMs).

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / <i>Aircraft Survivability Development</i>	Project (Number/Name) ER8 / <i>Common Missile Warning System (CMWS)</i>

Justification:
 CMWS: FY 2018 Base Research, Development, Test, and Evaluation (RDTE) dollars in the amount of \$4.714 million fund development engineering of the Threat Analysis Database (TAD) and future sensor and algorithm analysis.

ATW & CIRCM QRC: FY 2018 Overseas Contingency Operations (OCO) RDTE dollars in the amount of \$30.100 million fund integration efforts to support the Advanced Threat Warner and Common Infrared Countermeasure Quick Reaction Capability (ATW & CIRCM QRC) in support of JUONS SO-0010 for the OIR theater of operations.

Joint Staff, J-8 Deputy Director for Requirements (DDR) memorandum, April 24, 2015
 SOCOM JUONS SO-0010, Joint Rapid Acquisition Cell (JRAC) memorandum, May 29, 2015
 Directed Requirement for the Advanced Threat Warner and Common Infrared Countermeasure Quick Reaction Capability (ATW & CIRCM QRC) to Support Joint Urgent Operational Need (JUON) SO-0010, CIRCM Critical Intelligence Parameters Breach, 18 December 2015

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Title: CMWS Product Development and Management Services</p> <p>Description: RDTE funding supports continuing development engineering of the TAD, salaries, and integration with other ASE Systems.</p> <p>FY 2016 Accomplishments: FY 2016 Base RDTE dollars in the amount of \$2.997 million will fund Product Development – TAD; and Management Services – CMWS Systems Engineering Program Management.</p> <p>FY 2017 Plans: FY 2017 Base RDTE dollars in the amount of \$4.318 million will fund Product Development - TAD and Future Sensor and Algorithm Analysis; and Management Services - CMWS Systems Engineering Program Management. FY 2017 Base RDTE dollars in the amount of \$20.000 million will fund Product Development - Advanced Missile Warning System Development Engineering; and Management Services – CMWS Systems Engineering Program Management.</p> <p>FY 2018 Base Plans: FY 2018 Base RDTE dollars in the amount of \$4.714 million will fund Product Development - TAD and Future Sensor and Algorithm Analysis; and Management Services - CMWS Systems Engineering Program Management.</p>	2.879	24.318	4.714	-	4.714
<p>Title: JUONS SO-0010 Phase 2a OCO</p>	-	11.510	-	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development	Project (Number/Name) ER8 / Common Missile Warning System (CMWS)				
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: JUONS Phase 2a will integrate the Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system on a select number of aircraft in the threat area of responsibility.						
FY 2017 Plans: blank						
Title: ATW & CIRCM QRC OCO		-	61.600	0.000	30.100	30.100
Description: ATW/CIRCM QRC will displace JUONS Phase 2a to achieve reduction in SWaP.						
FY 2017 Plans: blank						
FY 2018 Base Plans: There is no FY18 Base funding for this effort.						
FY 2018 OCO Plans: Continue development and qualification of the new Army ATW processor and the ATW transfer alignment function. Complete software integration with the current ATW processor and begin the software integration with the new Army ATW processor. Continue QRC A-Kit development/Integration efforts for UH-60M, UH-60L, HH-60M, CH-47F, AH-64E, MH-47G and MH-60M. Funding will also support the modification of the JUONS SO-0010 Phase 2a A-Kit to accommodate the new Army ATW processor and CIRCM on all aircraft.						
Accomplishments/Planned Programs Subtotals		2.879	97.428	4.714	30.100	34.814
		FY 2016	FY 2017			
Congressional Add: JUONS SO-0010 Phase 2a Congressional Add		43.300	-			
FY 2016 Accomplishments: FY 2016 Base RDTE dollars in the amount of \$43.300 million will fund Product Development – JUONS SO-0010 Phase 2a Prime Contractor – Integration Engineering and JUONS SO-0010 Phase 2a Aircraft Integration; and Management Services – JUONS SO-0010 Phase 2a Systems Engineering Program Management.						
Congressional Add: ATW & CIRCM QRC Congressional Add		16.700	-			
FY 2016 Accomplishments: Begin ATW & CIRCM QRC development and qualification of the new Army ATW processor and the ATW transfer alignment function. Funding will also begin software integration with the current						

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development	Project (Number/Name) ER8 / Common Missile Warning System (CMWS)

	FY 2016	FY 2017
ATW processor. Efforts will also begin on A-Kit development/Integration. Efforts will also include Army systems engineering and program management efforts.		
Congressional Adds Subtotals	60.000	-

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APA Funding:: SSN AZ3517; BA4; CMWS	104.348	97.741	37.225	89.520	126.745	32.719	18.775	10.917	61.000	69.608	521.853

Remarks

D. Acquisition Strategy

CMWS: The acquisition strategy includes buying CMWS B-Kits to support fielding requirements and installation of A-Kits on all modernized aircraft. The previous CMWS production contract was a firm fixed-priced (FFP), Indefinite Delivery, Indefinite Quantity (IDIQ) contract. A FFP bridge contract was awarded March 2013 for CMWS hardware. The follow-on CMWS production FFP/Cost Plus Fixed Fee (CPFF) IDIQ contract is a 3 year firm fixed price contract to procure the remaining Generation 3 Electronic Control Unit (ECU) and A-Kits and was awarded SEP 2013. The Gen 3 ECU, which provides increased processing capacity and enables unguided munitions detection, became a part of the system in FY 2010; First Unit Equipped (FUE) for the Gen 3 ECU was achieved in Operation Enduring Freedom (OEF) on 18 September 2013. All aircraft deployed to OEF have received the new processor with hostile fire detection capability. Gen 3 ECUs will gradually replace all Gen 2 ECUs across the Aviation fleet between now and 2017.

JUONS Phase 2a and ATW & CIRCM QRC: JUONS SO-0010 acquisition strategy includes aircraft prime contractor engineering support contracted to a Government test organization. Aircraft integration for JUONS will be handled through government operated organizations and industry partners.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development	Project (Number/Name) ER8 / Common Missile Warning System (CMWS)
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CMWS Systems Engineering Program Management	Various	Various : PM ASE, HSV, AL	7.800	0.339	Mar 2016	0.387		0.370	Jan 2018	-		0.370	Continuing	Continuing	Continuing
Advanced Missile Warning System Systems Engineering Program Management	TBD	TBD : TBD	0.000	-		2.000		-		-		-	0.000	2.000	0.000
JUONS SO-0010 Phase 2a Systems Engineering Program Management	Various	Various : PM ASE, HSV, AL	0.000	0.317	Mar 2016	1.310		-		-		-	0.000	1.627	0.000
ATW & CIRCM QRC Systems Engineering Program Management	Various	Various : PM ASE, HSV, AL	0.000	1.600	Mar 2016	5.544		0.000		1.000	Jan 2018	1.000	Continuing	Continuing	Continuing
Subtotal			7.800	2.256		9.241		0.370		1.000		1.370	-	-	-

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CMWS tier 2/3 Upgrades	Various	Various : -	2.000	-		-		-		-		-	Continuing	Continuing	Continuing
CMWS Threat Analysis Database Design	Various	BAE : Various	0.455	-		-		-		-		-	Continuing	Continuing	Continuing
CMWS Threat Analysis Database (TAD)	Various	BAE : Various	0.874	2.543	May 2016	2.131		2.188	Mar 2018	-		2.188	Continuing	Continuing	Continuing
CMWS Enhanced Sensor Study & Evaluation	Various	Various : -	11.466	-		-		-		-		-	0.000	11.466	0.000
CMWS Data Modeling	TBD	Various : Various	0.688	-		-		-		-		-	Continuing	Continuing	Continuing
CMWS Future Sensor and Algorithm Analysis	Various	Various : TBD	0.000	-		1.800		2.156	Mar 2018	-		2.156	Continuing	Continuing	Continuing
CMWS Prime Contractor-- Integration Engineering	TBD	TBD, TBD : TBD	7.787	-		-		-		-		-	Continuing	Continuing	Continuing
CMWS Aircraft Integration	TBD	Various : Various	19.974	-		-		-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605051A / Aircraft Survivability Development				ER8 / Common Missile Warning System (CMWS)							
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CMWS Software	TBD	Various : Various	3.000	-		-		-		-		-	Continuing	Continuing	Continuing
Advanced Missile Warning System Development Engineering	TBD	TBD : TBD	0.000	-		18.000		-		-		-	0.000	18.000	0.000
JUONS SO-0010 Phase 2a Prime Contractor -- Integration Engineering	Various	Various : Various	0.000	3.742	Mar 2016	5.200		-		-		-	0.000	8.942	0.000
JUONS SO-0010 Phase 2a Software	Various	Various : Various	0.000	1.534	Mar 2016	-		-		-		-	0.000	1.534	0.000
JUONS SO-0010 Phase 2a Training	Various	Various : Various	0.000	0.200	Mar 2016	-		-		-		-	0.000	0.200	0.000
ATW & CIRCM QRC Development Engineering	TBD	TBD : TBD	0.000	-		-		0.000		5.100	Mar 2018	5.100	0.000	5.100	0.000
ATW & CIRCM QRC ATW System Development and Qualification	Various	Various : Various	0.000	29.453	Mar 2016	26.788		-		-		-	Continuing	Continuing	Continuing
ATW & CIRCM QRC Aircraft Integration	Various	Various : Various	0.000	1.442		25.548		-		-		-	Continuing	Continuing	Continuing
Subtotal			46.244	38.914		79.467		4.344		5.100		9.444	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CMWS Test and Evaluation	TBD	Various : Various	16.156	-		-		-		-		-	Continuing	Continuing	Continuing
JUONS SO-0010 Phase 2a Test and Evaluation	Various	Various : Various	0.000	21.709		5.000		-		-		-	0.000	26.709	0.000
ATW & CIRCM QRC Test and Evaluation	Various	Various : Various	0.000	-		3.720		0.000		24.000	Mar 2018	24.000	Continuing	Continuing	Continuing
Subtotal			16.156	21.709		8.720		0.000		24.000		24.000	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army								Date: May 2017			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development			Project (Number/Name) ER8 / Common Missile Warning System (CMWS)				
	Prior Years	FY 2016		FY 2017		FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	70.200	62.879		97.428		4.714	30.100	34.814	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development	Project (Number/Name) ER8 / Common Missile Warning System (CMWS)
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CMWS System Dev/Tier 2 and 3 Upgrades (TAD Updates)																												
CMWS Gen 3 Production																												
CMWS Future Sensor and Algorithm Analysis																												
JUONS SO-0010 Phase 2a Contractor Logistics Support (Field Support)																												
JUONS SO-0010 Phase 2a Engineering, Integration, and Test																												
ATW & CIRCM QRC Engineering, Integration, and Test																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605051A / Aircraft Survivability Development	Project (Number/Name) ER8 / Common Missile Warning System (CMWS)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CMWS System Dev/Tier 2 and 3 Upgrades (TAD Updates)	2	2011	4	2022
CMWS Gen 3 Production	3	2012	4	2016
CMWS Future Sensor and Algorithm Analysis	1	2017	4	2022
JUONS SO-0010 Phase 2a Contractor Logistics Support (Field Support)	1	2017	4	2022
JUONS SO-0010 Phase 2a Engineering, Integration, and Test	1	2016	2	2017
ATW & CIRCM QRC Engineering, Integration, and Test	2	2016	1	2018

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605052A / Indirect Fire Protection Capability Increment 2
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	83.995	175.069	-	175.069	149.506	52.300	24.700	0.000	0.000	485.570
EY7: IFPC Increment 2 - Block 1	-	0.000	83.995	175.069	-	175.069	149.506	52.300	24.700	0.000	0.000	485.570

Note

Funding for FY17 and out has been realigned for IFPC Inc 2-I Block 1 system development activities from BA4, PE 0604319/DU3 to BA5, PE 0605052/EY7 as the program transitions to EMD.

A. Mission Description and Budget Item Justification

This program supports the overall integrated Air and Missile Defense (AMD) architecture and provides a robust intercept capability against Cruise Missiles (CM), Unmanned Aircraft System (UAS) and Rocket, Artillery, and Mortar (RAM) threats for deployed forces. The Indirect Fire Protection Capability Increment 2 - Intercept (IFPC Inc 2-I) is a ground-based weapon system that will be designed to acquire, track, engage, and defeat the UAS, CM, and RAM threats. The system will provide 360-degree protection and will simultaneously engage threats arriving from different azimuths. A block acquisition approach will be used to provide this capability. The IFPC Inc 2-I Block 1 system will consist of an existing interceptor and sensor and development of fire control software and a Multi-Mission Launcher (MML) to support the UAS and CM defeat mission. The IFPC Inc 2-I system will be compatible with the Army Integrated Air and Missile Defense (IAMD) Command and Control (C2) architecture. The IFPC Inc 2-I system will be transportable by Army common mobile platforms.

FY 2018 Base dollars in the amount of \$175.069 million are designated for the fabrication and delivery of EMD Assets #1-6, program management/administration, system engineering, hardware and software integration, additional spares and system/subsystem developmental testing.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	83.995	63.370	-	63.370
Current President's Budget	0.000	83.995	175.069	-	175.069
Total Adjustments	0.000	0.000	111.699	-	111.699
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	111.699	-	111.699

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity
2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)

R-1 Program Element (Number/Name)
PE 0605052A / Indirect Fire Protection Capability Increment 2

Change Summary Explanation

Funding increase in FY18 of \$111.699 million is due to a change in the Acquisition Strategy associated with a Milestone C delay from FY18 to FY19 as identified in Milestone B Army Cost Position, funding adjustment to transition four MMLs originally designated as Low Rate Initial Production assets funded with Missile Procurement, Army to be designated as additional test assets for Initial Operation Test and Evaluation, and an increase to fund EMD Risk Mitigation activities to lower the programmatic risk as discussed by the Army Acquisition Executive and the Vice Chief of Staff of the Army.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605052A / Indirect Fire Protection Capability Increment 2				Project (Number/Name) EY7 / IFPC Increment 2 - Block 1			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EY7: IFPC Increment 2 - Block 1	-	0.000	83.995	175.069	-	175.069	149.506	52.300	24.700	0.000	0.000	485.570
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding for FY17 and out has been realigned for IFPC Inc 2-I Block 1 system development activities from BA4, PE 0604319/DU3 to BA5, PE 0605052/EY7 as the program transitions to EMD.

A. Mission Description and Budget Item Justification

This program supports the overall integrated Air and Missile Defense (AMD) architecture and provides a robust intercept capability against Cruise Missiles (CM), Unmanned Aircraft System (UAS) and Rocket, Artillery, and Mortar (RAM) threats for deployed forces. The Indirect Fire Protection Capability Increment 2 - Intercept (IFPC Inc 2-I) is a ground-based weapon system that will be designed to acquire, track, engage, and defeat the UAS, CM, and RAM threats. The system will provide 360-degree protection and will simultaneously engage threats arriving from different azimuths. A block acquisition approach will be used to provide this capability. The IFPC Inc 2-I Block 1 system will consist of an existing interceptor and sensor and development of fire control software and a Multi-Mission Launcher (MML) to support the UAS and CM defeat mission. The IFPC Inc 2-I system will be compatible with the Army Integrated Air and Missile Defense (IAMDM) Command and Control (C2) architecture. The IFPC Inc 2-I system will be transportable by Army common mobile platforms.

FY 2018 Base dollars in the amount of \$175.069 million are designated for the fabrication and delivery of EMD Assets #1-6, program management/administration, system engineering, hardware and software integration, additional spares and system/subsystem developmental testing.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: IFPC Inc 2-I Program Management/Admin	-	25.134	6.834	-	6.834
Description: Funding is provided for the following efforts: Starting in FY18, R-2A Program Management will be split out into PM Admin, PM System Engineering, and System Engineering & Integration to better align with R-3.					
FY 2017 Plans:					
- Transition to and continue RDT&E efforts associated with the Engineering and Manufacturing Development (EMD) phase					
- Perform system engineering, logistics engineering, system test and evaluation management, technical configuration control, and business management activities					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605052A / <i>Indirect Fire Protection Capability Increment 2</i>	Project (Number/Name) EY7 / <i>IFPC Increment 2 - Block 1</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Conduct system design and program reviews FY 2018 Base Plans: - Continue RDT&E efforts associated with the Engineering and Manufacturing Development (EMD) phase - Perform system engineering, integration, logistics engineering, system test and evaluation management, technical configuration control, cost and business management activities - Conduct system technical reviews and program management reviews - Perform developmental testing and performance evaluations - Perform logistics and maintenance demonstrations - Conduct validation of logistics publications					
Title: IFPC Inc 2-I Program Management - System Engineering Description: Funding is provided for the following efforts: Starting in FY18, R-2A Program Management will be split out into PM Admin, PM System Engineering, and System Engineering & Integration to better align with R-3. FY 2018 Base Plans: - Continue RDT&E efforts associated with the Engineering and Manufacturing Development (EMD) phase - Perform system engineering, integration, logistics engineering, system test and evaluation management, technical configuration control, cost and business management activities - Conduct system technical reviews and program management reviews - Perform developmental testing and performance evaluations - Perform logistics and maintenance demonstrations - Conduct validation of logistics publications	-	-	2.852	-	2.852
Title: System Engineering & Integration Description: Funding is provided for the following efforts: Starting in FY18, R-2A Program Management will be split out into PM Admin, PM System Engineering, and System Engineering & Integration to better align with R-3. FY 2018 Base Plans: - Continue engineering and technical support of MML hardware, software and interface development and integration - Participate in system technical and program management reviews	-	-	23.513	-	23.513

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605052A / <i>Indirect Fire Protection Capability Increment 2</i>	Project (Number/Name) EY7 / <i>IFPC Increment 2 - Block 1</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<ul style="list-style-type: none"> - Perform technical assessments, concept studies, cost reduction, risk reduction, final design, and required documentation - Continue IFPC Integration Lab (I2 Lab) system integration, performance analysis and test - Continue I2 Lab software development and integration - Conduct EMD MML functional checkout - Additional FY18 Risk Mitigation efforts to lower programmatic risks as discussed with Army Acquisition Executive and Vice Chief of Staff of the Army include - Procure and integrate 2 EOC lites, SFNK lab kits, additional system integration lab assets, and additional MML LRUs, and conduct additional system analysis to support the requirement for concurrent integration and test events to be performed 					
<p>Title: IFPC Inc 2-I Engineering and Technical Support</p> <p>Description: Funding is provided for the following efforts:</p> <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue MML engineering and technical support for design of system hardware, software, and integration requirements definition - Participate in system and program reviews - Perform technical assessments, concept studies, cost reduction, risk reduction, final design, qualification testing and required documentation <p>FY 2018 Base Plans:</p> <ul style="list-style-type: none"> - Fabricate and deliver EMD MML Assets #1-6 - Continue engineering and technical support of MML hardware, software, interface development, qualification and integration - Continue MML component hardware, software, and integration development activities - Continue development of MML technical data package - Participate in system technical and program management reviews - Perform technical assessments, concept studies, cost reduction, risk reduction, final design, and required documentation - Conduct maintenance and repair of EMD MML assets to enable scheduled use in further test activities 	-	36.592	95.875	-	95.875
<p>Title: IFPC Inc 2-I System/Subsystem Development and Integration</p>	-	22.269	20.659	-	20.659

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605052A / Indirect Fire Protection Capability Increment 2	Project (Number/Name) EY7 / IFPC Increment 2 - Block 1

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: Funding is provided for the following efforts:</p> <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue system component hardware, software, and integration development activities - Participate in system and program reviews - Continue development of technical data package - Perform integration, component, and system level risk reduction - Continue system/subsystem hardware, software, and integration test activities - Continue manufacturing, assembly, and integration of Engineering and Manufacturing Development (EMD) phase test assets <p>FY 2018 Base Plans:</p> <ul style="list-style-type: none"> - Continue system component hardware, software, and integration development activities - Participate in system technical and program management reviews - Perform integration, component, and system level qualification, performance verification and risk reduction - Continue system/subsystem hardware, software, and integration test and simulation activities - Continue manufacturing, assembly, integration and repair of EMD phase test assets, to include all MEIs 					
<p>Title: IFPC Inc 2-I System/Subsystem Logistics Support</p> <p>Description: Funding is provided for the following efforts:</p> <p>FY 2018 Base Plans:</p> <ul style="list-style-type: none"> - Conduct RDT&E logistics and maintenance efforts associated with the Engineering and Manufacturing Development (EMD) phase - Perform logistics engineering and supply chain management activities - Perform logistics and maintenance demonstrations - Conduct validation of logistics publications and manuals 	-	-	5.529	-	5.529
<p>Title: IFPC Inc 2-I System/Subsystem Developmental Testing</p> <p>Description: Funding is provided for the following efforts:</p> <p>FY 2018 Base Plans:</p> <ul style="list-style-type: none"> - Conduct Component Qualification Testing - Conduct Developmental Testing (#1) 	-	-	19.807	-	19.807

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605052A / <i>Indirect Fire Protection Capability Increment 2</i>	Project (Number/Name) EY7 / <i>IFPC Increment 2 - Block 1</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Initiate System Qualification Testing					
- Conduct End-to-End Modeling and Simulation and Performance Analysis Activities					
- Conduct Cyber Security test activities					
Accomplishments/Planned Programs Subtotals	-	83.995	175.069	-	175.069

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PE 0605456A, Proj PA3: <i>PAC-3/MSE MISSILE</i>	2.201	-	-	-	-	-	-	-	-	0.000	2.201
• SSN C53101: <i>MSE Missile</i>	514.946	702.201	459.040	-	459.040	499.915	540.669	523.413	524.934	Continuing	Continuing
• PE 0205456A, Proj EF9: <i>System Integration and Test</i>	61.653	73.417	78.926	-	78.926	80.314	109.222	112.614	123.007	Continuing	Continuing
• PE 0604114A, Proj EX2: <i>Lower Tier Air Missile Defense (LTAMD) Capability</i>	-	35.132	76.728	-	76.728	67.088	83.195	141.185	142.000	Continuing	Continuing
• SSN C50016: <i>Lower Tier Air and Missile Defense (AMD)</i>	130.275	126.470	140.826	-	140.826	125.161	144.243	119.282	121.825	Continuing	Continuing
• PE 0604319A, Proj DU3: <i>IFPC2</i>	149.222	-	31.303	-	31.303	52.604	239.305	259.804	316.104	Continuing	Continuing
• SSN C62002: <i>IFPC Inc 2-I Block 1 Missile</i>	-	19.319	57.742	-	57.742	31.641	191.830	315.025	277.500	Continuing	Continuing
• SSN C62001: <i>IFPC Inc 2-I Block 1 System</i>	-	-	-	-	-	157.406	144.740	100.400	14.600	Continuing	Continuing
• PE 0604820A, Proj E10: <i>Sentinel</i>	11.821	15.983	32.968	-	32.968	31.761	51.897	72.562	81.351	Continuing	Continuing
• PE 0605457A, Proj S40: <i>Army Integrated Air and Missile Defense (AIAMD)</i>	222.074	272.811	336.420	-	336.420	290.250	190.600	117.470	64.510	Continuing	Continuing
• SSN BZ5075: <i>IAMD Battle Command System</i>	20.917	204.969	-	-	-	-	274.494	375.026	513.464	Continuing	Continuing
• PE 0604741A, Proj 146, 149: <i>Air Defense C2I Eng Dev</i>	33.619	61.532	28.726	-	28.726	28.320	14.638	8.674	-	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605052A / Indirect Fire Protection Capability Increment 2	Project (Number/Name) EY7 / IFPC Increment 2 - Block 1
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2016	FY 2017	FY 2018	FY 2018	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Cost To	
			Base	OCO	Total					Complete	Total Cost
• SSN AD50700: AIR & MSL <i>Defense Planning & Control Sys</i>	28.176	126.539	26.635	24.100	50.735	17.960	6.366	32.397	-	Continuing	Continuing
• SSN C62004: IFPC <i>Inc 2-I Block 2 Missile</i>	-	-	-	-	-	-	-	-	12.300	Continuing	Continuing
• PE 0605457A, Proj DU4: <i>Advanced Electronic Protection Enhancements AEPE</i>	-	-	23.165	-	23.165	25.010	26.719	26.218	26.500	Continuing	Continuing

Remarks

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

D. Acquisition Strategy

An independent Cost Benefit Analysis (CBA) was completed in FY2015 and the recommendation was made to continue organic development through the Engineering and Manufacturing Development (EMD) Phase. The Government will fund the Aviation and Missile Research Development and Engineering Center (AMRDEC) and Letterkenny Army Depot (LEAD) to continue the development, manufacturing, and testing of the Multi-Mission Launcher (MML) during the Engineering and Manufacturing Development (EMD) phase of the program.

During the transition to and initiation of the EMD phase, the IFPC Inc 2-I Product Office will award tasks on existing contracts for: Sentinel software modification to support Low Slow Small capability; integration of IFPC Inc 2-I software code into the IAMD architecture with IBCS v5.0 baseline software for Initial Operational Test and Evaluation; AIM-9X Block II interceptor software modification; AIM-9X Block II Weapon Interface Controller and Engagement Calculator software development; MML logistics products development; and complete system Critical Design Review. The IFPC Inc 2-I Product Office will conduct MML qualification testing and will conduct publication validation and verification, training, logistics demonstration, developmental flight testing, support a cyber security assessment, and initiate MML Production Technical Data Package (TDP) independent assessment. The IFPC Inc 2-I Product Office will support a Technology Readiness Assessment and receive results from the MML Production TDP assessment to support the Limited User Test, Milestone C, and the Low Rate Initial Production Decision. The IFPC Inc 2-I Product Office has modified its Acquisition Strategy by transferring four MML assets, originally designated as part of LRIP, to be test articles for use in IOT&E and other developmental test activities, as required.

The IFPC Inc 2-I Product Office will fund AMRDEC to integrate IFPC Inc 2-I software into the IBCS v4.0 baseline to support the Limited User Test, continue component qualification testing, order materials for MML EMD assets, assemble two MML assets, and support software integration, test and checkout activities in the I2 Lab.

The IFPC Inc 2-I Product Office will fund LEAD to fabricate components, assemble, and deliver the ten remaining MML assets.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605052A / Indirect Fire Protection Capability Increment 2	Project (Number/Name) EY7 / IFPC Increment 2 - Block 1

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605052A / Indirect Fire Protection Capability Increment 2				EY7 / IFPC Increment 2 - Block 1							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 - Program Management	MIPR	Cruise Missile Defense Systems Project Office : Huntsville, Alabama	0.000	-		8.778	Oct 2016	6.834	Oct 2017	-		6.834	Continuing	Continuing	Continuing
PM - System Engineering	MIPR	Cruise Missile Defense Systems Project Office : Huntsville, Alabama	0.000	-		-		2.852	Oct 2017	-		2.852	Continuing	Continuing	Continuing
Subtotal			0.000	-		8.778		9.686		-		9.686	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering & Integration	MIPR	Multiple Activities : Multiple Locations	0.000	-		16.356	Oct 2016	23.513	Oct 2017	-		23.513	Continuing	Continuing	Continuing
Engineering and Product Development/Fabrication	MIPR	Multiple Activities : Multiple Locations	0.000	-		36.592	Oct 2016	95.875	Oct 2017	-		95.875	Continuing	Continuing	Continuing
System/Subsystem Development and Integration	MIPR	Multiple Activities : Multiple Locations	0.000	-		22.269	Oct 2016	20.659	Oct 2017	-		20.659	Continuing	Continuing	Continuing
Subtotal			0.000	-		75.217		140.047		-		140.047	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Log Support	MIPR	Cruise Missile Defense Systems Project Office : Huntsville, Alabama	0.000	-		-		1.429	Oct 2017	-		1.429	Continuing	Continuing	Continuing

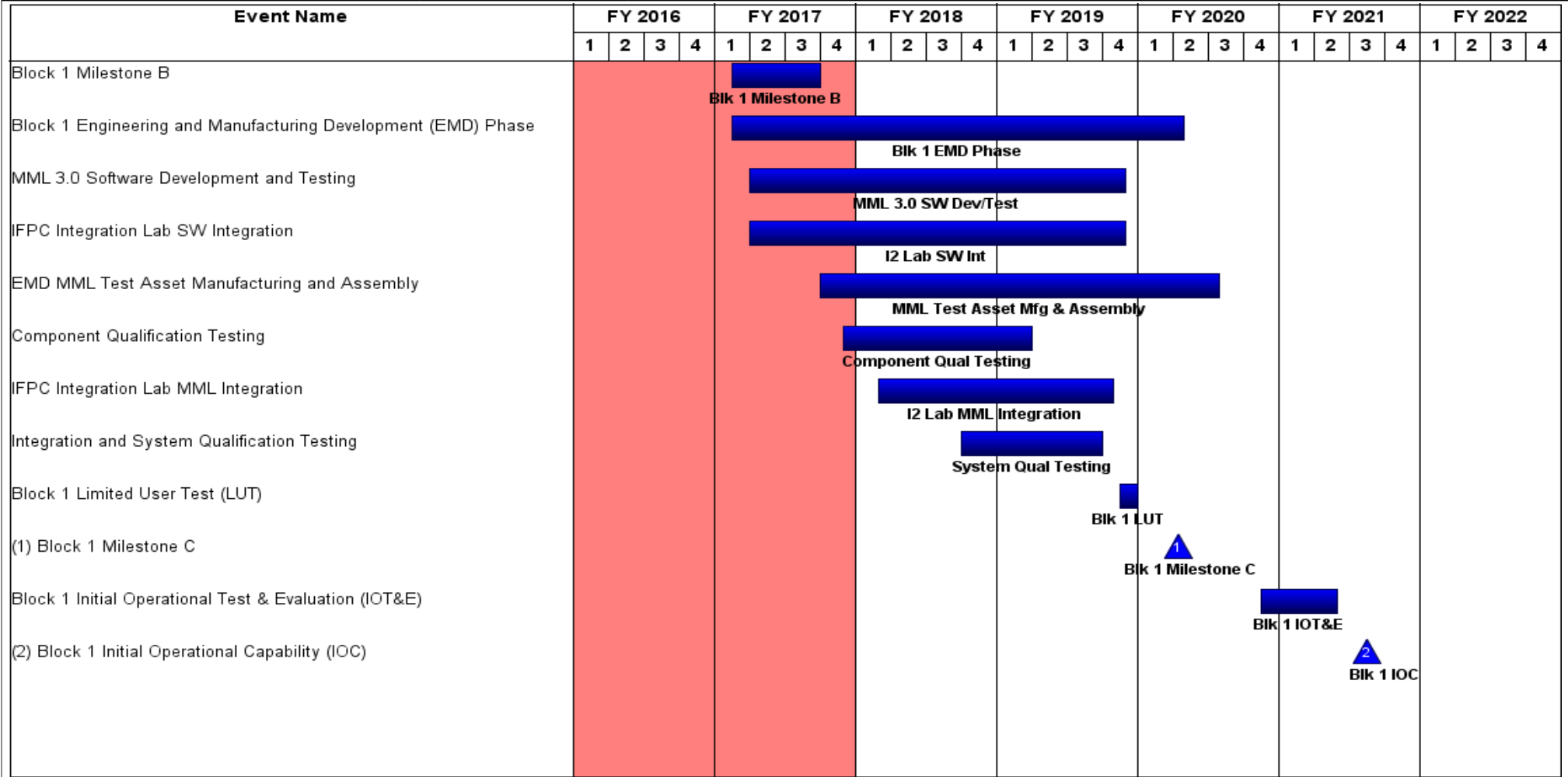
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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605052A / Indirect Fire Protection Capability Increment 2				EY7 / IFPC Increment 2 - Block 1							
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Log Support	C/FFP	Potomac Wave Consulting, Inc. : Redstone Arsenal	0.000	-		-		4.101	Oct 2017	-		4.101	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		5.530		-		5.530	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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/Subsystem Developmental Testing	IA	Multiple Activities : Multiple Locations	0.000	-		-		19.806	Oct 2017	-		19.806	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		19.806		-		19.806	-	-	-
Project Cost Totals			0.000	-		83.995		175.069		-		175.069	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605052A / Indirect Fire Protection Capability Increment 2	Project (Number/Name) EY7 / IFPC Increment 2 - Block 1
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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605052A / <i>Indirect Fire Protection Capability Increment 2</i>	Project (Number/Name) EY7 / <i>IFPC Increment 2 - Block 1</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Block 1 Milestone B	1	2017	3	2017
Block 1 Engineering and Manufacturing Development (EMD) Phase	1	2017	2	2020
MML 3.0 Software Development and Testing	2	2017	4	2019
IFPC Integration Lab SW Integration	2	2017	4	2019
EMD MML Test Asset Manufacturing and Assembly	4	2017	3	2020
Component Qualification Testing	4	2017	1	2019
IFPC Integration Lab MML Integration	1	2018	4	2019
Integration and System Qualification Testing	4	2018	3	2019
Block 1 Limited User Test (LUT)	4	2019	4	2019
Block 1 Milestone C	2	2020	2	2020
Block 1 Initial Operational Test & Evaluation (IOT&E)	4	2020	2	2021
Block 1 Initial Operational Capability (IOC)	3	2021	3	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605053A / Ground Robotics
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	70.760	-	70.760	88.117	94.121	70.089	35.662	0.000	358.749
FB2: Man Transportable Robotic System (MTRS) Inc II	-	0.000	0.000	6.780	-	6.780	4.690	4.700	0.000	0.000	0.000	16.170
FB3: Robotics Architecture	-	0.000	0.000	2.003	-	2.003	2.044	3.086	4.128	5.193	0.000	16.454
FB4: Common Robotic Systems	-	0.000	0.000	31.252	-	31.252	29.824	28.942	12.229	0.000	0.000	102.247
FB6: Squad Multipurpose Equipment Transport (SMET)	-	0.000	0.000	16.802	-	16.802	19.345	24.357	24.107	14.425	0.000	99.036
FB7: Robotics Enhanced Program (REP)	-	0.000	0.000	7.989	-	7.989	9.841	10.138	10.376	10.557	0.000	48.901
FB8: Soldier Borne Sensor (SBS)	-	0.000	0.000	2.289	-	2.289	3.506	1.530	1.227	1.266	0.000	9.818
FB9: MTRS Standardization	-	0.000	0.000	3.645	-	3.645	15.867	20.168	16.822	3.021	0.000	59.523
FC9: Battery Modernization & Interface Standardization	-	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FG8: Common Robotic Controller	-	0.000	0.000	0.000	-	0.000	3.000	1.200	1.200	1.200	0.000	6.600

Note

In FY2018 funding for the Man Transportable Robotic System (MTRS) Inc II transitions from PE 0604808A Landmine Warfare/Barrier - Eng Dev, Project 415 Mine Neutral/Detection to PE 0605053A Ground Robotics, Project FB2 Man Transportable Robotic System (MTRS) Inc II; Robotics Architecture will transition from PE 0604641A Tactical Unmanned Ground Vehicle, Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB3 Robotics Architecture; Common Robotics Systems (CRS) transitions from PE 0604641A Tactical Unmanned Ground Vehicle, Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB4 Common Robotic Systems; Robotic Enhanced Program (REP) will transition from PE 0604641A Tactical Unmanned Ground Vehicle, Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB7 Robotic Enhanced Program, Squad Multipurpose Equipment Transport (SMET) will transition from PE 0604641A Tactical Unmanned Ground Vehicle Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB6 SMET.

A. Mission Description and Budget Item Justification

The Man-Transportable Robotic System (MTRS) Inc II is a modular system providing a multitude of standoff capabilities through different payloads for the Army. These capabilities include detect and confirm presence, identify disposition, and counter hazards by providing a platform for payloads in support of current and future mission

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity
2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)

R-1 Program Element (Number/Name)
PE 0605053A / Ground Robotics

requirements. Additionally, MTRS Inc II will support current and future payload missions for the engineer's route clearance platoons, Special Operational Forces (SOF) detachments, Chemical Biological Radiological and Nuclear (CBRN), and Explosive Ordnance Disposal (EOD) units.

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 common architecture for universal controllers. RA includes the construction of program specific Interoperability Profiles (IOP) (i.e. Squad Multi-Equipment Transport (SMET), Leader/Follower (LF), Route Clearance Interrogation System (RCIS) Type II, Common Robotics System (Vehicle) (CRS(V)), Common Robotics System (Individual) (CRS(I)) Inc II, Common Robotics System (Heavy) (CRS(H)), EOD Robotic Payload (ERP), Light Reconnaissance Robot (LRR), Robotic Wingman, etc.) and new standards addressing emerging requirements (i.e. Cyber Security, Information Assurance, new autonomous behaviors, new payloads, etc).

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 the 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 used by all unmanned ground and aerial vehicles within the battalion formation providing interoperability, logistics, and training efficiencies. 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 operating environment (OE) while protecting and sustaining the force. The CRS(I) complements the Joint Integrated Warfighting Force by providing standoff to the Warfighter during major combat, stability, and homeland security operations.

Squad Multipurpose Equipment Transport (SMET) will help to reduce the load on the Soldier by transporting mission specific equipment, resupply equipment, and supplies required for extended operations. The SMET will be capable of carrying the equipment currently required to support Infantry and Engineer Platoons in the Infantry Brigade Combat Team (IBCT) for a 72 hour mission without resupply. The SMET will reduce Soldier load, increase squad mobility during combat operations and dismounted maneuvers. SMET will have open architectures, operator control units and support casualty evacuation, power generation/offload and chemical/biological payloads.

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) robotics 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.

The Soldier Borne Sensor (SBS) provides a near term solution to three Army Warfighting Challenges at the Infantry Squad level: develop situational understanding, conduct air-ground reconnaissance, and conduct joint combined arms maneuver. The SBS provides the Squad organic "quick look" capability when higher echelon assets are unavailable and time is of the essence. The system is simple to use, expendable, and deployable in a matter of seconds to support the squad leader's decision-making process. The system allows Soldiers to obtain local situational awareness and understanding of their immediate surroundings while remaining in covered or concealed positions.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0605053A / <i>Ground Robotics</i>
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The MTRS Standardization project provides the platforms to support integration and testing of payloads and technology for non-standard unmanned ground robotics systems used by Army Engineers, Explosive Ordnance Disposal (EOD), Chemical, Biological, Radiological, and Nuclear (CBRN) and Special Operational Forces (SOF) units. Current system characteristics include the following: a remote controlled articulated arm with a gripper, operating range up to 800m, multiple illuminated cameras, a pan/tilt surveillance camera, two-way radio, and a ruggedized operator control unit. The platforms provided will support development and testing of the following capabilities: High Dexterous Manipulation System (HDMS), Multi-Spectral Image Fusion System (MIFS), and Precision Aimed Multishot Disruptor (PAMD). The use of robotics allows the first approach, to potentially explosive hazards, to be made by a robot rather than a Soldier. This project will also supports the development of a library of robot parts that can be 3D printed via additive manufacturing. The funding will also test the operational compatibility of the 3D printed parts with robot platforms.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	70.760	-	70.760
Total Adjustments	0.000	0.000	70.760	-	70.760
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	66.759	-	66.759
• Other Adjustments 1	0.000	0.000	-0.003	-	-0.003
• Other Adjustments 2	0.000	0.000	4.004	-	4.004

Change Summary Explanation

FY 2018 delta is attributable to various projects (i.e., FB2, FB3, FB4, FB6, FB7, FB8, FB9, FG8) within this program element being new starts in FY 2018.

In FY2018 funding for the Man Transportable Robotic System (MTRS) Inc II transitions from PE 0604808A Landmine Warfare/Barrier - Eng Dev, Project 415 Mine Neutral/Detection to PE 0605053A Ground Robotics, Project FB2 Man Transportable Robotic System (MTRS) Inc II; Robotics Architecture transitions from PE 0604641A Tactical Unmanned Ground Vehicle, Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB3 Robotics Architecture; Common Robotics Systems (CRS) transitions from PE 0604641A Tactical Unmanned Ground Vehicle, Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB4 Common Robotic Systems; Robotic Enhanced Program (REP) transitions from PE 0604641A Tactical Unmanned Ground Vehicle, Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB7 Robotic Enhanced Program.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>				Project (Number/Name) FB2 / <i>Man Transportable Robotic System (MTRS) Inc II</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FB2: <i>Man Transportable Robotic System (MTRS) Inc II</i>	-	0.000	0.000	6.780	-	6.780	4.690	4.700	0.000	0.000	0.000	16.170
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018 funding for the Man Transportable Robotic System (MTRS) Inc II will transition from PE 0604808A Landmine Warfare/Barrier - Eng Dev, Project 415 Mine Neutral/Detection to PE 0605053A Ground Robotics, Project FB2 Man Transportable Robotic System (MTRS) Inc II

A. Mission Description and Budget Item Justification

The Man-Transportable Robotic System (MTRS) Inc II is a modular medium-sized system providing a multitude of standoff capabilities through different payloads for the Army. These capabilities include detect and confirm presence, identify disposition, and counter hazards by providing a platform for payloads in support of current and future mission requirements. MTRS Inc II will support current and future payload missions for the Engineer's route clearance platoons, Special Operational Forces (SOF) detachments, Chemical Biological Radiological and Nuclear (CBRN), and Explosive Ordnance Disposal (EOD) Units.

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

	FY 2016	FY 2017	FY 2018
Title: MTRS Inc II RDTE	-	-	6.780
Description: MTRS Inc II RDTE funding to support OPA requirements			
FY 2018 Plans: Funding will be used to acquire First Article Test hardware for test, test site, and test site support, fund design efforts to include Critical Design Review (CDR) and contract data, along with program management costs to include salaries, travel and miscellaneous expenses associated with the MTRS Inc II RDTE program.			
Accomplishments/Planned Programs Subtotals	-	-	6.780

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• R67050: <i>Man-Transportable Robotic Sys Inc II (MTRS Inc II)</i>	-	5.471	-	-	-	6.700	19.250	39.451	38.250	0.000	109.122

Remarks

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB2 / <i>Man Transportable Robotic System (MTRS) Inc II</i>

D. Acquisition Strategy

The MTRS Inc II acquisition strategy will execute an abbreviated Engineering Manufacturing Development (EMD) phase followed by a Production Deployment phase to integrate available payloads into the MTRS Inc II materiel solution. This EMD/Production Deployment award will be based on a selection from a full and open competition. The contract will be a Firm Fixed Price contract and award will execute a Preliminary Design Review (PDR), Critical Design Review (CDR), design integration, and pre-production build phase of First Article Test assets, Low Rate Initial Production (LRIP) and Full Rate Production (FRP). Pre-production assets will be used to evaluate performance to performance specifications derived from the MTRS Inc II Capability Production Document (CPD) requirement. Upon completion of this phase, the program will proceed to LRIP and Full Rate Production.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>				Project (Number/Name) FB3 / <i>Robotics Architecture</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FB3: <i>Robotics Architecture</i>	-	0.000	0.000	2.003	-	2.003	2.044	3.086	4.128	5.193	0.000	16.454
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018 funding for Robotics Architecture will transition from PE 0604641A Tactical Unmanned Ground Vehicle, Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB3 Robotics Architecture.

A. Mission Description and Budget Item Justification

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 common architecture for universal controllers. RA includes the construction of program specific Interoperability Profiles (IOP) (i.e. Squad Multi-Equipment Transport (SMET), Leader/Follower (LF), Route Clearance Interrogation System (RCIS) Type II, Common Robotics System (Vehicle) (CRS(V)), Common Robotics System (Individual) (CRS(I)) Inc II, Common Robotics System (Heavy) (CRS(H)), EOD Robotic Payload (ERP), Light Reconnaissance Robot (LRR), Robotic Wingman, etc.) and new standards addressing emerging requirements (i.e. Cyber Security, Information Assurance, new autonomous behaviors, new payloads, etc).

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

	FY 2016	FY 2017	FY 2018
Title: Robotics Architecture	-	-	2.003
Description: Provide architecture tools and support for current Program of Record (PoR) to allow for interoperability within the Joint community for Robotics Autonomous Systems.			
FY 2018 Plans: FY 2018 funding for Robotics Architecture will complete and update Interoperability Profile (IOP) and tools to evaluate and assess Route Clearance Interrogation System (RCIS), Man-Transportable Robotic System (MTRS) Inc II, Common Robotic System (Individual) (CRS(I)), and initial tools for emerging PoR Leader Follower (LF) and Squad Multipurpose Equipment Transport (SMET) requirements. It will initiate the development of IOP V4 which will provide interfaces for near term emerging programs such as LF, CRS(H), EOD Robotic Payload (ERP), Robotic Wingman and RCIS Type II.			
Accomplishments/Planned Programs Subtotals	-	-	2.003

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB3 / <i>Robotics Architecture</i>
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D. Acquisition Strategy

In FY2018 the Robotics Architecture line funds the Science & Technology (S&T) community and PM FP personnel to develop IOP tools and supporting infrastructure. It leverages intellectual capital and products which allows for Joint interoperability and helps meet Army Program of Record (PoR) cost and schedule while delivering high quality products for fielding. The architecture and tools developed under this line are central to the Army's acquisition philosophy of a modular open systems approach between the major subsystems of robotics and autonomous systems.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>				Project (Number/Name) FB4 / <i>Common Robotic Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FB4: <i>Common Robotic Systems</i>	-	0.000	0.000	31.252	-	31.252	29.824	28.942	12.229	0.000	0.000	102.247
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018 funding for Common Robotic Systems (CRS) will transition from PE 0604641A Tactical Unmanned Ground Vehicle, Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB4 Common Robotic Systems.

A. Mission Description and Budget Item Justification

The Common Robotic System - Individual (CRS(I)) will be a man-packable, small (>25 lbs.), highly mobile, unmanned robotic system with advanced sensors/mission modules for dismounted Service members. The CRS(I) will be designed so the 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 used by all unmanned ground and aerial vehicles within the battalion formation providing interoperability, logistics, and training efficiencies. 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 Operating 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.

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

	FY 2016	FY 2017	FY 2018
Title: CRS(I) Engineering Manufacturing Design (EMD)	-	-	31.252
Description: Up to two vendors will enter the Engineering & Manufacturing Design (EMD) Phase and support activities up to the Critical Design Review (CDR) to include providing robots to test during the Government run-off.			
FY 2018 Plans: Up to two vendors will participate in Preliminary Design Review (PDR), Critical Design Review (CDR), and provide CRS(I) systems to participate in a Government run-off that includes a series of tests the robots must perform. Information provided in the Government run-off will assist in a down-select, where one vendor is chosen to continue in the EMD phase. Funding supports both vendors, equipment for the Government run-off, Government run-off tests, and program management.			
Accomplishments/Planned Programs Subtotals	-	-	31.252

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• G99595: <i>Common Robotics System (Individual) (CRS(I))</i>	-	-	-	-	-	3.200	8.400	28.958	45.291	0	85.849

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB4 / <i>Common Robotic Systems</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

The CRS(I) acquisition strategy includes awarding a contract for up to two vendors to enter at MS B and conduct Preliminary Design Review (PDR), Critical Design Review (CDR) and a "Government run-off". Upon completion of the Government run-off, a down-select will occur and one vendor will continue in the Engineering & Manufacturing Development (EMD) Phase to integrate available payloads and test the universal control unit. Following a successful EMD, the CRS(I) will achieve a MS C decision with Low Rate Initial Production approval to support the Product Verification Testing, Initial Operational Test & Evaluation (IOT&E) and Logistics Development. Upon completion of these events, the CRS(I) will transition to Full Rate Production, Full Material Release, and fielding of the systems.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB4 / <i>Common Robotic Systems</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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	MIPR	Combat Support - Combat Service Support : Warren MI	0.000	-		-		1.780	Dec 2017	-		1.780	0.000	1.780	0.000
Risk Mitigation	MIPR	Various : Various	0.000	-		-		2.378	Jun 2018	-		2.378	0.000	2.378	0.000
Subject Matter Expert (SME) Services	MIPR	Various : Various	0.000	-		-		1.000	Jan 2018	-		1.000	0.000	1.000	0.000
Subtotal			0.000	-		-		5.158		-		5.158	0.000	5.158	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Manufacturing & Design	C/CPFF	tbd : tbd	0.000	-		-		21.122	Mar 2018	-		21.122	0.000	21.122	0.000
Subtotal			0.000	-		-		21.122		-		21.122	0.000	21.122	0.000

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 & Common Support Cost	MIPR	Various : Warren MI	0.000	-		-		2.862	Nov 2017	-		2.862	0	2.862	0
Subtotal			0.000	-		-		2.862		-		2.862	0.000	2.862	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ATEC Test Support	MIPR	Army Test Engineering Center : Various	0.000	-		-		2.110	Jul 2018	-		2.110	0.000	2.110	0.000
Subtotal			0.000	-		-		2.110		-		2.110	0.000	2.110	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB4 / <i>Common Robotic Systems</i>
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	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-	0.000	31.252	-	31.252	0.000	31.252	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB4 / <i>Common Robotic Systems</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) CRS(I) Contract Award									▲ 1 Contract Award																			
(2) CRS(I) Preliminary Design Review (PDR) (x2)									▲ 2 PDR																			
(3) CRS(I) Critical Design Review (CDR) (x2)									▲ 3 CDR																			
CRS(I) Post-CDR Design/Competitive Downselection (to one vendor)													■ Downselection															
CRS(I) Engineering and Manufacturing Development (EMD) 2													■ EMD 2															
(4) CRS(I) Milestone C																	▲ 4 MS C											
CRS(I) Production Qualification Testing (PQT)/Limited User Testing (LUT)																	■ PQT/LUT											
(5) CRS(I) Full Rate Production Decision																					▲ 5 FR							
CRS(I) LOG Development													■ Log Development															

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB4 / <i>Common Robotic Systems</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CRS(I) Contract Award	2	2018	2	2018
CRS(I) Preliminary Design Review (PDR) (x2)	3	2018	3	2018
CRS(I) Critical Design Review (CDR) (x2)	1	2019	1	2019
CRS(I) Post-CDR Design/Competitive Downselection (to one vendor)	2	2019	3	2019
CRS(I) Engineering and Manufacturing Development (EMD) 2	3	2019	3	2020
CRS(I) Milestone C	4	2020	4	2020
CRS(I) Production Qualification Testing (PQT)/Limited User Testing (LUT)	4	2020	3	2021
CRS(I) Full Rate Production Decision	4	2022	4	2022
CRS(I) LOG Development	3	2019	2	2022

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>				Project (Number/Name) FB6 / <i>Squad Multipurpose Equipment Transport (SMET)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FB6: <i>Squad Multipurpose Equipment Transport (SMET)</i>	-	0.000	0.000	16.802	-	16.802	19.345	24.357	24.107	14.425	0.000	99.036
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Squad Multipurpose Equipment Transport (SMET) program funded on PE 0605053A Ground Robotics, Project FB6 is a new start in FY2018.

A. Mission Description and Budget Item Justification

Squad Multipurpose Equipment Transport (SMET) will help to reduce the load on the Soldier by transporting mission specific equipment, resupply equipment, and supplies required for extended operations. The SMET will be capable of carrying the equipment currently required to support Infantry and Engineer Platoons in the Infantry Brigade Combat Team (IBCT) for a 72 hour mission without resupply. The SMET will reduce Soldier load, increase squad mobility during combat operations and dismounted maneuvers. SMET will have open architectures, operator control units and support casualty evacuation, power generation/offload and chemical/biological payloads.

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

	FY 2016	FY 2017	FY 2018
Title: SMET	-	-	16.802
Description: Squad Multipurpose Equipment Transport (SMET)			
FY 2018 Plans: Funding will be used to acquire systems from multiple vendors to conduct a User Operational Excursion, Aberdeen Test Center support, and associated logistics support. Program management costs to include salaries, travel and miscellaneous expenses associated with the SMET program will also be funded.			
Accomplishments/Planned Programs Subtotals	-	-	16.802

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• R12154: <i>Squad Multipurpose Equipment Transport (SMET)</i>	-	-	-	-	-	-	8.876	21.025	24.788	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB6 / <i>Squad Multipurpose Equipment Transport (SMET)</i>

D. Acquisition Strategy

The Squad Multipurpose Equipment Transport (SMET) architectures and analysis effort was completed as part of the Robotics Development effort under the Tactical Unmanned Ground Vehicle (654641DV7) funding line in FY2017. This supported a rapid start to performance specification development and other Request For Proposal (RFP) documents in support of a Directed Requirement. The Directed Requirement will begin with User Assessment and down select of 4 vendors in FY17 as part of the Robotic Enhanced Program under the Tactical Unmanned Ground Vehicle (654641DV7) funding line. In FY18 the 4 vendors will participate in an User Operational Excursion. This Excursion will guide the development of the Capability Production Document (CPD) in 3QFY19 leading to a program of record with anticipated Milestone C in 4QFY19 and First Unit Equipped (FUE) 1QFY21.

It is the Army's intent to maximize the use of an Open Systems Architecture (OSA), as well as the approved Unmanned Ground Vehicle (UGV) interoperability profiles for SMET. The PdM plans to procure sufficient technical data during the SMET contract to allow for future competition of production systems and spare parts, or seek cost savings by incorporating the developed SMET technology into other programs. Throughout the life of the program, the Army will continue to survey the marketplace to identify opportunities for technology insertion and competition.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB6 / <i>Squad Multipurpose Equipment Transport (SMET)</i>
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Costs	MIPR	PM FP : Warren, MI	0.000	-		-		1.000	Oct 2017	-		1.000	0.000	1.000	0.000
Subtotal			0.000	-		-		1.000		-		1.000	0.000	1.000	0.000

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Directed Requirement Excursion	C/CPFF	Year Long Excursion : TBD	0.000	-		-		11.000	Jan 2018	-		11.000	0.000	11.000	0.000
Subtotal			0.000	-		-		11.000		-		11.000	0.000	11.000	0.000

Remarks
Purchase 80 systems and support for year long Excursion with Soldiers for Concept of Operations (CONOPS) and Tactics, Techniques & Procedures (TTP) Development. Capability developer intends to use Excursion data to inform the CPD with intention to enter at Milestone C in FY19.

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Materiel Battle Lab / TARDEC Excursion Support	MIPR	Materiel Battle Lab, TARDEC : Multiple Locations	0.000	-		-		1.000	Oct 2017	-		1.000	0.000	1.000	0.000
Subtotal			0.000	-		-		1.000		-		1.000	0.000	1.000	0.000

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ATEC Test Support	MIPR	Army Test Engineering Center : Various	0.000	-		-		3.802	Jan 2018	-		3.802	0.000	3.802	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB6 / <i>Squad Multipurpose Equipment Transport (SMET)</i>
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Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			0.000	-		-		3.802		-		3.802	0.000	3.802	0.000

Remarks
Testing includes safety release at a minimum for year long Excursion, followed by additional Reliability, Availability, Maintainability (RAM) testing and technology inserts as a result of requirement shaping from Excursion activities.

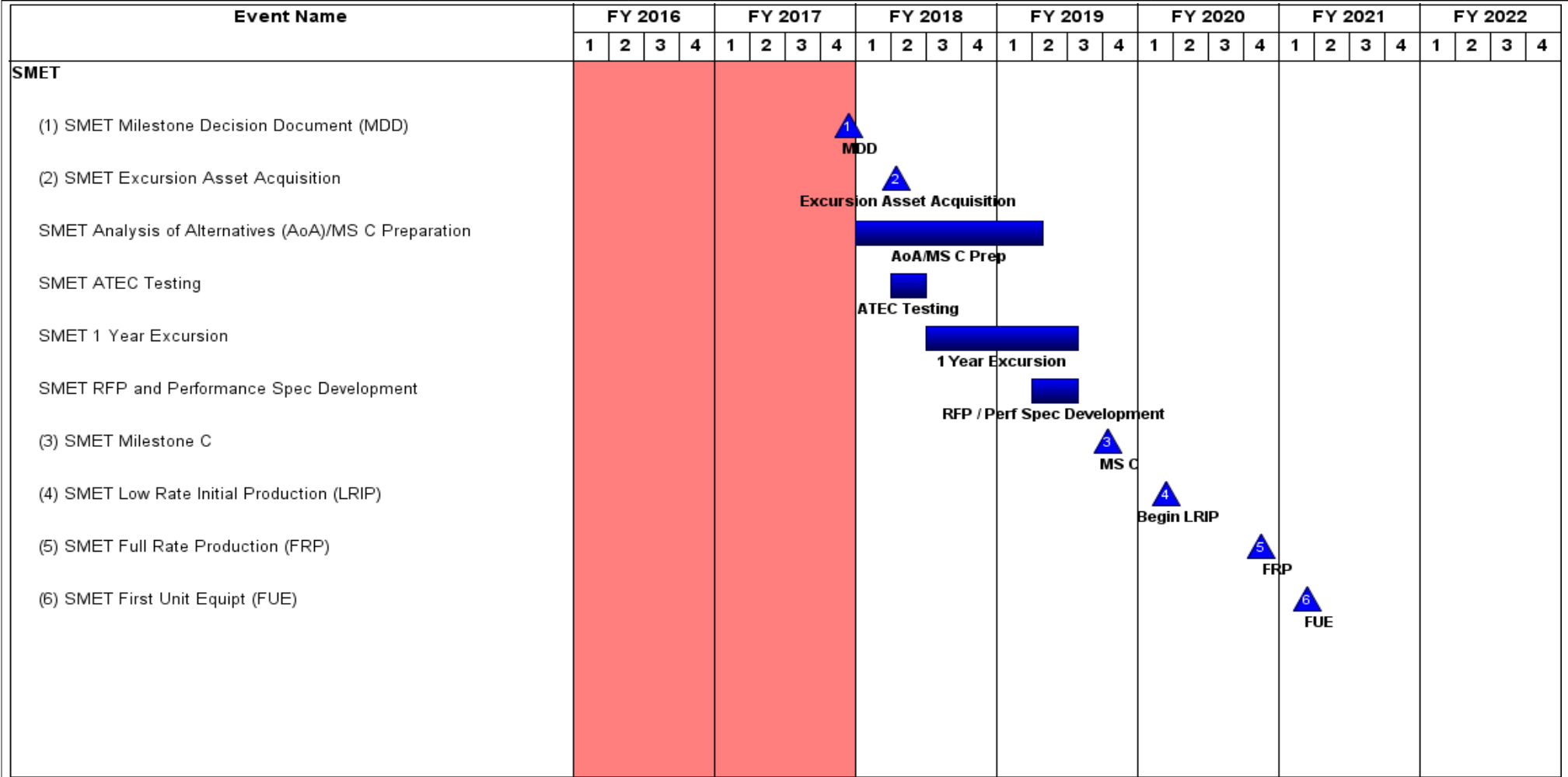
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		0.000		16.802		-		16.802	0.000	16.802	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB6 / <i>Squad Multipurpose Equipment Transport (SMET)</i>
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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB6 / <i>Squad Multipurpose Equipment Transport (SMET)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SMET	1	2018	4	2022
SMET Milestone Decision Document (MDD)	4	2017	4	2017
SMET Excursion Asset Acquisition	2	2018	2	2018
SMET Analysis of Alternatives (AoA)/MS C Preparation	1	2018	2	2019
SMET ATEC Testing	2	2018	2	2018
SMET 1 Year Excursion	3	2018	3	2019
SMET RFP and Performance Spec Development	2	2019	3	2019
SMET Milestone C	4	2019	4	2019
SMET Low Rate Initial Production (LRIP)	1	2020	1	2020
SMET Full Rate Production (FRP)	4	2020	4	2020
SMET First Unit Equipt (FUE)	1	2021	1	2021

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB7 / <i>Robotics Enhanced Program (REP)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FB7: <i>Robotics Enhanced Program (REP)</i>	-	0.000	0.000	7.989	-	7.989	9.841	10.138	10.376	10.557	0.000	48.901
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2018 funding for Robotic Enhanced Program (REP) will transition from PE 0604641A Tactical Unmanned Ground Vehicle, Project DV7 Small Unmanned Ground Vehicle to PE 0605053A Ground Robotics, Project FB7 Robotic Enhanced Program.

A. Mission Description and Budget Item Justification

The Robotics Enhanced Program (REP) uses a "buy/lease, try and inform" methodology to evaluate Commercial Off the Shelf (COTS), Government Off the Shelf (GOTS) and Non-Developmental Item (NDI) robotics 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.

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

	FY 2016	FY 2017	FY 2018
Title: Robotic Enhanced Program (REP)	-	-	7.989
Description: Annual funding for the REP is broken up into two iterations occurring each fiscal year. RDTE funds are utilized in an experimental effort to inform Center of Excellence (CoE) determined requirements as outlined in the Robotic and Autonomous Systems (RAS) Strategy.			
FY 2018 Plans: FY 2018 funding for the REP will be utilized to fund Iteration 18.1 and 18.2 which will fund salaries, travel, ATEC support, RDECOM support, CoE support, Battle Lab support, and associated experiments.			
Accomplishments/Planned Programs Subtotals	-	-	7.989

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

N/A

Remarks

D. Acquisition Strategy

The Robotic Enhanced Program (REP) is not a Program of Record.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>	Project (Number/Name) FB8 / <i>Soldier Borne Sensor (SBS)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FB8: <i>Soldier Borne Sensor (SBS)</i>	-	0.000	0.000	2.289	-	2.289	3.506	1.530	1.227	1.266	0.000	9.818
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Soldier Borne Sensor (SBS) provides a near term solution to three Army Warfighting Challenges at the Infantry Squad level: develop situational understanding, conduct air-ground reconnaissance, and conduct joint combined arms maneuver. The SBS provides the Squad organic "quick look" capability when higher echelon assets are unavailable and time is of the essence. The system is simple to use, expendable, and deployable in a matter of seconds to support the squad leader's decision-making process. The system allows Soldiers to obtain local situational awareness and understanding of their immediate surroundings while remaining in covered or concealed positions.

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

	FY 2016	FY 2017	FY 2018
Title: Soldier Borne Sensor (SBS)	-	-	2.289
Description: The SBS provides the small unit a "quick look" capability providing Situational Awareness (SA) of routes, building, tunnels, obstacles blocking line of sight, and similar concealed threat locations.			
FY 2018 Plans: Conduct Production Qualification Testing (PQT), Initial Operational Test and Evaluation (IOT&E) of SBS Increment 1, and initiate integration of Increment 2 technology insertions.			
Accomplishments/Planned Programs Subtotals	-	-	2.289

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• W63798: <i>Soldier Borne Sensor</i>	-	-	3.000	-	3.000	11.824	15.531	18.454	18.823	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Soldier Enhancement Program (SEP) was leveraged to initiate the Soldier Borne Sensor (SBS) program allowing for a Rapid Fielding of capabilities to the field. The SBS intends to leverage commercially available technologies every three years as tech insertions to allow the warfighter to have the most current technology on the market.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0605053A / <i>Ground Robotics</i>	FB8 / <i>Soldier Borne Sensor (SBS)</i>

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>				Project (Number/Name) FB9 / <i>MTRS Standardization</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FB9: <i>MTRS Standardization</i>	-	0.000	0.000	3.645	-	3.645	15.867	20.168	16.822	3.021	0.000	59.523
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The MTRS Standardization project is considered a new start.

A. Mission Description and Budget Item Justification

The MTRS Standardization project provides the platforms to support integration and testing of payloads and technology for non-standard unmanned ground robotics systems used by Army Engineers, Explosive Ordnance Disposal (EOD), Chemical, Biological, Radiological, and Nuclear (CBRN) and Special Operational Forces (SOF) units. Current system characteristics include the following: a remote controlled articulated arm with a gripper, operating range up to 800m, multiple illuminated cameras, a pan/tilt surveillance camera, two-way radio, and a ruggedized operator control unit. The platforms provided will support development and testing of the following capabilities: High Dexterous Manipulation System (HDMS), Multi-Spectral Image Fusion System (MIFS), and Precision Aimed Multishot Disruptor (PAMD). The use of robotics allows the first approach, to potentially explosive hazards, to be made by a robot rather than a Soldier.

This project will also supports the development of a library of robot parts that can be 3D printed via additive manufacturing. The funding will also test the operational compatibility of the 3D printed parts with robot platforms.

This project is a new start.

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

	FY 2016	FY 2017	FY 2018
Title: Platform to Support Payload Development & Test	-	-	1.500
Description: Testing of multi-shot disruptor and fire set for EOD robotics systems.			
FY 2018 Plans: Provide platforms to be used in the development and testing of the following payloads: High Dexterous Manipulation System (HDMS), Multi-Spectral Image Fusion System (MIFS), and Precision Aimed Multishot Disruptor (PAMD).			
Title: Other Transactional Authority	-	-	2.145
FY 2018 Plans: Funding will support the establishment of a library of robot parts which can be 3D printed via additive manufacturing. Funds will also test the operational capability of 3D printed parts with robot platforms.			
Accomplishments/Planned Programs Subtotals	-	-	3.645

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0605053A / <i>Ground Robotics</i>	FB9 / <i>MTRS Standardization</i>

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

N/A

Remarks

D. Acquisition Strategy

Procure mobility platforms from existing IDIQ contract. Utilize Other Transactional Authority contract for additive manufacturing effort.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>				Project (Number/Name) FC9 / <i>Battery Modernization & Interface Standardization</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
<i>FC9: Battery Modernization & Interface Standardization</i>	-	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

There is no FY 18 PB Request.

A. Mission Description and Budget Item Justification

There is no FY 2018 PB Request.

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

N/A

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-2A, RDT&E Project Justification: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605053A / <i>Ground Robotics</i>				Project (Number/Name) FG8 / <i>Common Robotic Controller</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FG8: <i>Common Robotic Controller</i>	-	0.000	0.000	0.000	-	0.000	3.000	1.200	1.200	1.200	0.000	6.600
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project does not have any FY 2018 PB funds programmed.

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

N/A

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-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605350A / WIN-T Increment 3 - Full Networking							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	32.187	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	32.187
EE8: WIN-T Increment 3 - Full Networking	-	32.187	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	32.187

Note

Program was funded in PE 0603782A, project 372 in FY 2014 and prior.

A. Mission Description and Budget Item Justification

Warfighter Information Network – Tactical (WIN-T) Increment 3 (Inc 3) develops the Network Operations (NetOps) software to meet the Army’s Network Convergence goals. NetOps provides the monitoring, control and planning tools to ensure management of the voice, data and internet transport networks. The NetOps software will also provide Information Assurance and Network Centric Enterprise Services. This allows for seamless integration of the tactical network planning, management, monitoring, and defense for the Signal staff. These NetOps improvements simplify the management of the network and increase the automation of tools and reporting. The developed NetOps software enhancements will be provided as a technical insertion to WIN-T Increments 1 and 2 for fielding and support.

Increment 3 also develops the enhanced Net Centric Waveform (NCW) version 10.x for increased throughput capability beyond the line of sight satellite communication and the Highband Networking Waveform (HNW) version 3.0 for line of sight communications. Both NCW and HNW provide improved network capacity and robustness. The waveform improvements will be available for use in PM WIN-T and other Army and DoD programs.

The Acquisition Decision Memorandum (ADM) dated 30 May 2014 directed the restructure of the Inc 3 program. Inc 3 completed the development of NetOps Build 4/5, NCW 10.x, and demonstration of the HNW 3.0. The program will also cease all efforts associated with development of Inc 3 unique hardware items and will have an efficient and effective shutdown. ADM anticipated for program closeout in 4QFY16.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	33.515	0.000	0.000	-	0.000
Current President's Budget	32.187	0.000	0.000	-	0.000
Total Adjustments	-1.328	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.328	-			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605350A / WIN-T Increment 3 - Full Networking				Project (Number/Name) EE8 / WIN-T Increment 3 - Full Networking			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EE8: WIN-T Increment 3 - Full Networking	-	32.187	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	32.187
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program was funded in PE 0603782A, project 372 in FY 2014 and prior.

A. Mission Description and Budget Item Justification

Warfighter Information Network – Tactical (WIN-T) Increment 3 (Inc 3) develops the Network Operations (NetOps) software to meet the Army’s Network Convergence goals. NetOps provides the monitoring, control and planning tools to ensure management of the voice, data and internet transport networks. The NetOps software will also provide Information Assurance and Network Centric Enterprise Services. This allows for seamless integration of the tactical network planning, management, monitoring, and defense for the Signal staff. These NetOps improvements simplify the management of the network and increase the automation of tools and reporting. The developed NetOps software enhancements will be provided as a technical insertion to WIN-T Increments 1 and 2 for fielding and support.

Increment 3 also develops the enhanced Net Centric Waveform (NCW) version 10.x for increased throughput capability beyond the line of sight satellite communication and the Highband Networking Waveform (HNW) version 3.0 for line of sight communications. Both NCW and HNW provide improved network capacity and robustness. The waveform improvements will be available for use in PM WIN-T and other Army and DoD programs.

The Acquisition Decision Memorandum (ADM) dated 30 May 2014 directed the restructure of the Inc 3 program. Inc 3 completed the development of NetOps Build 4/5, NCW 10.x, and demonstration of the HNW 3.0. The program will also cease all efforts associated with development of Inc 3 unique hardware items and will have an efficient and effective shutdown. ADM anticipated for program closeout in 4QFY16.

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

	FY 2016	FY 2017	FY 2018
Title: Increment 3 Product Development	6.184	-	-
Description: Increment 3 Engineering Manufacturing Development (EMD) continues development of the Inc 3 system software development and prototype manufacturing of test assets for the Inc 3 system.			
FY 2016 Accomplishments: Completes development and testing of assets for HNW 3.0 over the air demonstration, followed by insertion into the repository.			
Title: Test and Engineering	22.703	-	-
Description: Test and Evaluation			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605350A / WIN-T Increment 3 - Full Networking	Project (Number/Name) EE8 / WIN-T Increment 3 - Full Networking

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<i>FY 2016 Accomplishments:</i> FY 2016 completes funding the Engineering and Manufacturing Development (EMD) testing by funding FQT 3, Operational Testing of NetOps Builds at the Network Integration Evaluation (NIE) 16.2 and HNW over the air Demonstration.			
<i>Title:</i> Management Services <i>Description:</i> Provides System Engineering and Program Management Support.	3.300	-	-
<i>FY 2016 Accomplishments:</i> Completes System Engineering and Program Management Support and funds smart shutdown process.			
Accomplishments/Planned Programs Subtotals	32.187	-	-

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

N/A

Remarks

D. Acquisition Strategy

An evolutionary acquisition strategy is being utilized to provide for the timely insertion of new technologies into Army communication systems by adhering to the basic principles of the DoD Modular Open Systems Approach (MOSA). This allows the Army to keep pace with changing commercial technology and maintain required interoperability with other joint, strategic and commercial standards-based networks. Applying integrated Network Operations (NetOps) capability, WIN-T provides the capability to manage, prioritize, and protect information. It ensures NetOps commonality with Joint, Allied, Coalition, Current Force, and Commercial voice and data networks.

The program is presently in its Engineering, Manufacturing, and Development (EMD) phase, as WIN-T Inc 3 technology is being tested and released over time and will be inserted into WIN-T Inc 1 and Inc 2.

The Acquisition Decision Memorandum (ADM) dated 30 May 2014 directed the restructure of the Inc 3 program. Inc 3 completed the development of NetOps Build 4/5, NCW 10.x, and demonstration of the HNW 3.0. The program will also cease all efforts associated with development of Inc 3 unique hardware items and will have an efficient and effective shutdown. ADM anticipated for program closeout in 4QFY16.

An updated Acquisition Program Baseline (APB) was approved by the AAE on 15 Sep 14 and shows no Nunn-McCurdy risk due to the program quantity being zero. Likewise, the Program Acquisition Unit Cost/Average Procurement Unit Cost (PAUC/APUC) are no longer applicable.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605350A / WIN-T Increment 3 - Full Networking	Project (Number/Name) EE8 / WIN-T Increment 3 - Full Networking

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605380A / <i>AMF Joint Tactical Radio System (JTRS)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	10.143	5.028	8.965	-	8.965	44.938	25.140	9.018	0.000	Continuing	Continuing
EA9: <i>Airborne Maritime Fixed - Small Airborne (AMF-SA)</i>	-	2.113	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.113
EG6: <i>Small Airborne Networking Radio (SANR)</i>	-	8.030	5.028	8.965	-	8.965	44.938	25.140	9.018	0.000	Continuing	Continuing

Note

Prior to FY 2014, the Airborne Maritime/Fixed Station (AMF) Joint Tactical Radio System (JTRS) was funded under Navy PE 0604280N, aligned under the Navy JTRS Programs. In accordance with a July 11, 2012 Acquisition Decision Memorandum (ADM), the JTRS Program of Record transitioned to a Military Department-managed program. AMF is now managed by Program Executive Office Command, Control and Communications-Tactical, under Project Manager Tactical Radios, and funded by Army PE 0605380A. On May 2, 2014, the Milestone Decision Authority (MDA), Under Secretary of Defense for Acquisition, Technology, and Logistics (USD AT&L), issued an ADM that designated Small Airborne Link 16 Terminal (SALT) and Small Airborne Networking Radio (SANR) as subprograms under the AMF Program. In FY 2015, Project EA9 represented the total Airborne Maritime Fixed Small Airborne (AMF-SA, or SALT) RDT&E budget. In FY 2016, funding was allocated between the SALT (Project EA9) and SANR (Project EG6) subprograms.

On August 31, 2015, the SALT MDA issued an ADM tasking an orderly close out of the SALT subprogram (Project EA9). SALT subprogram close out was completed during FY 2016. Only the SANR subprogram (Project EG6) will be funded in FY 2017 and beyond under AMF JTRS.

A. Mission Description and Budget Item Justification

The AMF radios are software programmable, multi-band, multi-mode, mobile ad hoc networking radios, providing simultaneous voice and data communications for Army Aviation platforms. The radios will operate in networks supporting the Common Operating Picture, Situational Awareness, and interoperability of Mission Command systems throughout the battlefield. AMF radios will ensure the Soldier's ability to communicate both horizontally and vertically via voice and data within all mission areas and Common Operating Environment. AMF radios will operate waveforms that are deployed by Joint Forces today, and will introduce networking waveforms to the Aviation community that will enable interoperability between air and ground forces and transport operational and Mission Command information through the tactical network. AMF radios will help close capability gaps by extending data networking to company and below echelons, enabling network services to the platform and connecting Army Aviation platforms to Army ground and Joint air network domains.

Per MDA direction, the AMF Program will procure radios as Non-Developmental Items. The MDA, USD AT&L, signed the Acquisition Program Baseline along with an ADM in May of 2014, which identified SALT (Project EA9) and SANR (Project EG6) as subprograms.

On August 31, 2015, the SALT MDA issued an ADM tasking an orderly close out of the SALT subprogram (Project EA9). SALT subprogram close out was completed during FY 2016.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0605380A / <i>AMF Joint Tactical Radio System (JTRS)</i>
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Total FY 2018 RDTE funding is \$8.965 million, all of which is allocated to SANR (Project EG6). This provides funding necessary to continue and complete source selection activities in support of contract award and continuing development of documentation to support Milestone C.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	11.455	5.028	35.927	-	35.927
Current President's Budget	10.143	5.028	8.965	-	8.965
Total Adjustments	-1.312	0.000	-26.962	-	-26.962
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.312	-			
• Adjustments to Budget Years	0.000	0.000	-26.962	-	-26.962

Change Summary Explanation

FY 2018 program funding was reduced by 26.962 million given contract award is now planned for 2QFY19.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605380A / AMF Joint Tactical Radio System (JTRS)				Project (Number/Name) EA9 / Airborne Maritime Fixed - Small Airborne (AMF-SA)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EA9: Airborne Maritime Fixed - Small Airborne (AMF-SA)	-	2.113	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.113
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Prior to FY 2014, the Airborne Maritime/Fixed Station (AMF) Joint Tactical Radio System (JTRS) was funded under Navy PE 0604280N, aligned under the Navy JTRS Programs. In accordance with a July 11, 2012 Acquisition Decision Memorandum (ADM), the JTRS Program of Record transitioned to a Military Department-managed program. AMF is now managed by Program Executive Office Command, Control and Communications-Tactical, under Project Manager Tactical Radios, and funded by Army PE 0605380A. On May 2, 2014, the Milestone Decision Authority (MDA), Under Secretary of Defense for Acquisition, Technology, and Logistics, issued an ADM that designated Small Airborne Link 16 Terminal (SALT) and Small Airborne Networking Radio (SANR) as subprograms under the AMF Program. In FY 2015, Project EA9 represented the total Airborne Maritime Fixed Small Airborne (AMF-SA, or SALT) RDT&E budget. In FY 2016, funding was allocated between the SALT (Project EA9) and SANR (Project EG6) subprograms.

A. Mission Description and Budget Item Justification

On August 31, 2015, the SALT MDA issued an ADM tasking an orderly close out of the SALT subprogram. The SALT subprogram was closed out during FY 2016.

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

	FY 2016	FY 2017	FY 2018
Title: Airborne Maritime Fixed Small Airborne (AMF-SA).	2.113	-	-
Description: Airborne Maritime Fixed Small Airborne (AMF-SA) Small Airborne Link 16 Terminal (SALT)			
FY 2016 Accomplishments: FY 2016 funded PMO Support and System Engineering support. The SALT subprogram was closed out during FY 2016.			
Accomplishments/Planned Programs Subtotals	2.113	-	-

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• B90902: Airborne Maritime Fixed - Small Airborne (AMF-SA)	-	-	-	-	-	-	-	-	-	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605380A / AMF Joint Tactical Radio System (JTRS)	Project (Number/Name) EA9 / Airborne Maritime Fixed - Small Airborne (AMF-SA)
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks
SALT subprogram close out was completed during FY 2016.

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605380A / AMF Joint Tactical Radio System (JTRS)				Project (Number/Name) EG6 / Small Airborne Networking Radio (SANR)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EG6: <i>Small Airborne Networking Radio (SANR)</i>	-	8.030	5.028	8.965	-	8.965	44.938	25.140	9.018	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Prior to FY 2014, the Airborne Maritime/Fixed Station (AMF) Joint Tactical Radio System (JTRS) was funded under Navy PE 0604280N, aligned under the Navy JTRS Programs. In accordance with a July 11, 2012 Acquisition Decision Memorandum (ADM), the JTRS Program of Record transitioned to a Military Department-managed program. AMF is now managed by Program Executive Office Command, Control and Communications-Tactical, under Project Manager Tactical Radios, and funded by Army PE 0605380A. On May 2, 2014, the Milestone Decision Authority (MDA), Under Secretary of Defense for Acquisition, Technology, and Logistics, issued an ADM that designated Small Airborne Link 16 Terminal (SALT) and Small Airborne Networking Radio (SANR) as subprograms under the AMF Program. In FY 2015, Project EA9 represented the total Airborne Maritime Fixed Small Airborne (AMF-SA, or SALT) RDT&E budget. In FY 2016, funding was allocated between the SALT (Project EA9) and SANR (Project EG6) subprograms.

Only the SANR subprogram (Project EG6) will be funded in FY 2017 and beyond under AMF JTRS.

A. Mission Description and Budget Item Justification

Per MDA direction, AMF JTRS will procure SANR radios as Non-Developmental Items (NDI). The SANR is a two-channel, software-defined, National Security Agency Type 1 certified networking radio providing seamless real-time information for operation in mobile and dynamic combat environments that will meet tactical communications requirements as validated by the Army Aviation community. SANR will provide increased data throughput to Army Aviation platforms via the Soldier Radio Waveform (SRW) and Wideband Networking Waveform (WNW) capabilities, and maintain Single Channel Ground and Airborne Radio System (SINCGARS) capability. SANR will replace the current SINCGARS radios on Army Aviation platforms. SANR is planned for implementation on the following platforms: Apache (AH-64E), Black Hawk (UH-60V, UH-60M, HH-60M, and MH-60M), Chinook (CH-47F and MH-47G), and Gray Eagle Unmanned Aircraft System (MQ-1C) aircraft. SANR will enhance and further enable the ability of the maneuver commander to integrate and synchronize aviation forces with land based operational forces. SANR, employed on Army aviation platforms, will enable aviation combat elements (Combat Aviation Brigades, Theater Aviation Brigades, and Special Operations Aviation Regiment) to better utilize the inherent versatility of airborne communications as a complement to the unique capabilities of the other combat arms. SANR will give commanders enhanced Situational Awareness and Mission Command in a package that provides a more responsive means of directing aircraft to match changing maneuver forces situations and missions.

FY 2018 provides funding necessary to continue and complete source selection activities in support of contract award and continue development of documentation to support Milestone C.

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

	FY 2016	FY 2017	FY 2018
Title: Small Airborne Networking Radio (SANR)	8.030	5.028	8.965

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605380A / AMF Joint Tactical Radio System (JTRS)	Project (Number/Name) EG6 / Small Airborne Networking Radio (SANR)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>Description: Small Airborne Networking Radio (SANR)</p> <p>FY 2016 Accomplishments: With FY 2016 funding, the SANR subprogram resumed acquisition activities. The program conducted Market Research; revised the Acquisition Strategy, Capability Production Document (CPD) and associated required documentation; developed and released a Draft Request for Proposal and conducted source selection planning. The program also planned and resourced a demonstration at the Army Warfighting Assessment 17.1, in accordance with a May 2014 Acquisition Decision Memorandum.</p> <p>FY 2017 Plans: With FY 2017 funding, the program will continue and complete Acquisition Strategy and Capability Production Document (CPD) revision and staffing, develop documentation to support release of the Request for Proposal, and conduct planning for source selection activities in support of contract award.</p> <p>FY 2018 Plans: With FY 2018 funding, the program will continue and complete source selection activities, except for final peer reviews, in support of contract award. SANR source selection efforts include evaluation of proposals (document review), test article integration and test execution for each offeror (source selection testing), and evaluation of other selection factors. The program will also continue to develop documentation to support Milestone C.</p>			
Accomplishments/Planned Programs Subtotals	8.030	5.028	8.965

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• B90904: JTRS (AMF) Small Airborne Networking Radio (SANR)	-	-	-	-	-	-	65.560	74.649	85.048	Continuing	Continuing

Remarks

D. Acquisition Strategy

The SANR acquisition strategy is to procure small airborne networking radios for the Apache, Blackhawk, Chinook, and Gray Eagle aircraft. SANR will be capable of operating the SRW, WNW, and SINCGARS waveforms. SANR will replace Army Aviation platform SINCGARS ARC-201D radios. The SANR acquisition strategy employs full and open competition using an NDI procurement approach that leverages prior industry and Government investment in software-defined radios. The strategy supports a concept in which NDI radios can be selected from a qualified vendor that meet the AMF SANR CPD requirements.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605380A / <i>AMF Joint Tactical Radio System (JTRS)</i>	Project (Number/Name) EG6 / <i>Small Airborne Networking Radio (SANR)</i>

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					PE 0605450A / Joint Air-to-Ground Missile (JAGM)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	79.897	42.972	34.626	-	34.626	11.900	3.000	2.000	0.000	0.000	174.395
JA6: Joint Air-To-Ground Missile (JAGM)	-	79.897	42.972	34.626	-	34.626	11.900	3.000	2.000	0.000	0.000	174.395

A. Mission Description and Budget Item Justification

The Joint Air-to-Ground Missile (JAGM) program is an Army led, Acquisition Category (ACAT) 1C Major Defense Acquisition Program (MDAP) with joint interest with the U.S. Marine Corps (USMC) and U.S. Navy. The JAGM is the next generation of aviation-launched, fire and forget missiles to replace the HELLFIRE Laser and Longbow radar missiles. JAGM will be used by joint service aircraft for destruction of high value stationary, moving, and relocatable land and maritime targets from standoff range in day, night, adverse weather, and obscured battlefield conditions.

FY2018 Base dollars in the amount of \$34.626 million support the completion of the Engineering and Manufacturing Development phase, to include: Apache integration; system developmental testing; and a Limited User Test. Funding also supports post-Milestone C developmental, integrated, and operational testing working toward an FY2019 Initial Operational Test and Evaluation.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	83.054	42.972	8.526	-	8.526
Current President's Budget	79.897	42.972	34.626	-	34.626
Total Adjustments	-3.157	0.000	26.100	-	26.100
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.157	-			
• Adjustments to Budget Years	0.000	0.000	26.100	-	26.100

Change Summary Explanation

Since PB17, the JAGM EMD schedule has changed due to hardware delays caused by low production yield and other manufacturing related issues, along with a delay in awarding the Apache integration effort on the Boeing IDIQ contract. The program now includes a Limited User Test (LUT) (replacing the previously scheduled Initial Operational Test and Evaluation (IOT&E)) in second quarter FY 2018. The LUT will inform the Milestone C decision, scheduled in third quarter FY 2018. The IOT&E is now scheduled for second quarter FY 2019, in lieu of the previously scheduled Follow-on Test and Evaluation. These changes have no impact on the current EMD plan to complete all 48 missile flight tests prior to February 2018, in support of Milestone C.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity
2040: *Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0605450A / *Joint Air-to-Ground Missile (JAGM)*

The FY 2018 \$26.100 million funding increase is to address the above schedule changes.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)				Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
JA6: Joint Air-To-Ground Missile (JAGM)	-	79.897	42.972	34.626	-	34.626	11.900	3.000	2.000	0.000	0.000	174.395
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Air-to-Ground Missile (JAGM) program is an Army led, Acquisition Category (ACAT) 1C Major Defense Acquisition Program (MDAP) with joint interest with the U.S. Marine Corps (USMC) and U.S. Navy. The JAGM is the next generation of aviation-launched, fire and forget missiles to replace the HELLFIRE Laser and Longbow radar missiles. JAGM will be used by joint service aircraft for destruction of high value stationary, moving, and relocatable land and maritime targets from standoff range in day, night, adverse weather, and obscured battlefield conditions.

FY2018 Base dollars in the amount of \$34.626 million support the completion of the Engineering and Manufacturing Development phase, to include: Apache integration; system developmental testing; and a Limited User Test. Funding also supports post-Milestone C developmental, integrated, and operational testing working toward an FY2019 Initial Operational Test and Evaluation.

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

	FY 2016	FY 2017	FY 2018
Title: Engineering and Manufacturing Development (EMD) Contract	26.340	10.581	-
Description: The JAGM prime contractor will conduct qualification of the production line and deliver missiles to support Developmental and Limited User Testing (LUT). The prime contractor will support government-led activities to qualify the JAGM on the AH-64 Apache.			
FY 2016 Accomplishments: The JAGM prime contractor established subcontracts, procured hardware and initiated production of the JAGM missile on a pilot production line. Prime contractor supported government-led System Critical Design Review (CDR), initial Production Readiness Review (iPRR), System Test Readiness Review (TRR) and Production Qualification Testing (PQT) and integration on AH-64 Apache.			
FY 2017 Plans: The JAGM prime contractor develops, integrates and delivers tactical AURs for integrated test and evaluation on the Apache platform and supports Initial Operational Test and Evaluation (IOT&E). The prime contractor will also deliver hardware for safety tests and Explosive Ordnance Disposal (EOD) classroom system trainers.			
Title: System Critical Design Review (CDR)	5.522	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)	Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Description: System CDR occurs in the EMD phase. Assess the JAGM system final design as captured in product specifications. Ensures that each item in the product baseline has been captured in the detailed design documentation.</p> <p>FY 2016 Accomplishments: See next page</p> <p>The JAGM Product Office, with Independent Review Team oversight, successfully completed System CDR by verifying prime contractor design compliance to all performance requirements, including environmental conditions, missile and platform interfaces, reliability, and cyber security.</p>				
<p>Title: Engineering and Manufacturing Development (EMD) Qualification of JAGM and Apache Integration</p> <p>Description: The Government will conduct developmental testing and qualification of the JAGM system, including integration onto Apache AH-64 aircraft.</p> <p>FY 2016 Accomplishments: The JAGM Product Office and Other Government Agencies (OGAs) conducted warhead tests for lethality characterization and Live Fire Test and Evaluation (T&E) requirements; seeker performance through captive flight tests including countermeasures and hardware in the loop; completed missile flight tests from both ground launched and Army MQ-1C Unmanned Aerial Vehicle (UAV) launched resulting in 7 out of 7 successful missile test shots, Safety of Flight, platform integration laboratory testing for airworthiness and interface verification, and supported other platform integration. The data will support the Full Materiel Release process.</p> <p>FY 2017 Plans: The JAGM Product Office and OGAs will continue developmental T&E, Integrated T&E and Operational T&E to include warhead tests for Live Fire T&E requirements; Initial Operational Test and Evaluation (IOT&E); Aircraft and missile regression flight tests to demonstrate compatibility is maintained with legacy systems; and a Logistics Demonstration. The data will support System Evaluation, Milestone C and Full Materiel Release.</p> <p>FY 2018 Plans: The JAGM Product Office and OGAs will continue Developmental and Operational T&E using EMD hardware delivered from the prime contractor. The data will support System Evaluation, Milestone C, and Full Materiel Release.</p>		35.859	21.529	7.730
<p>Title: Systems Engineering and Milestone (MS) C Preparation</p> <p>Description: The JAGM Product Office will complete all documentation, conduct evaluations, reviews and analyses to support a FY 2017 MS C decision and exercise EMD Contract LRIP options.</p>		12.176	10.862	6.370

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)	Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>FY 2016 Accomplishments: The JAGM Product Office developed documents, conducted reviews, and performed analyses to support a MS C decision and contract options, and conducted systems engineering to support other platform integration.</p> <p>FY 2017 Plans: The JAGM Product Office takes delivery of missile and system trainers while conducting government testing and systems engineering (Lethality, Safety, Qualification, Airworthiness, Logistics Demonstration, IOT&E and Full Materiel Release). JAGM Product Office will continue to coordinate and staff all acquisition documents in support of a MS C decision, per DoD 5000.02 and AR 70-1 guidance.</p> <p>FY 2018 Plans: The program continues document development, government testing and systems engineering in support of a MS C decision.</p>			
<p>Title: Full Rate Production (FRP) Decision Preparation</p> <p>Description: The JAGM Product Office will confirm that JAGM is operable, safe to operate and logistically supportable.</p> <p>FY 2018 Plans: The JAGM Product will develop all FRP documentation, conduct review and perform analyses, and government testing to support a FRP decision.</p>	-	-	2.500
<p>Title: Post Milestone C Developmental, Integrated, and Operational Testing</p> <p>Description: The JAGM Product Office will demonstrate JAGM Operational Suitability and Effectiveness with AH-64.</p> <p>FY 2018 Plans: The JAGM Product Office and Other Government Agencies will complete Live Fire T&E, verify AH-64 software integration with JAGM Pilot Vehicle Interface (PVI) through captive carry and JAGM flight tests, regression flight tests, environmental and ground launch tests for Safety Release and Airworthiness Release, and Apache-launched flight tests in preparation for IOT&E, and support other platform integration.</p>	-	-	10.526
<p>Title: Apache AH-64 and JAGM Software Integration</p> <p>Description: Provides full JAGM capability on E-model Apaches.</p> <p>FY 2018 Plans:</p>	-	-	7.500

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / <i>Joint Air-to-Ground Missile (JAGM)</i>	Project (Number/Name) JA6 / <i>Joint Air-To-Ground Missile (JAGM)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Develop and provide Pilot-Vehicle interface (PVI) capability that is required for seamless JAGM integration on the Apache platform.			
Accomplishments/Planned Programs Subtotals	79.897	42.972	34.626

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• BLIN 005 (C70302A): <i>Joint Air-To-Ground Missile (JAGM) Procurement</i>	27.738	101.851	178.432	-	178.432	253.118	211.806	292.770	186.931	3,438.200	4,690.846
• 0605450N: Navy <i>JAGM Missile RDT&E</i>	25.640	17.880	14.791	-	14.791	6.969	0.124	0.150	0.153	0.000	65.707
• 0206138M: Navy <i>JAGM Missile Procurement</i>	-	26.200	26.126	-	26.126	24.267	24.262	49.713	50.708	1,303.300	1,504.576

Remarks

On Exhibit R-2A, Section B, under the two planned activities 1) Engineering and Manufacturing Development (EMD) Contract and Engineering and 2) Manufacturing Development (EMD) Qualification of JAGM and Apache Integration, the program office initially planned to conduct an Initial Operational Test & Evaluation (IOT&E) with FY 2017 RDT&E funding. As a result of hardware delays, the program office will now execute a Limited User Test (LUT) in 2018. The delay in contract award between Boeing and the Apache Project Office prevented the completion of a platform software update required to support IOT&E, which would provide the Pilot-Vehicle Interface (PVI) capability required for seamless JAGM integration with the Apache platform. The approved Milestone B Test & Evaluation Master Plan (TEMP) specified that the program manager, in agreement with the Army Test and Evaluation Command (ATEC), could transition the IOT&E to a LUT, if required; and convert the planned and funded Follow-On Test and Evaluation (FOT&E) event in FY 2019 to an IOT&E to support Full Materiel Release (FMR) and Full Rate Production (FRP) decisions. These changes have no impact on the missile design, production timelines, Initial Operating Capability (IOC) date, Low Rate Initial Production (LRIP), or any key program event. The same quantity of missiles will be available for each event with no schedule impact to milestones. Additionally, these funds will support integration with other platforms, as required.

On 17 March 2017, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) delegated Milestone Decision Authority (MDA) to the Secretary of the Army. Accordingly, the Acquisition Category (ACAT) designation for JAGM is now ACAT 1C.

D. Acquisition Strategy

The JAGM EMD acquisition approach outlines the plan to complete developmental testing to qualify the All Up Round (AUR) and the contractor production line, and to integrate JAGM on the U.S. Army AH-64 Apache. Advance Procurement of long lead items (HELLFIRE Romeo back ends and Guidance Section subsystems) occurs

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / <i>Joint Air-to-Ground Missile (JAGM)</i>	Project (Number/Name) JA6 / <i>Joint Air-To-Ground Missile (JAGM)</i>
in FY 2016 - FY 2017. This long lead procurement is needed to facilitate Low Rate Initial Production (LRIP) I and II, which is necessary to achieve Initial Operational Capability (IOC).		
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605450A / Joint Air-to-Ground Missile (JAGM)				JA6 / Joint Air-To-Ground Missile (JAGM)							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Eng/ Project Management	C/LH	Various : Performers	51.455	12.176	Oct 2015	10.862	Oct 2016	12.230	Oct 2017	-		12.230	0.000	86.723	0.000
Subtotal			51.455	12.176		10.862		12.230		-		12.230	0.000	86.723	0.000
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Prime Contract	C/FFP	TD : Prime Contract	371.319	-		-		-		-		-	0.000	371.319	0.000
Rocket Motor Insensitive Munition (IM) Qualification	C/CPFF	Defense Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	32.434	7.297	Jun 2016	-		-		-		-	0.000	39.731	0.000
Electro-Mechanical Control Actuator System (EMCAS)	C/CPFF	Defense Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	4.033	-		-		-		-		-	0.000	4.033	0.000
Integrated Warhead	C/CPFF	Defense Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	2.982	-		-		-		-		-	0.000	2.982	0.000
EMD Long Lead Contract (Backends)	SS/FFP	Lockheed Martin : Orlando, FL	8.082	-		-		-		-		-	0.000	8.082	0.000
Development Engineering	C/LH	Various : Performers	21.648	-		-		-		-		-	0.000	21.648	0.000
EMD Prime Contract	C/FPIF	Lockheed Martin : Orlando, Florida	45.317	19.043	Apr 2016	10.581	Sep 2017	-		-		-	0.000	74.941	0.000
Apache Indefinite Delivery/ Indefinite Quantity (IDIQ) Contract	C/CPFF	Boeing Company : Mesa, AZ	1.100	6.800	Mar 2016	-		7.500	Apr 2018	-		7.500	0.000	15.400	0.000
Subtotal			486.915	33.140		10.581		7.500		-		7.500	0.000	538.136	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)	Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)
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Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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
 As a result of hardware delays, the JAGM Milestone C incurred a delay from 4QFY 2017 to 3QFY 2018. Given the FPI(F) contract type, Lockheed Martin will be responsible for all overrun contract costs associated with the EMD Prime Contract. As a result of negotiations, the period of performance was extended from 31 July 2017 to 31 July 2018.

(C / FFP) - Competitive/Firm Fixed Price
 (C / CPFF) - Competitive/Cost-Plus Fixed Fee
 (C / LH) - Competitive/Labor Hour
 (SS / FFP) - Sole Source/Firm Fixed Price
 (C / FPIF) - Competitive/Fixed Price Incentive (Firm Target)

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Gov Agencies	C/LH	Various : Performers	46.278	34.581	Nov 2016	21.529	Nov 2017	14.896	Nov 2018	-		14.896	0.000	117.284	0.000
Subtotal			46.278	34.581		21.529		14.896		-		14.896	0.000	117.284	0.000

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals			584.648	79.897		42.972		34.626		-		34.626	0.000	742.143	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)	Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) CDR - All Up Round	▲																											
EMD																												
Army System & Integration Testing																												
(2) Limited User Testing (LUT)																												
(3) MS C Decision																												
(4) Initial Operational Test & Evaluation (IOT&E)																												
(5) Full Rate Production (FRP) Decision																												
Software Upgrade Against Emerging Threats																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / <i>Joint Air-to-Ground Missile (JAGM)</i>	Project (Number/Name) JA6 / <i>Joint Air-To-Ground Missile (JAGM)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CDR - All Up Round	2	2016	2	2016
EMD	4	2015	3	2018
Army System & Integration Testing	4	2015	3	2018
Limited User Testing (LUT)	2	2018	2	2018
MS C Decision	3	2018	3	2018
Initial Operational Test & Evaluation (IOT&E)	2	2019	2	2019
Full Rate Production (FRP) Decision	4	2019	4	2019
Software Upgrade Against Emerging Threats	1	2020	4	2039

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605456A / PAC-3/MSE Missile
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	2.201	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.201
PA3: PAC-3/MSE Missile	-	2.201	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.201

Note

Realigned requirements not unique to MSE to PE 0205456A EF9 in FY15.

A. Mission Description and Budget Item Justification

This system is an integral part of the overall Air and Missile Defense (AMD) architecture and enables the incremental fielding of the system capability for Army Air and Missile Defense Battalions.

The PAC-3 Missile Segment Enhancement (MSE) is the latest version of the PAC-3 Missile. It provides a more agile and lethal interceptor that increases the engagement envelope/defended area of the PATRIOT System. Both Live Fire Test and Evaluation (LFT&E) and Initial Operational Test & Evaluation (IOT&E) activities are required to be executed during Low Rate Initial Production (LRIP) in support of the planned Full Rate Production (FRP) decision. As software and hardware improvements are developed there is a continuing need for system level modeling, simulations, and tests. Modeling and Simulation allow for performance assessment against all threats that would not be possible in flight tests due to cost, target, and range constraints. Flight testing is periodically required for validation of the Modeling and Simulation as well as satisfying Army Test & Evaluation Command/Director, Operational Test & Evaluation (ATEC/DOTE) requirements.

There is no funding in FY18.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	2.272	0.000	0.000	-	0.000
Current President's Budget	2.201	0.000	0.000	-	0.000
Total Adjustments	-0.071	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.071	-			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605456A / PAC-3/MSE Missile				Project (Number/Name) PA3 / PAC-3/MSE Missile			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
PA3: PAC-3/MSE Missile	-	2.201	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.201
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Missile Segment Enhancement (MSE) is the latest version of the PAC-3 Missile. It provides a more agile and lethal interceptor that increases the engagement envelope/defended area of the PATRIOT System. Both LFT&E and IOT&E activities are required to be executed during Low Rate Initial Production (LRIP) in support of the planned Full Rate Production (FRP) decision. As software and hardware improvements are developed there is a continuing need for system level modeling, simulations, and tests. Modeling and Simulation allow for performance assessment against all threats that would not be possible in flight tests due to cost, target and range constraints. Flight testing is periodically required for validation of Modeling and Simulation as well as satisfying ATEC/DOTE requirements.

PATRIOT is an integral part of the overall Air and Missile Defense (AMD) Architecture and enables the incremental fielding of the system capability for Army Air and Missile Defense Battalions.

There is no funding in FY18.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Testing, Targets, and Modeling and Simulation	2.201	-	-	-	-
Description: Funding is provided for the following efforts					
FY 2016 Accomplishments: Continues execution of LFT&E and flight test activities in support of the Test and Evaluation Master Plan (TEMP).					
Accomplishments/Planned Programs Subtotals	2.201	-	-	-	-

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SSN C53101: SSN C53101, MSE Missile	514.946	423.201	459.040	-	459.040	496.109	524.489	516.913	524.934	Continuing	Continuing
• SSN C50016: SSN C50016, Lower-Tier Air and Missile Defense (AMD)	130.275	126.470	125.126	-	125.126	114.061	144.243	119.282	121.825	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605456A / PAC-3/MSE Missile	Project (Number/Name) PA3 / PAC-3/MSE Missile
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PE 0205456: PE 0205456, Proj EF9, System Integration and Test	61.653	70.547	78.922	-	78.922	80.308	95.214	112.607	123.000	Continuing	Continuing
• PE 0604319A: PE 0604319A, Proj DU3, IFPC2, (FY12 PE 0603305A IFPC II - Intercept)	149.222	-	11.300	-	11.300	52.600	149.300	134.800	139.500	Continuing	Continuing
• SSN C62002: SSN C62002, IFPC Inc 2-I Block 1 Missile	-	-	57.742	-	57.742	157.406	144.740	100.400	14.600	Continuing	Continuing
• SSN C62001: SSN C62001, IFPC Inc 2-I Block 1 System	-	19.319	26.589	-	26.589	71.947	191.830	315.025	277.500	Continuing	Continuing
• PE 0604820A: PE 0604820A, Proj E10, SENTINEL	11.821	17.152	25.968	-	25.968	31.761	51.897	72.562	81.351	Continuing	Continuing
• PE 0605457A: PE 0605457A, Proj S40 Army Integrated Air and Missile Defense (AIAMD)	222.074	225.769	163.440	-	163.440	147.440	32.743	34.254	34.800	Continuing	Continuing
• SSN BZ5075: SSN BZ5075, IAMD Battle Command System (IBCS)	20.917	204.513	282.502	-	282.502	371.021	437.607	445.020	516.670	Continuing	Continuing
• PE 0604741A: PE 0604741A, Proj 126,146,149, Air Defense C2I Eng Dev	33.619	27.131	28.724	-	28.724	28.318	14.638	8.674	-	0.000	141.104
• SSN AD50700: SSN AD50700; Air & Missile Defense Planning & Control Sys	28.176	25.443	17.005	9.100	26.105	17.960	6.366	6.951	-	0.000	111.001
• PE 0202429A: PE 0202429A Proj EP8 JLENS COCOM EXERCISE	10.171	46.371	6.746	-	6.746	-	-	-	-	0.000	63.288
• SSN C62004: SSN C62004, IFPC Inc 2-I Block 2 Missile	-	-	-	-	-	-	-	-	12.300	Continuing	Continuing
• PE 0605457A: PE 0605457A, Proj DU4; Advanced Electronic Protection Enhancements	-	-	23.165	-	23.165	25.010	26.719	26.218	26.500	Continuing	Continuing
• PE 0604114A: PE 0604114A, Proj EX2; Lower Tier Air Missile Defense (LTAMD) Capability	-	-	92.428	-	92.428	78.188	86.395	113.485	141.000	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605456A / PAC-3/MSE Missile	Project (Number/Name) PA3 / PAC-3/MSE Missile
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2016	FY 2017	<u>FY 2018</u> Base	<u>FY 2018</u> OCO	<u>FY 2018</u> Total	FY 2019	FY 2020	FY 2021	FY 2022	<u>Cost To</u> Complete	<u>Total Cost</u>
• PE 0605052A: PE 0605052A, Proj EY7; IFPC Increment 2 - Block1	-	-	128.580	-	128.580	93.100	52.300	24.700	-	Continuing	Continuing

Remarks

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

D. Acquisition Strategy

The design objective of the PATRIOT system is to provide an element of an Integrated Air and Missile Defense System capable of being modified to cope with the evolving threat. This strategy minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems. PAC-3 system development efforts further improve system capabilities against emerging and reactive threats. The PAC-3 Missile Program focuses on developing, fabricating and testing the high velocity, hit to kill, surface to air missile and associated ground support equipment to provide essential increases in battle space, accuracy, lethality and firepower to counter and destroy evolving air defense threats. The missile performance is demonstrated through a series of flight tests and modeling and simulation activities. The PAC-3 / MSE program evolves the PAC-3 system providing extended ranges, insensitive munitions enhancements, and greater logistical flexibility. The PAC-3 MSE will be fielded to U.S. PATRIOT units.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	222.074	272.811	336.420	-	336.420	290.250	190.600	117.470	64.510	Continuing	Continuing
S40: Army Integrated Air and Missile Defense	-	222.074	272.811	336.420	-	336.420	290.250	190.600	117.470	64.510	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Army Integrated Air and Missile Defense (AIAMD) program is a designated Major Defense Acquisition Program (MDAP).

The AIAMD program is a direct response to the U.S. Army Air and Missile Defense (AMD) Concept and Operational and Organizational (O&O) Plan for the Future Force, the AIAMD System of Systems (SoS) Capabilities Development Document (CDD) and the new Air and Missile Defense Task Force Concept of Operations (CONOPS). The AIAMD Program is uniquely structured to enable the development of an overarching SoS capability with all participating Air Defense Artillery (ADA) components functioning interdependently to provide total operational capabilities not achievable by the individual element systems. The AIAMD program achieves this objective by establishing the AIAMD architecture and developing (1) the IAMD Battle Command Systems (IBCS) Engagement Operations Center (EOC) that provides the common Mission Command capability, (2) the Integrated Fire Control Network (IFCN) capability for fire control connectivity and distributed operations, and (3) the common Plug and Fight (P&F) Kits that network enable multiple sensor components, weapon components, and the IBCS EOC.

The AIAMD Program will provide advanced capabilities to the Army and the soldier by allowing transformation to a network-centric system-of-systems capability (also referred to as "Plug and Fight") that integrates AMD sensors and weapons with the IBCS EOC. The AIAMD SoS architecture will enable extended range and non-line-of-sight engagements, to include joint kill chain engagements across the full spectrum of aerial threats, providing fire control quality data to the most appropriate weapon to complete the mission successfully. Further, it will mitigate the coverage gaps and the single points of failure that have plagued AMD defense design in the past. The AIAMD program will provide the user with the ability to train on a single command and control (C2) system that will result in overall training savings. The AIAMD program will also provide the Army with the ability to procure components that will build to established interfaces allowing them to "connect" to the IFCN alleviating the cost of procuring total system capabilities in the future.

Funding in FY18 will provide for continuation of software development and developmental test phase activities, to include production representative equipment required for testing. The production representative equipment will consist of a Patriot battalions worth of equipment and assets to support IFPC Initial Operational Test and Evaluation (IOT&E), as well as lab hardware upgrades, developmental test support, and PDB-8 software convergence with AIAMD.

Fielding of the IBCS is the Army Air Defense Artillery User's number one priority. The AIAMD Initial Operational Capability (IOC) will be delivered through fielding of the IBCS EOC-based AIAMD architecture including the IBCS EOC, Sentinel, and Patriot components connected via an IFCN, working in an integrated manner. Additional capabilities include the incorporation of IBCS functionality into Air Defense Airspace Management (ADAM) Cells, ADA Brigade Headquarters and Army Air and Missile Defense Command (AAMDC) Headquarters. Future additional capabilities include incorporation of Terminal High Altitude Air Defense (THAAD) batteries and Indirect Fire Protection Capability (IFPC) components into the AIAMD architecture.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605457A / <i>Army Integrated Air and Missile Defense (AIAMD)</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	222.075	252.811	169.070	-	169.070
Current President's Budget	222.074	272.811	336.420	-	336.420
Total Adjustments	-0.001	20.000	167.350	-	167.350
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	20.000	167.350	-	167.350
• Other Adjustments 1	-0.001	0.000	0.000	-	0.000

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

Project: S40: *Army Integrated Air and Missile Defense*

Congressional Add: *Product Development - Cyber Security*

	FY 2016	FY 2017
	8.000	-
Congressional Add Subtotals for Project: S40	8.000	-
Congressional Add Totals for all Projects	8.000	-

Change Summary Explanation

FY17 Base funding increase in the amount of \$20.000 Million supports additional testing required to achieve MS C decision.

FY18 Base funding increase in the amount of \$167.350 Million provides necessary resources for continuing software development and hardware, to include production representative hardware required for test.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605457A / <i>Army Integrated Air and Missile Defense (AIAMD)</i>				Project (Number/Name) S40 / <i>Army Integrated Air and Missile Defense</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
<i>S40: Army Integrated Air and Missile Defense</i>	-	222.074	272.811	336.420	-	336.420	290.250	190.600	117.470	64.510	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Army Integrated Air and Missile Defense (AIAMD) Program is a direct response to the U.S. Army Air and Missile Defense (AMD) Concept and Operational and Organizational (O&O) Plan for the Future Force, the AIAMD System of Systems (SoS) Capabilities Development Document (CDD) and the new Air and Missile Defense Task Force Concept of Operations (CONOPS). The AIAMD Program is uniquely structured to enable the development of an overarching SoS capability with all participating Air Defense Artillery (ADA) components functioning interdependently to provide total operational capabilities not achievable by the individual element systems. The AIAMD program achieves this objective by establishing the AIAMD architecture and developing (1) the IAMD Battle Command Systems (IBCS) Engagement Operations Center (EOC) that provides the common Mission Command capability, (2) the Integrated Fire Control Network (IFCN) capability for fire control connectivity and distributed operations, and (3) the common Plug and Fight (P&F) Kits that network enable multiple sensor components, weapon components, and the IBCS EOC.

The AIAMD Program will provide advanced capabilities to the Army and the soldier by allowing transformation to a network-centric system-of-systems capability (also referred to as "Plug and Fight") that integrates AMD sensors and weapons with the IBCS EOC. The AIAMD SoS architecture will enable extended range and non-line-of-sight engagements, to include joint kill chain engagements across the full spectrum of aerial threats, providing fire control quality data to the most appropriate weapon to complete the mission successfully. Further, it will mitigate the coverage gaps and the single points of failure that have plagued AMD defense design in the past. The AIAMD program will provide the user with the ability to train on a single command and control (C2) system that will result in overall training savings. The AIAMD program will also provide the Army with the ability to procure components that will build to established interfaces allowing them to "connect" to the IFCN alleviating the cost of procuring total system capabilities in the future.

Funding in FY18 will provide for continuation of software development and developmental test phase activities, to include production representative equipment required for testing. The production representative equipment will consist of a Patriot battalions worth of equipment and assets to support IFPC Initial Operational Test and Evaluation (IOT&E), as well as lab hardware upgrades, developmental test support, and PDB-8 software convergence with AIAMD.

Fielding of the IBCS is the Army Air Defense Artillery User's number one priority. The AIAMD Initial Operational Capability (IOC) will be delivered through fielding of the IBCS EOC-based AIAMD architecture including the IBCS EOC, Sentinel, and Patriot components connected via an IFCN, working in an integrated manner. Additional capabilities include the incorporation of IBCS functionality into Air Defense Airspace Management (ADAM) Cells, ADA Brigade Headquarters and Army Air and Missile Defense Command (AAMDC) Headquarters. Future additional capabilities include incorporation of Terminal High Altitude Air Defense (THAAD) batteries and Indirect Fire Protection Capability (IFPC) components into the AIAMD architecture.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)	Project (Number/Name) S40 / Army Integrated Air and Missile Defense			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Title: Product Development</p> <p>Description: Funding is provided for the following effort</p> <p>FY 2016 Accomplishments: Conduct of EMD Flight Tests and Limited User Test (LUT) activities, Program Readiness Review, and risk reduction test.</p> <p>FY 2017 Plans: Product development in support of developmental test activities, and ongoing risk reduction test.</p> <p>FY 2018 Base Plans: Product development in support of the continuation of software development and developmental test activities, and ongoing risk reduction test.</p>	154.307	199.250	262.891	-	262.891
<p>Title: Government Program Management</p> <p>Description: Funding is provided for the following effort</p> <p>FY 2016 Accomplishments: Development of the P&F kits, IFCN, Modeling and Simulation. Other contracts and OGAs in support of the EMD Developmental Test activities, LUT / HWIL, Customer Test, and risk reduction test.</p> <p>FY 2017 Plans: Government Program Management in support of developing the P&F kits, IFCN, and Modeling and Simulation. Other contracts and OGAs in support of the EMD Developmental Test activities, preparation and conduct of flight tests, and ongoing risk reduction test.</p> <p>FY 2018 Base Plans: Conduct of developmental test activities and ongoing risk reduction test.</p>	4.568	4.685	4.853	-	4.853
<p>Title: Test and Evaluation</p> <p>Description: Funding is provided for the following effort</p> <p>FY 2016 Accomplishments: Modeling and Simulation, Joint Interoperability Test Support, Army Evaluation Center/Developmental Test Command/Operational Test Command support and White Sands Missile Range Test Support for EMD</p>	55.199	68.876	68.676	-	68.676

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)	Project (Number/Name) S40 / Army Integrated Air and Missile Defense
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Developmental Test activities including preparation and conduct of flight tests. Also provides for Customer Test, LUT / HWIL, ongoing risk reduction test, and target preparation. FY 2017 Plans: Provides for Modeling and Simulation, Joint Interoperability Test Support, Army Evaluation Center/ Developmental Test Command/Operational Test Command support and White Sands Missile Range Test Support for developmental test activities including preparation and conduct of flight tests. FY 2018 Base Plans: Modeling and Simulation, Joint Interoperability Test Support, Army Evaluation Center/Developmental Test Command/Operational Test Command support and White Sands Missile Range Test Support for developmental test activities.					
Accomplishments/Planned Programs Subtotals	214.074	272.811	336.420	-	336.420
	FY 2016	FY 2017			
Congressional Add: Product Development - Cyber Security	8.000	-			
FY 2016 Accomplishments: Cybersecurity research					
Congressional Adds Subtotals	8.000	-			

C. Other Program Funding Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PE 0605456A, Project PA3: PE 0605456A, Project PA3, PAC- 3/MSE Missile	2.201	-	-	-	-	-	-	-	-	0.000	2.201
• SSN C53101: SSN C53101, MSE Missile	514.946	702.201	459.040	-	459.040	499.915	540.669	523.413	524.934	Continuing	Continuing
• PE 0205456, Project EF9: PE 0205456, Project EF9, System Integration and Test	61.653	73.417	78.926	-	78.926	80.314	109.222	112.614	123.007	Continuing	Continuing
• PE 0604114A, Project EX2: PE 0604114A, Project EX2,	-	35.132	76.728	-	76.728	67.088	83.195	114.185	142.000	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)	Project (Number/Name) S40 / Army Integrated Air and Missile Defense
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
<i>Lower Tier Air and Missile Defense (LTAMD) Capability</i>											
• SSN C50016: SSN C50016, Lower Tier Air and Missile Defense (AMD)	130.275	126.470	140.826	-	140.826	125.161	144.243	119.282	121.825	Continuing	Continuing
• PE 0604319A, Proj DU3: PE 0604319A, Proj DU3, IFPC2 (FY12 PE0603305A IFPC II- Intercept)	149.222	-	31.303	-	31.303	52.604	239.305	259.804	316.104	Continuing	Continuing
• PE 0605052A, Project EY7: PE 0605052A, Project EY7, IFPC Increment 2 - Block 1	-	83.995	175.069	-	175.069	149.506	52.300	24.700	-	Continuing	Continuing
• SSN C62002: SSN C62002, IFPC Inc 2-1 Block 1 System	-	19.319	-	-	-	31.641	191.830	315.025	277.500	Continuing	Continuing
• SSN C62001: SSN C62001, IFPC INC 2-1 Block 1 Missile	-	-	57.742	-	57.742	157.406	144.740	100.400	14.600	Continuing	Continuing
• PE 0604820A, Proj E10: PE 0604820A, Proj E10, SENTINEL	11.821	15.983	32.968	-	32.968	31.761	51.897	72.562	81.351	Continuing	Continuing
• SSN BZ5075: SSN BZ5075, Army IAMD Battle Command System (IBCS)	20.917	204.969	-	-	-	-	326.928	387.026	513.464	Continuing	Continuing
• PE 0604741A, Proj 146, 149: PE 0604741A, Proj 146, 149, Air Defense C2I Eng Dev	33.619	44.456	28.786	-	28.786	28.320	14.638	8.674	-	Continuing	Continuing
• SSN AD50700: SSN AD50700, AIR & MSL Defense Planning & Control Sys	28.176	126.539	26.635	24.100	50.735	17.960	6.366	32.397	-	Continuing	Continuing
• SSN C62004: SSN C62004, IFPC Inc 2-1 Block 2 Missile	-	-	-	-	-	-	-	-	12.300	Continuing	Continuing

Remarks
 This program is an integral part of the Army Integrated Air and Missile Defense (AIAMD) architecture. It provides for development of a common Mission Command (MC) through an open architecture approach allowing for integration of Air Defense Artillery (ADA) components as they become available. This approach enables the AIAMD program to pursue its baseline program independent of fluctuation of other programs.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)	Project (Number/Name) S40 / Army Integrated Air and Missile Defense

D. Acquisition Strategy

The AIAMD acquisition strategy is to deliver an Initial Operational Capability (IOC) in FY22. The capabilities are delivered through the fielding of the IAMD Battle Command System (IBCS) Engagement Operations Center (EOC)-based AIAMD architecture including the IBCS EOC, Sentinel, and Patriot (through a Radar Interface Unit (RIU)) components connected via an Integrated Fire Control Network (IFCN), working in an integrated manner. Additional capabilities include the incorporation of IBCS functionality into Air Defense Airspace Management (ADAM) Cells, ADA Brigade Headquarters and Army Air and Missile Defense Command (AAMDC) Headquarters. Future additional capabilities include incorporation of Terminal High Altitude Area Defense (THAAD) batteries and other Army and Joint net-centric architectures to ensure compatibility.

Key principles of the AIAMD acquisition approach are the following:

- Migrate from system-based acquisition to component-based acquisition
- Use system-of-systems acquisition approach with collaboration among AIAMD, PEO MS, PEO C3T, and Brigade Combat Team (BCT) Modernization Component Project Offices, Missile Defense Agency (MDA), and other Service Project Offices to network enable weapons and sensor components
- Develop and procure common Army IAMD Battle Command System (IBCS) Engagement Operations Center (EOC) that replaces seven weapon system unique Battle Management Command, Control, Communications, Computers and Intelligence (BMC4I) components
- Establish product lines used to evaluate and select, modify and integrate modular open systems hardware (HW) and software (SW) common configuration items
- Conduct architecture-based System Engineering, Integration and Test (SEI&T) activities for an incremental fielded configuration of the AIAMD Integrated Fire Control (IFC) Network-compatible IBCS EOC, weapons and sensor system components

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)				S40 / Army Integrated Air and Missile Defense							
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Program Management	MIPR	Various : Huntsville, AL	22.816	4.568	Oct 2015	4.685	Oct 2016	4.853	Oct 2017	-		4.853	Continuing	Continuing	Continuing
Subtotal			22.816	4.568		4.685		4.853		-		4.853	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Space and Missile Defense (ASMD) System of Systems (SOS) Hardware-in-the- Loop Testbed	C/CPFF	Various : Huntsville, AL and multiple other locations	17.697	-		-		-		-		-	0.000	17.697	0.000
AIAMD System Engineering & Integration	C/CPFF	Various : Huntsville, AL	97.987	26.716		28.115		32.964	Oct 2017	-		32.964	Continuing	Continuing	Continuing
IAMD Engineering Manufacturing and Development	C/CPIF	Northrop Grumman, Raytheon and Other : Huntsville, AL and Various other locations	870.290	111.093		146.632		207.163	Oct 2017	-		207.163	Continuing	Continuing	Continuing
Government Furnished Equipment	TBD	Various : Multiple	16.410	2.079		8.478		7.482	Oct 2017	-		7.482	Continuing	Continuing	Continuing
Government Systems Engineering and Logistics	TBD	Various : Huntsville, AL	43.393	14.419		16.025		15.282	Oct 2017	-		15.282	Continuing	Continuing	Continuing
Advanced Electronic Protection Enhancement (AEPE)	TBD	Various : TBD	21.000	-		-		-		-		-	0.000	21.000	0.000
Cyber Security	TBD	Huntsville, AL : TBD	15.000	8.000		-		-		-		-	0.000	23.000	0.000
Subtotal			1,081.777	162.307		199.250		262.891		-		262.891	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)				Project (Number/Name) S40 / Army Integrated Air and Missile Defense							
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Evaluation Center/ Developmental Test Command/Operational Test Command	TBD	Various : Multiple Locations	10.904	17.143		20.173		17.645	Oct 2017	-		17.645	Continuing	Continuing	Continuing
Modeling & Sim/Joint Interoperability Test Spt	MIPR	SED : Huntsville, AL	106.477	27.014		37.418		36.816	Oct 2017	-		36.816	Continuing	Continuing	Continuing
Range Support	TBD	WSMR : White Sands, NM	26.083	11.042		11.285		14.215	Oct 2017	-		14.215	Continuing	Continuing	Continuing
Subtotal			143.464	55.199		68.876		68.676		-		68.676	-	-	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			1,248.057	222.074		272.811		336.420		-		336.420	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)	Project (Number/Name) S40 / Army Integrated Air and Missile Defense
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Modeling and Simulation																												
EMD Developmental Test																												
EMD Continuation																												
(1) Product Readiness Review (PRR)																												
(2) Milestone C (MS C) Decision																												
Initial Operational T&E/Hardware in the Loop (HWIL)																												
(3) Initial Operational Capability (IOC)																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / <i>Army Integrated Air and Missile Defense (AIAMD)</i>	Project (Number/Name) S40 / <i>Army Integrated Air and Missile Defense</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Modeling and Simulation	1	2013	4	2022
EMD Developmental Test	4	2014	4	2019
EMD Continuation	1	2016	4	2020
Product Readiness Review (PRR)	4	2016	4	2016
Milestone C (MS C) Decision	4	2020	4	2020
Initial Operational T&E/Hardware in the Loop (HWIL)	4	2020	2	2022
Initial Operational Capability (IOC)	3	2022	3	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605625A / Manned Ground Vehicle
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	37.692	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	37.692
FC8: BCT Ground Combat Vehicle	-	37.692	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	37.692

A. Mission Description and Budget Item Justification

Fiscal constraints and competing demands during budget uncertainty forced the Army to make hard choices between near term readiness and modernizing current systems to meet near term capability gaps and developing the Ground Combat Vehicle (GCV). The Army concluded it was not the right time to develop the GCV and ended the program upon completion of the Technology Development (TD) phase in June 2014. The Army has benefited from investment in the GCV program and will use the insights gained to inform technology maturation efforts in support of a strategy for the Army's Future Fighting Vehicle (FFV) modernization program.

Although the GCV program ended at the conclusion of the TD phase, the Army still maintains their requirement to fully modernize their fleet of ground combat vehicles. The FFV program will continue to leverage information and insights gained from the GCV TD phase to allow the Army to make better informed decisions in the future regarding their Combat Vehicle Portfolio. The main goals of the FFV program are to conduct technical, cost, and risk assessments against selected capability trades and future technologies for a FFV system.

Funding is not provided for the FFV Program in FY 2018.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	39.247	0.000	0.000	-	0.000
Current President's Budget	37.692	0.000	0.000	-	0.000
Total Adjustments	-1.555	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.555	-			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605625A / <i>Manned Ground Vehicle</i>				Project (Number/Name) FC8 / <i>BCT Ground Combat Vehicle</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FC8: <i>BCT Ground Combat Vehicle</i>	-	37.692	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	37.692
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Fiscal constraints and competing demands during budget uncertainty forced the Army to make hard choices between near term readiness and modernizing current systems to meet near term capability gaps and developing the Ground Combat Vehicle (GCV). The Army concluded it was not the right time to develop the GCV and ended the program upon completion of the Technology Development (TD) phase in June 2014. The Army has benefited from investment in the GCV program and will use the insights gained to inform technology maturation efforts in support of a strategy for the Army's Future Fighting Vehicle (FFV) modernization program.

Although the GCV program ended at the conclusion of the TD phase, the Army still maintains their requirement to fully modernize their fleet of ground combat vehicles. The FFV program will continue to leverage information and insights gained from the GCV TD phase to allow the Army to make better informed decisions in the future regarding their Combat Vehicle Portfolio. The main goals of the FFV program are to conduct technical, cost, and risk assessments against selected capability trades and future technologies for a FFV system.

Funding is not provided for the FFV Program in FY 2018.

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

	FY 2016	FY 2017	FY 2018
<p>Title: Government System Engineering & Program Management</p> <p>Description: Provides for basic Government oversight of the Ground Combat Vehicle (GCV) and Future Fighting Vehicle (FFV) programs. Includes funding for government personnel (labor, travel, training, supplies) and other support (other government agencies, support contractors, automated data processing, communications, and equipment).</p> <p>FY 2016 Accomplishments: The Project Management team continued to provide oversight to planned contract efforts. The contract efforts were focused on advanced concept development, technology risk reduction, and integration of S&T developed components. The Government Future Fighting Vehicle (FFV) team was also lead, integrate, and collaborate across technical and analytical efforts with the S&T and Requirements communities.</p>	9.247	-	-
<p>Title: Contractor Systems Engineering/Program Management</p> <p>Description: Provides for contractor basic development, engineering, and management for the GCV and FFV prime contracts, less prototype hardware and software development (which are captured in the following sections). Includes material consumed in support of component level engineering efforts.</p>	28.445	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605625A / <i>Manned Ground Vehicle</i>	Project (Number/Name) FC8 / <i>BCT Ground Combat Vehicle</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p><i>FY 2016 Accomplishments:</i> Contractors conducted concept development work and subsystem risk reduction, in collaboration with planned S&T efforts. Concept development effort was initially evolved from the design concepts developed under the GCV TD phase and resulted in development and delivery of concept data packages that include: 3 dimensional/Computer Aided Design (CAD) model representations, bill of materials, product structure / weight tape / power and energy balance, and cost estimate. In addition, a variety of technical and operational analyses and trades were completed.</p>			
Accomplishments/Planned Programs Subtotals	37.692	-	-

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

N/A

Remarks

D. Acquisition Strategy

The Army continued to engage with the prime contractors from the Ground Combat Vehicle (GCV) Technology Development (TD) Phase, to conduct system level trade studies and integrated assessments using their designs relative to a new Future Fighting Vehicle (FFV). In addition, the contractors were performed design excursions based on the Bradley Fighting Vehicle. The data provided will be utilized by the Army to determine if the acquisition of a new FFV is the preferred choice over a modification to existing Fighting Vehicles.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605626A / <i>Aerial Common Sensor</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.002	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.002
AC5: <i>Enhanced Medium Alt Recon Surv Sys</i>	-	0.002	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.002

Note

The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) Research, Development, Test, and Evaluation (RDTE) funding line contains funding for Airborne Reconnaissance Low - Enhanced (ARL-E) in Fiscal Year (FY) 2015 (\$10.174 million). The remaining funds will go towards Interim Contractor Logistics Support (ICLS) and test support for the EMARSS Variants: EMARSS-G (Constant Hawk & Tactical Operations (TACOP) Light Imaging Detection and Ranging (LiDAR)); EMARSS-V (Vehicle and Dismounted Exploitation Radar (VaDER)); EMARSS-M (Liberty Project Aircraft (LPA)); and EMARSS-S Engineering and Manufacturing Development (EMD) systems.

For FY16 and beyond, the EMARSS RDTE funding line continues on 375206EH3.

For FY16 and beyond, the ARL-E RDTE funding line continues on 375206EH5.

A. Mission Description and Budget Item Justification

The EMARSS is the Army's next generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. EMARSS provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS aircraft will be assigned to the U.S. Army Intelligence and Security Command's (INSCOM) Aerial Exploitation Battalions (AEB). EMARSS is an improvement over the existing Medium Altitude Reconnaissance and Surveillance System Quick Reaction Capability (MARSS QRC) in that it hosts an on board Distributed Common Ground System - Army (DCGS-A) capability, improved satellite communications, improved aircraft performance, and life cycle logistics sustainment capability.

EMARSS will consist of a commercial derivative aircraft equipped with an Electro-optical/Infrared (EO/IR) sensor with Full Motion Video (FMV), a Communications Intelligence (COMINT) collection system, an Aerial Precision Geolocation (APG) system, tactical line-of-site (LOS) and beyond line-of-site (BLOS) communications suite, two DCGS-A enabled operator workstations and a self-protection suite. EMARSS is built to allow future capabilities to be integrated on platform with the addition of a third carry-on workstation.

EMARSS will operate in direct support of tactical missions. EMARSS, integrating elements of the DCGS-A, will provide efficient response to Combat Forces with Intelligence, Surveillance and Reconnaissance (ISR) tasking.

The EMARSS funding line contains funding for the ARL-E program. ARL-E supports the Aerial ISR 2020 Strategy which recommended replacement of the current Airborne Reconnaissance Low Multifunction (ARL-M) and migrates the current ARL sensors plus new niche sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. ARL-E procures the hardware, software, and infrastructure to rapidly install sensors which support a rapid plug and play, quick connect/disconnect, mounting system to allow the installation of various combinations of sensor-types in support of a wide-range of theater operations. The sensor suite will

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0605626A / <i>Aerial Common Sensor</i>
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consist of a COMINT subsystem capable of supporting theater net centric geo-location efforts, High Definition Full Motion Video (FMV); Improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar capability and updated mission workstations, as well as radio and data/communications architecture. ARL-E will leverage existing sensors as well as integrating and installing niche sensors to augment current capabilities. Niche capabilities include Wide Area Aerial Surveillance (WAAS), LIDAR, and Hyper Spectral Imaging (HSI) sensors.

B. Program Change Summary (\$ in Millions)	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.002	0.000	0.000	-	0.000
Current President's Budget	0.002	0.000	0.000	-	0.000
Total Adjustments	0.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605626A / <i>Aerial Common Sensor</i>				Project (Number/Name) <i>AC5 / Enhanced Medium Alt Recon Surv Sys</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
<i>AC5: Enhanced Medium Alt Recon Surv Sys</i>	-	0.002	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.002
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) Research, Development, Test, and Evaluation (RDTE) funding line contains funding for Airborne Reconnaissance Low - Enhanced (ARL-E) in Fiscal Year (FY) 2015 (\$10.174 million). The remaining funds will go towards Interim Contractor Logistics Support (ICLS) and test support for the EMARSS Variants: EMARSS-G (Constant Hawk & Tactical Operations (TACOP) Light Imaging Detection and Ranging (LiDAR)); EMARSS-V (Vehicle and Dismounted Exploitation Radar (VaDER)); EMARSS-M (Liberty Project Aircraft (LPA)); and EMARSS-S Engineering and Manufacturing Development (EMD) systems.

For FY16 and beyond, the EMARSS RDTE funding line continues on 375206EH3.
 For FY16 and beyond, the ARL-E RDTE funding line continues on 375206EH5.

A. Mission Description and Budget Item Justification

The EMARSS is the Army's next generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. EMARSS provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS aircraft will be assigned to the U.S. Army Intelligence and Security Command's (INSCOM) Aerial Exploitation Battalions (AEB). EMARSS is an improvement over the existing Medium Altitude Reconnaissance and Surveillance System Quick Reaction Capability (MARSS QRC) in that it hosts an on board Distributed Common Ground System - Army (DCGS-A) capability, improved satellite communications, improved aircraft performance, and life cycle logistics sustainment capability.

EMARSS Payloads will consist of Mission Equipment Packages (MEP) and Processing Exploitation & Dissemination commercial derivative equipment such as, an Electro-optical/Infrared (EO/IR) sensor with Full Motion Video (FMV), a Communications Intelligence (COMINT) collection system, an Aerial Precision Geolocation (APG) system, tactical line-of-site (LOS) and beyond line-of-site (BLOS) communications suite, two DCGS-A enabled operator workstations and a self-protection suite. Payloads integrated on platforms will include: niche capabilities such as Wide Area Aerial Surveillance (WAAS), LiDAR and improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar capability.

EMARSS will operate in direct support of tactical missions. EMARSS, integrating elements of the DCGS-A, will provide provide a near real-time response to Combat Forces with Intelligence, Surveillance and Reconnaissance (ISR) tasking.

The FY 2015 EMARSS funding line contains \$10.174 million for the ARL-E program. ARL-E supports the Aerial ISR 2020 Strategy which recommended replacement of the current Airborne Reconnaissance Low Multifunction (ARL-M) and migrates the current ARL sensors plus new niche sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. ARL-E procures the hardware, software, and infrastructure to rapidly install sensors which support a rapid plug and play,

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605626A / <i>Aerial Common Sensor</i>	Project (Number/Name) <i>AC5 / Enhanced Medium Alt Recon Surv Sys</i>
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quick connect/disconnect, mounting system to allow the installation of various combinations of sensor-types in support of a wide-range of theater operations. The sensor suite will consist of a COMINT subsystem capable of supporting theater net centric geo-location efforts, High Definition FMV; Improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar capability and updated mission workstations, as well as radio and data/communications architecture. ARL-E will leverage existing sensors as well as integrating and installing niche sensors to augment current capabilities. Niche capabilities include WAAS, LiDAR, and Hyper Spectral Imaging (HSI) sensors.

FY 2016 RDTE funding in the amount of \$0.002 million provides Interim Contractor Logistical Support (ICLS).

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Title: EMARSS - Product Development	0.002	-	-
Description: Funding is provided for the following efforts:			
FY 2016 Accomplishments: Partially funds an ICLS capability.			
Accomplishments/Planned Programs Subtotals	0.002	-	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• Aerial Common Sensor (ACS): <i>EMARSS - Aircraft Procurement (A02005)</i>	99.500	-	-	-	-	-	-	-	-	0	99.500
• EMARSS MEP/PED: <i>EMARSS Payloads (AZ2054)</i>	20.570	13.316	3.305	-	3.305	21.294	4.452	-	-	0	62.937
• ARL Mod: <i>ARL Mods (AZ2050)</i>	68.540	52.400	53.778	-	53.778	7.668	2.679	-	-	0	185.065

Remarks
Aerial Common Sensor (ACS) - A02005 - FY 2015 Base procurement dollars in the amount of \$165.890 million supports the modification and conversion of the balance of QRC systems redeploying out of Afghanistan to meet the EMARSS CPD.

FY 2014 A02005 Oversea Contingency Operations (OCO) in the amount of \$28 million procured one EMARSS-V.

For FY 2016 and beyond, the EMARSS Aviation Procurement - Army (APA) funding line continues from A02005 and splits between Project Manager Sensors - Aerial Intelligence (PM SAI) AZ2054 EMARSS Payloads and Project Manager Fixed Wing (PM FW) A02112 EMARSS Special Electronic Mission Aircraft (SEMA). Also in FY 2016 the EMARSS Payloads AZ2054 line is established/separated from ARL Mod AZ2050. Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne intelligence systems to Program Executive Officer for Aviation

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605626A / <i>Aerial Common Sensor</i>	Project (Number/Name) <i>AC5 / Enhanced Medium Alt Recon Surv Sys</i>

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
PEO-AVN); and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer or Intelligence, Electronic Warfare, and Sensors (PEO-IEWS).											

D. Acquisition Strategy

EMARSS is a Program of Record based on an Army G-3/5/7 Directed Requirement (DR) signed 11 December 2009. The program entered the acquisition process in the EMD phase with a 1QFY11 contract award that was competitively awarded to a single contractor. Program completed System Design Review in 1QFY12 and began modification and integration of the aircraft in 2QFY12. Program currently has an Army validated CPD and a successful Milestone C.

ARL-E portion, in the amount of \$10.174 million, funds the engineering, manufacturing and development of a Long Range radar prototype to replace the current ARL Phoenix Eye to meet requirement for increased performance for ARL-E.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605766A / National Capabilities Integration (MIP)
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	10.599	4.955	6.882	-	6.882	9.804	10.033	8.104	11.066	Continuing	Continuing
DX9: National Integration To Tactical Systems(MIP)	-	10.599	4.955	2.820	-	2.820	6.524	6.688	4.650	4.567	Continuing	Continuing
EX7: Air Vigilance System Development	-	0.000	0.000	4.062	-	4.062	3.280	3.345	3.454	6.499	Continuing	Continuing

Note

In FY 2018, PE 0605766A 'National Capabilities Integration (MIP) funds realign into two (2) separate projects:

- (1) Project DX9 National Integration To Tactical Systems (MIP)
- (2) Project EX7 Air Vigilance System Development

All funding is in support of the ACTIVE COMPONENT

A. Mission Description and Budget Item Justification

National Integration to Tactical Systems provides centralized monitoring and synchronization by the Army's Tactical Exploitation of National Capabilities (TENCAP) office, for the transition and integration of proven advanced technologies, prototypes and standards developed by the National Intelligence Community (IC) into Army systems and Programs of Record. This Program Element includes System Development and Integration funds for an Army ACAT III Program of Record (POR). It also enables efficient use and oversight of system development funds for final stage integration, development, and testing of successful technologies and prototypes to advance, or make compliant, Army systems and Programs of Record that have or use National capabilities.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	10.599	4.955	7.201	-	7.201
Current President's Budget	10.599	4.955	6.882	-	6.882
Total Adjustments	0.000	0.000	-0.319	-	-0.319
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	-0.319	-	-0.319

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605766A / <i>National Capabilities Integration (MIP)</i>	
<u>Change Summary Explanation</u> The FY 2018 funding request was reduced by \$0.319 million to align with current execution of the program.		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605766A / <i>National Capabilities Integration (MIP)</i>				Project (Number/Name) DX9 / <i>National Integration To Tactical Systems(MIP)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
DX9: <i>National Integration To Tactical Systems(MIP)</i>	-	10.599	4.955	2.820	-	2.820	6.524	6.688	4.650	4.567	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

National Integration to Tactical Systems provides for centralized monitoring and synchronization by the Army's Tactical Exploitation of National Capabilities (TENCAP) office for the transition and integration of new, updated, and emerging National Intelligence Community (IC) technologies, capabilities, and standards into Programs of Record across the Army to: (1) maintain operational relevance of Army programs and address changes in technology and the threat, (2) ensure Army programs maintain interoperability with and access to the National community architecture and systems, and (3) advance Army ability to conduct analysis and tasking, collection, processing, exploitation, dissemination and feedback (TCPEDF) of intelligence data.

FY2018 Base funding in the amount of \$2.820 million provides integration funds for 1 validated National Intel Community (IC) effort: Army TNG Integration, \$2.820 million funds the continued efforts to ensure Army Programs of Record are in compliance to the National standard for Airborne Overhead Cooperative Operations/ Theater Net-Centric Geolocation (AOCO/TNG), per the Joint Requirement (JROCM 101-10).

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

	FY 2016	FY 2017	FY 2018
<p>Title: Advanced Air Vigilance (AV) capabilities</p> <p>Description: Advanced development, modifications and changes to the Air Vigilance (AV) system software.</p> <p>FY 2016 Accomplishments: Provided updates to software baseline being used to provide timely intelligence to the warfighter across the world. Developed a future capability from the user to have the POR be used to collect data in an austere environment.</p> <p>FY 2017 Plans: Provides updates to software baseline being used to provide timely intelligence to the warfighter across the world. Develops the user capability to ensure theater net-centric geolocation capability, and the ability for the POR to be operated in austere environments as required by the warfighter.</p>	7.179	2.352	-
<p>Title: Army TNG Integration - Airborne Overhead Cooperative Operations (AOCO) / Theater Net-Centric Geolocation (TNG)</p> <p>Description: National Intelligence Community (IC) standard for interoperability and use of specific intelligence networked capabilities.</p> <p>FY 2016 Accomplishments:</p>	3.420	2.603	2.820

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605766A / <i>National Capabilities Integration (MIP)</i>	Project (Number/Name) DX9 / <i>National Integration To Tactical Systems(MIP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>Provided funds to specified Army Programs of Record for final-stage software development and integration efforts, ensuring compliance to the National requirement and standards, and interoperability with this National Intelligence Community (IC) networked capability for joint tactical use and improved Army battlefield awareness.</p> <p>FY 2017 Plans: Provides funds to ensure SIGNIT Army assets can perform timely and accurate geolocation against high value targets through software development enhancements of the current JCID 4.1/4.2 TNG investment, ensuring compliance to the National requirement and standards and interoperability with National Intelligence Community (IC) networked capabilities for tactical use and improved Army battlefield awareness, to participate in the Theater Net-Centric Geolocation (TNG) standards for interoperability. (ref. CJCSI 32450.61, AOCO 13Jan2012)</p> <p>FY 2018 Plans: Provides funds to specified Army Programs of Record (PORs) for final-stage software development and integration efforts, ensuring their compliance to the National requirement and standards that enables these PORs to be interoperable within this National Intelligence Community (IC) "Theater Net-Centric Geolocation (TNG)" network for joint tactical use and improved Army battlefield awareness. (ref. CJCSI 32450.61, AOCO 13Jan2012)</p>			
Accomplishments/Planned Programs Subtotals	10.599	4.955	2.820

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603766A: <i>Tactical Support Development - Adv Dev (MIP), PE 643766</i>	17.562	15.730	27.733	-	27.733	32.340	36.742	30.894	31.838	Continuing	Continuing

Remarks

D. Acquisition Strategy

The 'National Integration To Tactical Systems (Military Intelligence Program - MIP)' funds provide for transition and integration of National Intelligence Community (IC) advanced technologies and prototypes leveraged by the Army's Tactical Exploitation of National Capabilities (TENCAP) program office. The Army TENCAP acquisition strategy is driven by an annual TENCAP General Officer Steering Group (TGOSG), co-chaired by the Army G2; Army G8; and the Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics, and Technology [ASA(ALT)]; and includes representatives from the Army G3; Army G6; Army Training and Doctrine Command (TRADOC); and the Program Executive Office for Intelligence, Electronic Warfare and Sensors (PEO IEW&S). The TGOSG reviews, validates, prioritizes, and guides Army TENCAP efforts, according to Army and Defense strategy. Based on this TGOSG guidance, Army TENCAP invests BA 6.4 RDTE in Intelligence Community (IC) developments during the more cost-effective advanced development phase to ensure Army requirements are met with minimal redundancy. Army

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0605766A / <i>National Capabilities Integration (MIP)</i>	DX9 / <i>National Integration To Tactical Systems(MIP)</i>

TENCAP then uses BA 6.5 RDTE to manage the transition of these advanced development efforts through system development and integration into Army Programs of Record (POR). This strategy ensures these leveraged investments remain viable through multiple budget cycles, significantly increasing successful transition to recipient Army POR. Army TENCAP facilitates the continued access to National Intel Community (IC) 'joint' efforts and compatibility with those National standards and software baseline for those Army PORs that benefit from these leveraged National IC technologies, resulting in cost-savings through cost-sharing, and Army participation in collaborative Intelligence. Funds will be used for final-stage integration efforts identified and vetted through the Army TENCAP annual TGOSG, such as advanced Air Vigilance software enhancements, POR sensor integration into the Theater Net-Centric Geolocation network, integration of the future AMDAS capability into PM DCGS-A family of systems and operational concepts, transition and integration of Army TENCAP technologies discovered and leveraged by the annual MERIT project selection process, as well as other transitioning technologies discovered and/or leverage through other joint TENCAP outreach efforts.

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605766A / <i>National Capabilities Integration (MIP)</i>				Project (Number/Name) EX7 / <i>Air Vigilance System Development</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EX7: <i>Air Vigilance System Development</i>	-	0.000	0.000	4.062	-	4.062	3.280	3.345	3.454	6.499	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The FY 2018 funds realigned from Project DX9 'National Integration To Tactical Systems(MIP) to Project EX7 'Air Vigilance System Development'.

A. Mission Description and Budget Item Justification

Air Vigilance (AV) is a classified program that enhances situational awareness and force protection. The AV program is primarily a software based solution that evolves through its use. Physically, AV consists of a single, or multiple, sensor(s) that collects data and a central server to process the data for immediate Army tactical action and as input into the Intelligence Community's (IC) common accessible library.

FY2018 Base funding in the amount of \$4.062 million provides for system development and integration of latest software developments and hardware configurations in accordance with Capability Drop (CD) 3 requirements

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

	FY 2016	FY 2017	FY 2018
Title: Air Vigilance System Development and Integration	-	-	4.062
FY 2018 Plans: Provides for software development and integration to ingest latest collected sensor data into common baseline and enhance system capabilities to meet newly identified threats and latest Capability Drop requirements			
Accomplishments/Planned Programs Subtotals	-	-	4.062

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

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 0603766A RDTE: <i>Tactical Electronic Surveillance System - Adv Dev</i>	17.562	15.730	27.733	-	27.733	32.340	36.742	30.894	31.828	Continuing	Continuing
• W60001 OPA: <i>Air Vigilance (AV), OPA2 (W60001)</i>	8.224	0.733	5.348	-	5.348	6.497	6.953	5.169	8.530	Continuing	Continuing

Remarks

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605766A / National Capabilities Integration (MIP)	Project (Number/Name) EX7 / Air Vigilance System Development

D. Acquisition Strategy

Air Vigilance (AV) is an ACAT III Automated Information System (AIS) program of record (POR) that originated from a Quick Reaction Capability (QRC) developed and fielded cooperatively with the Intelligence Community (IC) through the efforts and mission of the Army's Tactical Exploitation of National Capabilities (TENCAP) office. The QRC was transitioned into an Army AIS POR by the AAE in May 2013 and assigned to Army Program Executive Office - Intelligence Electronic Warfare and Sensors (PEO IEWS), the chartered acquisition authority for management and execution of the Army's TENCAP mission and Milestone Decision Authority (MDA) for the AV POR. The Army TENCAP continues to leverage the IC common software development and support contract to field the AV systems, and ensure this primarily software based system can continue to access and leverage the common software, and input or ingest the latest sensor collects into the common IC data library. As an AIS POR, the AV POR is currently fielding systems per its Basis of Issue Plan (BOIP) and with software and system capabilities that meet its latest validated Capability Drop (CD) requirements. The AV POR is currently scheduled to meet Full Deployment (FD) by 2020, and will continue to evolve to meet future validated Capability Drop requirements and maintain its effectiveness against emerging threats.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605812A / Joint Light Tactical Vehicle - ED
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	31.197	11.530	23.467	-	23.467	3.056	3.112	2.120	2.184	Continuing	Continuing
VU9: Joint Light Tactical Vehicle - ED	-	31.197	11.530	23.467	-	23.467	3.056	3.112	2.120	2.184	Continuing	Continuing

Note

FY 2012 funding for the Joint Light Tactical Vehicles (JLTV) program is under Program Element (PE) 0604804A, Project L50. FY 2013 and out year funding is under Project Element (PE) 0605812A, Project VU9.

A. Mission Description and Budget Item Justification

Funding supports the development and testing of the JLTV Family of Vehicles (FoV). JLTV is a joint program between the U.S. Army and the U.S. Marine Corps, of which the U.S. Army is the lead service. The JLTV goal is a FoV capable of performing multiple mission roles designed to provide protected, sustained, and networked mobility for personnel and payloads across the full Range of Military Operations (ROMO). JLTV objectives include increased performance, protection, and payload over the current legacy HMMWV fleet, minimizing ownership costs by maximizing commonality, fuel efficiency and reliability. The commonality of components, maintenance procedures, training, etc., among vehicles is expected to be inherent in FoV solutions across mission variants to minimize total ownership cost. Unique service requirements have been minimized.

Major FY18 budget activities include the continued monitoring of contractor performance, completion of provisioning and logistics publications for test, and the completion of the Low-Rate Initial Production (LRIP) test program required events such as: Full Up System Level (FUSL) test, Multi-Service Operational Test and Evaluation (MOT&E), Automatic Fire Extinguishing System (AFES) test, and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) test.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	32.486	11.530	3.022	-	3.022
Current President's Budget	31.197	11.530	23.467	-	23.467
Total Adjustments	-1.289	0.000	20.445	-	20.445
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.289	-			
• Adjustments to Budget Years	0.000	0.000	20.445	-	20.445

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity
2040: *Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0605812A / *Joint Light Tactical Vehicle - ED*

Change Summary Explanation

FY18 JLTV OPA funds re-colored to RDT&E to Support Operational Testing and the Multi-Service Operational Test and Evaluation (MOT&E) event in preparation for the Full Rate Production (FRP) decision in FY19.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605812A / Joint Light Tactical Vehicle - ED				Project (Number/Name) VU9 / Joint Light Tactical Vehicle - ED			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
VU9: Joint Light Tactical Vehicle - ED	-	31.197	11.530	23.467	-	23.467	3.056	3.112	2.120	2.184	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2012 funding for the Joint Light Tactical Vehicles (JLTV) program is under Program Element (PE) 0604804A, Project L50. FY 2013 and out year funding is under Project Element (PE) 0605812A, Project VU9.

A. Mission Description and Budget Item Justification

Funding supports the development and testing of the JLTV Family of Vehicles (FoV). JLTV is a joint program between the U.S. Army and the U.S. Marine Corps, of which the U.S. Army is the lead service. The JLTV goal is a FoV capable of performing multiple mission roles designed to provide protected, sustained, and networked mobility for personnel and payloads across the full Range of Military Operations (ROMO). JLTV objectives include increased performance, protection, and payload over the current legacy HMMWV fleet, minimizing ownership costs by maximizing commonality, fuel efficiency and reliability. The commonality of components, maintenance procedures, training, etc., among vehicles is expected to be inherent in FoV solutions across mission variants to minimize total ownership cost. Unique service requirements have been minimized.

Major FY18 budget activities include the continued monitoring of contractor performance, completion of provisioning and logistics publications for test, and the completion of the Low-Rate Initial Production (LRIP) test program required events such as: Multi-Service Operational Test and Evaluation (MOT&E) and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) test.

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

	FY 2016	FY 2017	FY 2018
Title: Contract and support for development, fabrication, and test of live fire test assets.	17.200	4.271	4.109
Description: Funding is provided for the contract award for live fire test assets.			
FY 2016 Accomplishments: Contract awarded for Government System Integration Lab, Contractor Test Support, trailers, installation and packaged kits in support of Live Fire Testing Events and for Live Fire Test Assets that will be that will be destroyed during ballistic testing. Continued logistics support of GFE which will be destroyed during live fire test events.			
FY 2017 Plans: Funding provides for contract award to continue testing of Live Fire Test Assets that will be destroyed during ballistic testing and support for live fire testing. Continue logistics support of GFE which will be destroyed during live fire test events.			
FY 2018 Plans:			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605812A / Joint Light Tactical Vehicle - ED	Project (Number/Name) VU9 / Joint Light Tactical Vehicle - ED		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Funding is provided for LRIP Contractor Test Support Contract Award.				
Title: Joint Light Tactical Vehicles (JLTV) program management support		3.159	2.046	1.432
Description: Funding is provided for the support of program management government operations.				
FY 2016 Accomplishments: Support for LRIP phase to include program management and monitoring of vendor performance for the live fire tests.				
FY 2017 Plans: Continue support for LRIP phase to include monitoring of vendor performance for the live fire asset effort and program management.				
FY 2018 Plans: Continue support for LRIP phase to include monitoring of vendor performance and program management.				
Title: Test and Evaluation Events and Analysis.		10.838	5.213	12.249
Description: Test and Evaluation Events				
FY 2016 Accomplishments: Finalized the LRIP test plan and started the LRIP test program to include Full Up System Level (FUSL), Automatic Fire Extinguishing System (AFES), ballistic, corrosion, and roof crush.				
FY 2017 Plans: Beginning of Logistics Demonstration testing and the continuation of the LRIP test program to include Full Up System Level (FUSL), Automatic Fire Extinguishing System (AFES), corrosion, and ballistic testing.				
FY 2018 Plans: Continued monitoring of contractor performance, completion of provisioning and logistics publications for test, and the completion of the Low-Rate Initial Production (LRIP) test program required events such as: Full Up System Level (FUSL) test, Multi-Service Operational Test and Evaluation (MOT&E), Automatic Fire Extinguishing System (AFES) test, and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) test.				
Title: Science and Technology Updates.		-	-	5.677
Description: Funding is provided for the support of JLTV science and technology updates.				
FY 2018 Plans:				

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605812A / <i>Joint Light Tactical Vehicle - ED</i>	Project (Number/Name) VU9 / <i>Joint Light Tactical Vehicle - ED</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Science and Technology funds will be used to explore Acoustic and Thermal signature mitigation technology along with research into potential fuel economy savings.			
Accomplishments/Planned Programs Subtotals	31.197	11.530	23.467

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PM JLTV PRODUCTION D15603: <i>Joint Light Tactical Vehicles (JLTV), D15603, Army OPA 1</i>	249.911	587.514	804.440	-	804.440	1,078.794	1,099.507	1,135.483	1,168.494	Continuing	Continuing
• PM JLTV PROJECT 3209 <i>0605812M: Marine Corps Ground Combat/Support Systems, RDTE Project 3209 0605812M</i>	24.790	23.197	20.710	-	20.710	2.280	2.135	-	-	Continuing	Continuing
• PM JLTV PRODUCTION 5095: <i>Marine Corps Ground Combat/Support Systems, Production 5095</i>	58.578	113.230	217.739	-	217.739	665.477	739.211	469.511	532.720	Continuing	Continuing

Remarks

D. Acquisition Strategy

Joint Light Tactical Vehicle (JLTV) is a Joint Service Program with the U.S. Army and U.S. Marine Corps as the two main components. The U.S. Army is the JLTV service lead.

The JLTV Program entered the Production and Deployment Phase with the Acquisition Decision Memorandum authorization on 25 August 2015. With Milestone C approval, the LRIP fixed price contract was awarded to Oshkosh Defense LLC on 25 August 2015. This contract consists of a three year LRIP period with options for five additional years of FRP deliveries. JPO JLTV requested separately priced firm fixed price (FFP) option(s) for purchase of the Technical Data Package (TDP) with appropriate data rights to allow for possible future competition for production vehicles and spares.

During the LRIP phase, JPO JLTV will continue to produce production vehicles for extensive Test and Evaluation activities to support a FRP decision. A ramp up of JLTV quantities will continue thru FY19 to support fielding to U.S. Army and USMC units once the FRP decision is achieved and allow the program to transition into Full Rate production.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0605812A / Joint Light Tactical Vehicle - ED	VU9 / Joint Light Tactical Vehicle - ED

The JLTV program will continually monitor emerging technologies and capabilities through its partnerships with U.S. Army and Marine Corps science and technology organizations as well as through industry market research and partnerships. At this time follow-on increments for technology insertion are undefined; the JLTV program will look for opportunities to implement increased capabilities throughout the system's Life Cycle.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605812A / Joint Light Tactical Vehicle - ED	Project (Number/Name) VU9 / Joint Light Tactical Vehicle - ED
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Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Joint Light Tactical Vehicles (JLTV) Contract Service Support	SS/CPFF	Booz-Allen Hamilton, : McLean, VA	10.191	-		-		-		-		-	0.000	10.191	0.000
JLTV Contract Service Support for Cost Analysis for JLTV CARD	SS/CPFF	Camber Corporation, : Huntsville, AL	0.591	-		-		-		-		-	0.000	0.591	0.000
JLTV Service Support	MIPR	US Army Combined Arms Support Commands - CASCOM, : Ft. Lee, VA	0.200	-		-		-		-		-	0.000	0.200	0.000
Subtotal			10.982	-		-		-		-		-	0.000	10.982	0.000

Remarks
Funding for Management Services has shifted from RDT&E to procurement.

Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JLTV Live Fire Test Assets and Support	C/FFP	Oshkosh Corporation : Oshkosh, WI	5.708	13.383	Dec 2016	4.121		2.609	Dec 2018	-		2.609	Continuing	Continuing	Continuing
Science and Technology Updates	C/TBD	To Be Determined : To Be Determined	0.000	-		-		5.677	Jul 2018	-		5.677	0.000	5.677	0.000
Subtotal			5.708	13.383		4.121		8.286		-		8.286	-	-	-

Remarks
Joint Light Tactical Vehicles (JLTV) is a Joint Services Program with the U.S. Army and U.S. Marine Corps as the two main components. U.S. Army under PE 0605812A, Project VU9, and the U.S. Marine Corps under PE 0605812M, Project 3209. The LRIP/FRP contract awarded in FY15 has a cost sharing agreement between the services to cover shared RDT&E funded test activities. Funding for Live Fire Test Assets decreases as Live Fire Testing is completed and the program moves toward a Full Rate Program (FRP) decision.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605812A / Joint Light Tactical Vehicle - ED				Project (Number/Name) VU9 / Joint Light Tactical Vehicle - ED						

Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Light Tactical Vehicles (JLTV) Program Management Support	Various	TACOM Life Cycle Management Command (LCMC), : Harrison Township, MI	24.473	3.159	Sep 2016	2.046		1.432	Sep 2018	-		1.432	Continuing	Continuing	Continuing
GFE Management / GFE / Analysis	MIPR	Various : TBD	16.680	1.824	Aug 2016	-		1.500	Jul 2018	-		1.500	Continuing	Continuing	Continuing
JLTV EMD/LRIP phase.	MIPR	Tank-Automotive Reseach, Development, and Engineering Center - TARDEC : Warren, MI	14.245	-		-		-		-		-	Continuing	Continuing	Continuing
JLTV Prototype EMD/LRIP - Budget	MIPR	TACOM Life Cycle Management Command (LCMC), : Warren, MI	10.390	1.993	Apr 2016	0.150		-		-		-	Continuing	Continuing	Continuing
Subtotal			65.788	6.976		2.196		2.932		-		2.932	-	-	-

Remarks
Funding for Support Costs decreases due to the end of the development phase as well as programmatic support shifting from RDT&E to procurement.

Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Complete Engineering and Manufacturing Development (EMD) Test - Limited User Test (LUT)	MIPR	Army Evaluation Center (AEC) : Aberdeen Proving Ground, MD	41.342	-		-		-		-		-	0.000	41.342	0.000
MOT&E and Live Fire T&E - ballistics, FUSL, AFES, Log demo and corrosion.	Various	TBD : Various	16.912	10.838	Aug 2016	5.213		12.249	Oct 2017	-		12.249	23.708	68.920	0.000
Subtotal			58.254	10.838		5.213		12.249		-		12.249	23.708	110.262	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605812A / Joint Light Tactical Vehicle - ED	Project (Number/Name) VU9 / Joint Light Tactical Vehicle - ED
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Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
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
Funding for Government Test Support increases from FY17 to FY18 to support the Operational Test and Evaluation Event scheduled for the second quarter of FY18.

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	140.732	31.197	11.530	23.467	-	23.467	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605812A / <i>Joint Light Tactical Vehicle - ED</i>	Project (Number/Name) VU9 / <i>Joint Light Tactical Vehicle - ED</i>
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Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4												
Test Vehicles and LRIP Contract																																								
Full Up Systems Level (FUSL) Test																																								
Logistics Demonstration																																								
Multi-Service Operational Test and Evaluation (MOT&E)																																								
(1) Full-Rate Production (FRP) Decision																			▲ FRP																					
(2) Army Initial Operating Capability (IOC)																																								

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605812A / <i>Joint Light Tactical Vehicle - ED</i>	Project (Number/Name) VU9 / <i>Joint Light Tactical Vehicle - ED</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Test Vehicles and LRIP Contract	1	2016	1	2019
Full Up Systems Level (FUSL) Test	2	2017	1	2018
Logistics Demonstration	3	2017	4	2017
Multi-Service Operational Test and Evaluation (MOT&E)	2	2018	3	2018
Full-Rate Production (FRP) Decision	1	2019	1	2019
Army Initial Operating Capability (IOC)	1	2020	1	2020

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0605830A / <i>Aviation Ground Support Equipment</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	13.528	2.142	6.930	-	6.930	4.255	7.191	5.505	6.375	Continuing	Continuing
EE5: <i>Aviation Ground Support Equipment</i>	-	13.528	2.142	6.930	-	6.930	4.255	7.191	5.505	6.375	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element supports Aviation Ground Support Equipment (AGSE) developmental testing and acquisition of prototypes to enhance the functionality of current and future aircraft maintenance equipment. This will be accomplished by identifying more effective aircraft maintenance equipment, validating new maintenance concepts, improving machine interfaces, updating aircraft maintenance processes, and developing improved diagnostic technologies which will reduce Operation and Support costs. This program provides for the development of rapid battle repair procedures, tools, ground handling, and test equipment to speed the return of aircraft to a fully mission capable status. Included in this program are: Aviation Ground Power Unit (AGPU), Aviation Unit Maintenance Shop Set (AVUM SS), Self-propelled Crane Aircraft Maintenance and Positioning Increment II (SCAMP II) Type 2 (Expeditionary Variant) & Type 1 (Flight Line Variant), Non-Destructive Test Equipment (NDTE), Modernized Flexible Engine Diagnostic System (MFEDS), Modernized Maintenance Stands (MMS), Pitot Static Test Set (PSTS), and development of support equipment required for maintenance of modernized/future force aircraft.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	13.880	2.142	6.808	-	6.808
Current President's Budget	13.528	2.142	6.930	-	6.930
Total Adjustments	-0.352	0.000	0.122	-	0.122
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.352	-			
• Other Adjustments 1	0.000	0.000	0.122	-	0.122

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

Project: EE5: *Aviation Ground Support Equipment*

Congressional Add: *UH-72 Lakota Demonstration of the Next Generation Health Monitoring System (NGHMS)*

Congressional Add Subtotals for Project: EE5

	FY 2016	FY 2017
	5.000	-
	5.000	-

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0605830A / <i>Aviation Ground Support Equipment</i>
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Congressional Add Details (\$ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Congressional Add Totals for all Projects	5.000	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605830A / Aviation Ground Support Equipment				Project (Number/Name) EE5 / Aviation Ground Support Equipment			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EE5: Aviation Ground Support Equipment	-	13.528	2.142	6.930	-	6.930	4.255	7.191	5.505	6.375	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds Aviation Ground Support Equipment (AGSE) developmental testing and acquisition of prototypes to enhance the functionality of current and future aircraft maintenance equipment. This will be accomplished by identifying more effective aircraft maintenance equipment, validating new maintenance concepts, improving machine interfaces, updating aircraft maintenance processes, and developing improved diagnostic technologies which will reduce Operation and Support costs. This program provides for the development of rapid battle repair procedures, tools, ground handling, and test equipment to speed the return of aircraft to a fully mission capable status. Included in this program are: Aviation Ground Power Unit (AGPU), Aviation Unit Maintenance Shop Set (AVUM SS), Self-propelled Crane Aircraft Maintenance and Positioning Increment II (SCAMP II) Type 2 (Expeditionary Variant) & Type 1 (Flight Line Variant), Non-Destructive Test Equipment (NDTE), Modernized Flexible Engine Diagnostic System (MFEDS), Modernized Maintenance Stands (MMS), Pitot Static Test Set (PSTS), and development of support equipment required for maintenance of modernized/future force aircraft.

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

	FY 2016	FY 2017	FY 2018
Title: Aviation Ground Power Unit (AGPU)	4.763	-	-
Description: The AGPU provides external hydraulic, pneumatic, and AC/DC electrical power to meet Army helicopter servicing requirements.			
FY 2016 Accomplishments: Conducted system level testing and evaluation with redesigned components into prototype AGPUs.			
Title: Aviation Unit Maintenance Shop Set (AVUM SS)	1.085	-	1.000
Description: The AVUM SS consists of three deployable shelters which provide tool loads required for unit-level aviation maintenance tasks.			
FY 2016 Accomplishments: Completed developmental and operational testing of test samples and finalized the technical data package.			
FY 2018 Plans: Develop solution for transporting the one-sided expandable International Organization for Standardization (ISO) shelters.			
Title: SCAMP II, Type 2 (Expeditionary Variant)	0.354	1.449	1.403

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605830A / Aviation Ground Support Equipment	Project (Number/Name) EE5 / Aviation Ground Support Equipment

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
<p>Description: The SCAMP II, Type 2 will remove and replace major aircraft components (maintenance lifting) in support of Army Aviation Maintenance. Type 2 supports maintenance on unimproved, austere locations, split operations and downed aircraft recovery.</p> <p>FY 2016 Accomplishments: Completed Market Research for SCAMP II, Type 2 crane. Initiated Contracts Requirement Package documentation. Issued Request for Proposal.</p> <p>FY 2017 Plans: Complete Source Selection Evaluation Board, and acquisition documentation supporting a Milestone C decision. Purchase product samples for Source Selection Performance Demonstration Testing.</p> <p>FY 2018 Plans: Conduct customer test and technical manual development.</p>			
<p>Title: SCAMP II, Type 1 (Flight Line Variant)</p> <p>Description: SCAMP II, Type 1 will remove and replace major aircraft components (maintenance lifting) in support of Army Aviation Maintenance. Type 1 is used on improved surfaces and lift and reach the most extreme loads.</p> <p>FY 2018 Plans: Evaluate capability enhancements to legacy system and begin updating the technical manual to current Military Standards.</p>	-	-	2.906
<p>Title: Non-Destructive Test Equipment (NDTE)</p> <p>Description: NDTE provides Army Aviation Maintenance units with an electronic test instrument to inspect aircraft components and structures without complete disassembly or removal from the aircraft (includes eddy current, ultrasonic, and harmonic bond capabilities).</p> <p>FY 2016 Accomplishments: Purchased product samples, conducted performance verification testing, and technical manual updates.</p>	0.204	-	-
<p>Title: Modernized Flexible Engine Diagnostic System (MFEDS)</p> <p>Description: The MFEDS is an advanced technology engine test system designed to test and verify flight readiness of engines removed from aircraft for maintenance.</p> <p>FY 2016 Accomplishments:</p>	1.408	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605830A / Aviation Ground Support Equipment	Project (Number/Name) EE5 / Aviation Ground Support Equipment		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Performed system level performance verification testing.				
Title: Modernized Maintenance Stand (MMS)		0.057	-	-
Description: The Modernized Maintenance Stand provides a stable work platform for aircraft maintainers from ground level to the rotor systems. It enhances the occupational safety environment during scheduled and unscheduled maintenance operations.				
FY 2016 Accomplishments: Completed performance testing and Source Selection Evaluation Board.				
Title: Pitot Static Test Set (PSTS)		-	-	0.946
Description: PSTS is a portable aircraft air data systems tester which provides the capability of troubleshooting, repairing, and verifying proper operation of flight critical aircraft air data systems.				
FY 2018 Plans: Procure product test samples and conduct testing.				
Title: Management Support Services		0.306	0.321	0.304
Description: Management Support Services in support of the Aviation Ground Support Equipment Product Management Office.				
FY 2016 Accomplishments: Continued Management Support Services.				
FY 2017 Plans: Continue Management Support Services				
FY 2018 Plans: Continue Management Support Services.				
Title: Research, Development, Test, and Evaluation (RDTE) Project Test Support		-	0.062	-
Description: RDTE Project Test Support for the Aviation Ground Support Equipment Product Management Office.				
FY 2017 Plans: Continue Project Test Support				
Title: Technical Engineering Services		0.351	0.310	0.371

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605830A / Aviation Ground Support Equipment	Project (Number/Name) EE5 / Aviation Ground Support Equipment

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018
Description: Technical Engineering Services in support of Airworthiness and Safety certifications for Aviation Ground Support Equipment.			
FY 2016 Accomplishments: Continued Technical Engineering Services			
FY 2017 Plans: Continue Technical Engineering Services			
FY 2018 Plans: Continue Technical Engineering Services			
Accomplishments/Planned Programs Subtotals	8.528	2.142	6.930

	FY 2016	FY 2017
Congressional Add: UH-72 Lakota Demonstration of the Next Generation Health Monitoring System (NGHMS)	5.000	-
FY 2016 Accomplishments: Produced data from the Next Generation Health Monitoring Systems that provided the Army with detailed military derived information on Operations and Maintenance savings.		
Congressional Adds Subtotals	5.000	-

C. Other Program Funding Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• Aviation Ground Support Equipment: <i>Aviation Ground Support Equipment, SSN AZ3520</i>	58.067	48.234	47.404	-	47.404	37.529	37.154	34.795	35.725	Continuing	Continuing

Remarks

D. Acquisition Strategy
This project is an aggregate of aviation ground support equipment related projects. While the detailed acquisition strategy varies from program to program, the general strategy for each individual program is to complete the development effort through Government test (developmental and operational). Program documentation for each milestone decision is prepared, as appropriate, concurrently with the development effort.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605830A / <i>Aviation Ground Support Equipment</i>	Project (Number/Name) EE5 / <i>Aviation Ground Support Equipment</i>

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

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0210609A / Paladin Integrated Management (PIM)
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	136.353	41.498	6.112	-	6.112	0.000	0.000	0.000	0.000	0.000	183.963
ED8: <i>Paladin Integrated Management (PIM)</i>	-	136.353	41.498	6.112	-	6.112	0.000	0.000	0.000	0.000	0.000	183.963

A. Mission Description and Budget Item Justification

Paladin Integrated Management (PIM) is an ACAT 1C Acquisition Program. The program will replace the current fleet of M109 Family of Vehicles (FoV) consisting of the M109A6 Paladin Self Propelled Howitzer and M992A2 Field Artillery Ammunition Supply Vehicle (FAASV). PIM is an Army Modernization Program that addresses a critical capability gap created by the Non-Line of Sight Cannon termination in June of 2009 as well as obsolescence and Space, Weight, and Power (SWAP) issues in the M109 FoV current fleet. The PIM system integrates current Bradley Fighting Vehicle suspension and drive train items, Future Combat Systems (FCS) developed Electric Gun Drive systems and current fleet (M109A6) fire control systems into a new chassis providing better force protection, survivability and increases in electrical power over the current fleet. PIM is a two vehicle system: The M109A7 Self Propelled Howitzer (SPH) and the M992A3 Carrier Ammunition Tracked (CAT). The SPH has all characteristics listed above. The CAT utilizes all of these same components and traits except those related directly to the cannon system. The PIM system replaces the current M109 FoV on a one for one basis, in the cannon fires battalions in the Armored Brigade Combat Team Formations and the Echelons above Brigade (EAB). The overall intent is to increase Soldier force protection, vehicle survivability, provide an appropriate amount of SWAP capacity to add future capabilities, increase vehicle reliability, reduce life cycle costs and extend the life of the M109 FoV through FY 2050.

B. Program Change Summary (\$ in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	152.288	41.498	6.112	-	6.112
Current President's Budget	136.353	41.498	6.112	-	6.112
Total Adjustments	-15.935	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-9.900	-			
• SBIR/STTR Transfer	-6.035	-			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017			
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0210609A / <i>Paladin Integrated Management (PIM)</i>					Project (Number/Name) ED8 / <i>Paladin Integrated Management (PIM)</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
ED8: <i>Paladin Integrated Management (PIM)</i>	-	136.353	41.498	6.112	-	6.112	0.000	0.000	0.000	0.000	0.000	183.963	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

A. Mission Description and Budget Item Justification

Paladin Integrated Management (PIM) is an ACAT 1C Acquisition Program. The program will replace the current fleet of M109 Family of Vehicles (FoV) consisting of the M109A6 Paladin Self Propelled Howitzer and M992A2 Field Artillery Ammunition Supply Vehicle (FAASV). PIM is an Army Modernization Program that addresses a critical capability gap created by the Non-Line of Sight Cannon termination in June of 2009 as well as obsolescence and Space, Weight, and Power (SWAP) issues in the M109 FoV current fleet. The PIM system integrates current Bradley Fighting Vehicle suspension and drive train items, Future Combat Systems (FCS) developed Electric Gun Drive systems and current fleet (M109A6) fire control systems into a new chassis providing better force protection, survivability, and increases in electrical power over the current fleet. PIM is a two vehicle system: The M109A7 Self Propelled Howitzer (SPH) and the M992A3 Carrier Ammunition, Tracked (CAT). The SPH has all characteristics listed above. The CAT utilizes all these same components and traits except those related directly to the cannon system. The PIM system replaces the current M109 FoV on a one for one basis, in the cannon fires battalions in the Armored Brigade Combat Team Formations and the Echelons above Brigade (EAB). The overall intent is to increase Soldier force protection, vehicle survivability, provide an appropriate amount of SWAP capacity to add future capabilities, increase vehicle reliability, reduce life cycle costs, and extend the life of the M109 FoV through FY 2050.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Paladin/FAASV Integrated Management (PIM) Development	74.873	30.504	1.755	-	1.755
Description: Funding is provided for the following contractor developmental efforts:					
FY 2016 Accomplishments: Funding provided contractor support for the execution of the final Engineering and Manufacturing Development (EMD) testing for the M109A7 Self Propelled Howitzer (SPH) and the M992A3 Carrier Ammunition, Tracked (CAT). These tests included Production Qualification Test (PQT), Initial Operational Test and Evaluation (IOT&E), Full Up System Live Fire (FUSL), Threshold 2 (T2) and Under Belly Armor characterization testing. Threshold 1 (T1) is the base vehicle configuration without add-on armor. T2 is the vehicle with add-on armor kits to increase force protection/survivability. These events were conducted at various test sites throughout the US including Yuma Proving Grounds (YPG), Aberdeen Proving Grounds (APG), White Sands Missile Range (WSMR), and the Cold Regions Test Center (CRTC). Software Phase III maintenance and Training Aids, Devices, Simulators and Simulations (TADSS) development was also conducted. New Equipment Training (NET) Programs of Instruction (POI) development and execution to support IOT&E was accomplished. All of					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0210609A / <i>Paladin Integrated Management (PIM)</i>	Project (Number/Name) ED8 / <i>Paladin Integrated Management (PIM)</i>

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>the listed events were required to complete the various documentation requirements and test reports that will determine the operational suitability of the system and support the Full Rate Production decision in 4th QTR FY 2018.</p> <p>FY 2017 Plans: Funding provides contractor support for the execution of the final Engineering and Manufacturing Development (EMD) testing for the M109A7 Self Propelled Howitzer (SPH) and the M992A3 Carrier Ammunition, Tracked (CAT). These tests include Production Qualification Test (PQT), Initial Operational Test and Evaluation (IOT&E), Full Up System Live Fire (FUSL), and Under Belly Armor characterization testing. The reduced funding level from FY 16 to FY 17 reflects the culmination of the test events and writing of the test reports, addressing any issues discovered during test and the shift of the actual IOT&E test event into the 1st QTR FY17. These events will be conducted at various test sites throughout the US including Yuma Proving Grounds (YPG), Aberdeen Proving Grounds (APG), White Sands Missile Range (WSMR), and the Cold Regions Test Center (CRTC). Software Phase III maintenance and Training Aids, Devices, Simulators and Simulations (TADSS) development will also be conducted this year. New Equipment Training (NET) Programs of Instruction (POI) development and execution to support IOT&E will be accomplished this year. All of the listed events are required to complete the various documentation requirements and test reports that will determine the operational suitability of the system and support the Full Rate Production decision in 4th QTR FY 2018.</p> <p>FY 2018 Base Plans: Funding enables the government to complete all efforts on the M109 FOV Program to include the close out of the existing EMD work effort.</p>					
<p>Title: Test and Evaluation</p> <p>Description: Funding is provided for the following Government test efforts:</p> <p>FY 2016 Accomplishments: Funding provided program support and execution of the final EMD testing for the M109A7 Self Propelled Howitzer (SPH) and the M992A3 Carrier Ammunition, Tracked (CAT). These tests included Production Qualification Test (PQT), Initial Operational Test and Evaluation (IOT&E), Full Up System Live Fire (FUSL), T2 and the DAE directed Underbelly characterization testing. T2 is the vehicle with add-on armor kits to increase force protection/survivability. These events were conducted at various test sites throughout the US including</p>	49.609	5.973	-	-	-

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0210609A / <i>Paladin Integrated Management (PIM)</i>	Project (Number/Name) ED8 / <i>Paladin Integrated Management (PIM)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Yuma Proving Grounds (YPG), Aberdeen Proving Grounds (APG), White Sands Missile Range (WSMR), and the Cold Regions Test Center (CRTC).</p> <p>FY 2017 Plans: Funding provides program support and execution of the final EMD testing for the M109A7 Self Propelled Howitzer (SPH) and the M992A3 Carrier Ammunition, Tracked (CAT). These tests include Production Qualification Test (PQT), Initial Operational Test and Evaluation (IOT&E), Full Up System Live Fire (FUSL), T2 and the DAE directed Underbelly characterization testing. T2 is the vehicle with add-on armor kits to increase force protection/survivability. These events will be conducted at various test sites throughout the US including Yuma Proving Grounds (YPG), Aberdeen Proving Grounds (APG), White Sands Missile Range (WSMR), and the Cold Regions Test Center (CRTC).</p>					
<p>Title: Program Management</p> <p>Description: Funding is provided for the following program management support:</p> <p>FY 2016 Accomplishments: Continued Government System Engineering and Program Management for the total program including: Original Equipment Manufacturer (OEM) management consisting of weekly, monthly, and quarterly program management reviews; continued contract execution management for the EMD phase contract. Managed Government Developmental System Test and Evaluation program as it enters the LRIP testing phase. Management of the program cost, schedule, and performance metrics including making programmatic trade-off decisions. Management of Other Governmental Agencies (OGAs) that supported the PIM program.</p> <p>FY 2017 Plans: Continue the Government System Engineering and Program Management for the total program including: Original Equipment Manufacturer (OEM) management consisting of weekly, monthly, and quarterly program management reviews; continue contract execution management for the EMD phase contract until completion of all efforts in FY 2018. Manage Government Developmental System Test and Evaluation program as it enters the LRIP testing phase. Management of the program cost, schedule, and performance metrics including making programmatic trade-off decisions. Management of Other Governmental Agencies (OGAs) that support the PIM program.</p> <p>FY 2018 Base Plans: Continue the Government System Engineering and Program Management for the total program including: Original Equipment Manufacturer (OEM) management consisting of weekly, monthly, and quarterly program</p>	8.365	2.295	1.579	-	1.579

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0210609A / <i>Paladin Integrated Management (PIM)</i>	Project (Number/Name) ED8 / <i>Paladin Integrated Management (PIM)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
management reviews; continue contract execution management for the EMD phase contract until completion of all efforts in FY 2018. Manage Government Developmental System Test and Evaluation program as it enters the LRIP testing phase. Management of the program cost, schedule, and performance metrics including making programmatic trade-off decisions. Management of Other Governmental Agencies (OGAs) that support the PIM program.					
Title: Training Description: Funding is provided for the following training government and contractor efforts: FY 2016 Accomplishments: Completed final development of training support packages and POI's to support IOT&E and LOG verification events. Completed Training Aids, Devices, Simulators and Simulations for Operational Test units in support of IOT&E. FY 2017 Plans: Complete final development of training support packages and POI's to support IOT&E and Full Rate Decision. Complete Training Aids, Devices, Simulators and Simulations for Operational Test units in support of IOT&E. FY 2018 Base Plans: Funding provides for the review of current training support packages, training aids and devices based on the EMD effort for cannon system development.	2.796	2.726	2.778	-	2.778
Title: Data Description: Funding is provided for the following data contractor efforts: FY 2016 Accomplishments: Maintained Contractor Technical Data Packages. Continued the validation of Technical Publications that will support IOT&E and the future Active and Reserve component units during fielding.	0.710	-	-	-	-
Accomplishments/Planned Programs Subtotals	136.353	41.498	6.112	-	6.112

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0210609A / <i>Paladin Integrated Management (PIM)</i>	Project (Number/Name) ED8 / <i>Paladin Integrated Management (PIM)</i>

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

Line Item	FY 2016	FY 2017	FY 2018	FY 2018	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Cost To	
			Base	OCO	Total					Complete	Total Cost
• <i>Paladin Integrated Management: Paladin Integrated Management</i>	273.850	594.489	646.413	125.736	772.149	511.069	602.194	627.204	603.010	2,332.024	6,315.989

Remarks

D. Acquisition Strategy

The PIM Program was initiated on 16 August 2007 under the BAE Systems, Inc., System Technical Support (STS) Contract W56HZV-07-C-0096. Subsequent work directives were awarded under BAE STS contract W56HZV-07-C-0256 to further define the configuration of the PIM vehicles. On 14 August 2009, a Research, Development, Test and Evaluation (RDT&E) Contract W56HZV-09-C-0550 was awarded to BAE Systems Inc. for the Prototype Development and Fabrication of 7 prototype vehicles (5 PIM Self Propelled Howitzer (SPH) Systems and 2 PIM Carrier Ammunition, Tracked (CAT) vehicles). A Comprehensive Contract Modification (CCM) award to the RDT&E contract was accomplished on 6 January 2012. This modification allows for the completion of the design engineering and initial developmental test portion of the Engineering and Manufacturing Development (EMD) Phase and transfers the system responsibility for the program from the Government to BAE Systems Inc. An additional modification to the EMD contract was awarded on 18 July 2014 to extend the contract until 31 March 2017 to cover contractor support to Production Qualification Testing (PQT), the Logistics Demonstration, and Initial Operational Test & Evaluation (IOT&E). The awarded Low-Rate Initial Production (LRIP) contract is of a Fixed Price Incentive Firm Target (FPIF) contract type for procurement of vehicles with a period of performance running from November 2013 through approximately June 2019. The LRIP contract will provide for three LRIP years with the initial base year including 19 SPHs and 18 CATs and the remaining three option years with 18 sets, 30 sets and 48 sets, respectively (each set consisting of one each SPH and CAT) of PIM vehicles. The Full Rate Production (FRP) contract is planned as a FPIF contract with the option to convert to a Firm Fixed Price (FFP) contract after the first year of FRP. The FRP contract provides for the remaining PIM vehicles to fulfill the requirement up to the Army Acquisition Objective of 580 sets.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0303032A / TROJAN - RH12
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	5.022	4.273	4.431	1.200	5.631	4.521	4.577	4.621	4.584	Continuing	Continuing
RH5: TROJAN - RH12 - MIP	-	5.022	4.273	4.431	1.200	5.631	4.521	4.577	4.621	4.584	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project is a Military Intelligence Program (MIP). TROJAN research and development supports TROJAN Next Generation (TROJAN NexGEN), formerly TROJAN Classic XXI (TCXXI), future capabilities to fulfill the Army's need for worldwide, deployable, remobile, intelligence, surveillance and reconnaissance support that can dynamically execute operations from sanctuary-based to deployed assets in theater. In support of Army Modernization and Army Force Generation, TROJAN NexGEN will provide soldiers with a real-world, hands-on, live and near-real time SIGINT training environment sustaining, maintaining and enhancing their military occupational specialty proficiencies and specific target expertise. This operational readiness training will fulfill the Army's larger intelligence training requirement via a secure, collaborative architecture.

A key factor for future force success is the ability to collect, process, and use information about an adversary while preventing similar information from being disclosed. TROJAN NexGEN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN NexGEN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. Engineers test and evaluate new digital intelligence collection, processing and dissemination technology using the fielded TROJAN NexGEN systems prior to the acquisition of those technologies. As part of the objective intelligence architecture, these capabilities will enable processing and dissemination of real-time intelligence data from various sources to form the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative that TROJAN NexGEN keeps pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threat.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	5.022	4.273	4.284	-	4.284
Current President's Budget	5.022	4.273	4.431	1.200	5.631
Total Adjustments	0.000	0.000	0.147	1.200	1.347
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	0.147	1.200	1.347

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army Date: May 2017

Appropriation/Budget Activity
2040: *Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0303032A / TROJAN - RH12

Change Summary Explanation

FY 2018 Base Funding increase of .147 million is an inflation rate increase.
FY 2018 OCO Funding increase of 1.200 million is in support of Army requirement to Integrate and test specialized hardware/software.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0303032A / TROJAN - RH12				Project (Number/Name) RH5 / TROJAN - RH12 - MIP			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
RH5: TROJAN - RH12 - MIP	-	5.022	4.273	4.431	1.200	5.631	4.521	4.577	4.621	4.584	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project is a Military Intelligence Program (MIP). TROJAN research and development supports TROJAN Next Generation (TROJAN NexGEN), formerly TROJAN Classic XXI (TCXXI), future capabilities to fulfill the Army's need for worldwide, deployable, remobile, intelligence, surveillance and reconnaissance support that can dynamically execute operations from sanctuary-based to deployed assets in theater. In support of Army Modernization and Army Force Generation, TROJAN NexGEN will provide soldiers with a real-world, hands-on, live and near-real time SIGINT training environment sustaining, maintaining and enhancing their military occupational specialty proficiencies and specific target expertise. This operational readiness training will fulfill the Army's larger intelligence training requirement via a secure, collaborative architecture.

A key factor for future force success is the ability to collect, process, and use information about an adversary while preventing similar information from being disclosed. TROJAN NexGEN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN NexGEN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. Engineers test and evaluate new digital intelligence collection, processing and dissemination technology using the fielded TROJAN NexGEN systems prior to the acquisition of those technologies. As part of the objective intelligence architecture, these capabilities will enable processing and dissemination of real-time intelligence data from various sources to form the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative that TROJAN NexGEN keeps pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threat.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Integrate Direction Finding and geo-location	1.263	1.118	1.077	-	1.077
Description: Integrate Direction Finding (DF) and geolocation (GL) technologies into TROJAN Remote Receiving Groups.					
FY 2016 Accomplishments: Continued efforts to integrate Direction Finding (DF) and geolocation technologies into TROJAN Remote Receiving Groups.					
FY 2017 Plans: Continue efforts to integrate Direction Finding (DF) and geolocation technologies into TROJAN Remote Receiving Groups in accordance with Joint Interface Control Document (JICD) 4.2. Utilize field based					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0303032A / TROJAN - RH12	Project (Number/Name) RH5 / TROJAN - RH12 - MIP

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>risk reduction exercises to test and evaluate integrated technologies of the overall TROJAN Intelligence, Surveillance, and Reconnaissance (ISR) Enterprise.</p> <p>FY 2018 Base Plans: Will continue efforts to integrate Direction Finding (DF) and geolocation technologies into TROJAN Remote Receiving Groups in accordance with Joint Interface Control Document (JICD) 4.2. Will utilize field based risk reduction exercises to test and evaluate integrated technologies of the overall TROJAN Intelligence, Surveillance, and Reconnaissance (ISR) Enterprise.</p>					
<p>Title: Improve security of the TROJAN Network architecture (formerly Improve bandwidth utilization to maximize efficiency).</p> <p>Description: Acquire and apply multi-bandwidth compression algorithm technology to maximize TROJAN intelligence network throughput.</p> <p>FY 2016 Accomplishments: Improved bandwidth utilization and network architecture to maximize TROJAN intelligence network throughput.</p> <p>FY 2017 Plans: Utilize Government off the shelf (GOTS)/ Commercial of the shelf (COTS) solutions to secure data-at-rest / data-in-transit to extend the TROJAN intelligence network architecture to the edge.</p> <p>FY 2018 Base Plans: Will continue efforts to utilize Government off the shelf (GOTS) / Commercial of the shelf (COTS) solutions to secure data-at-rest / data-in-transit to extend the TROJAN intelligence network architecture to the edge.</p>	0.960	1.186	1.376	-	1.376
<p>Title: Integrate and test specialized hardware/software</p> <p>Description: Integrate and test specialized hardware/software for classified pre-processing of new signals of interest utilizing enhanced signal processing algorithms. Resource development of GL Application Interface for Virtual Environments (GLAIVE) software (SW). Integrated several new National Security Agency (NSA) SW packages.</p> <p>FY 2016 Accomplishments: Integrated and tested specialized hardware/software for classified pre-processing of new signals of interest utilizing enhanced signal processing algorithms. Resourced development of GLAIVE software. Continued efforts</p>	0.900	0.505	0.550	1.200	1.750

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0303032A / TROJAN - RH12	Project (Number/Name) RH5 / TROJAN - RH12 - MIP
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>to develop TROJAN Intelligence Surveillance Reconnaissance enterprise. Continued efforts to integrate the REDHAWK architecture and JICD 4.2 across all platforms.</p> <p>FY 2017 Plans: Continue integration and testing of specialized hardware/software for classified pre-processing of new signals of interest utilizing enhanced signal processing algorithms. Continue resource development of GLAIVE software. Continue efforts to develop TROJAN Intelligence Surveillance Reconnaissance enterprise. Continue efforts to integrate the REDHAWK architecture and JICD 4.2 across all platforms.</p> <p>FY 2018 Base Plans: Will continue integration and testing of specialized hardware/software for classified pre-processing of new signals of interest utilizing enhanced signal processing algorithms. Will continue resource development of GLAIVE software. Will continue efforts to develop TROJAN Intelligence Surveillance Reconnaissance enterprise. Will continue efforts to integrate the REDHAWK architecture and JICD 4.2 across all platforms.</p> <p>FY 2018 OCO Plans: Will support integration, testing, and development of more advanced intelligence analysis tools and supports the assessment of TROJAN JICD 4.2 capabilities as part of the current TROJAN NexGEN SIGINT platforms. Will also support the testing and integration of the Intelligence Community Information Technology Enterprise (IC ITE) during interoperability exercises such as STORMFORCE and Enterprise Challenge.</p>					
<p>Title: Research and testing of receivers</p> <p>Description: Research and testing of receiver packages for fixed and transportable TROJAN systems to acquire non-standard modulations using Digital System Processing (DSP) and Field Programmable Gate Arrays (FPGAs) technologies.</p> <p>FY 2016 Accomplishments: Continued research and testing of receiver packages for fixed and transportable TROJAN systems to acquire non-standard modulations using DSP and FPGAs.</p> <p>FY 2017 Plans: Continue research and testing of receiver packages for fixed and transportable TROJAN systems to acquire non-standard modulations using DSP and FPGAs.</p> <p>FY 2018 Base Plans:</p>	0.330	0.295	0.255	-	0.255

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date: May 2017**

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0303032A / TROJAN - RH12	Project (Number/Name) RH5 / TROJAN - RH12 - MIP
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Will continue research and testing of receiver packages for fixed and transportable TROJAN systems to acquire non-standard modulations using DSP and FPGAs.					
<p>Title: Development of Satellite Communication (SATCOM) dishes and transceivers</p> <p>Description: Development of smaller more mobile Satellite Communication (SATCOM) dishes and transceivers. Development of more efficient use of bandwidth, communications on the move and man-packable intelligence collection systems.</p> <p>FY 2016 Accomplishments: Continued development of smaller more mobile SATCOM dishes.</p> <p>FY 2017 Plans: Continue development of smaller tactical SATCOM dishes and transceivers to support beyond line of sight capabilities.</p> <p>FY 2018 Base Plans: Will continue development of smaller tactical SATCOM dishes and transceivers to support beyond line of sight capabilities.</p>	0.744	0.371	0.375	-	0.375
<p>Title: Develop specialized software enhancements to the TROJAN streaming subsystems</p> <p>Description: Develop specialized software enhancements to the TROJAN audio streaming subsystems to improve system redundancy and throughput capacity and system management capabilities; Investigate compression/processing technologies to reduce communications bandwidth requirements for remoted TROJAN systems, including streaming audio technologies.</p> <p>FY 2016 Accomplishments: Developed specialized software enhancements to the TROJAN audio streaming subsystems to improve system redundancy and throughput capacity.</p> <p>FY 2017 Plans: Research specialized software enhancements to improve system redundancy and throughput capacity to enable support for full motion video (FMV) streaming.</p> <p>FY 2018 Base Plans: Will continue efforts to develop specialized software enhancements to improve system redundancy and throughput capacity to enable support for full motion video (FMV) streaming.</p>	0.050	0.023	0.023	-	0.023
<p>Title: Labor cost software (SW) engineers</p>	0.775	0.775	0.775	-	0.775

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0303032A / TROJAN - RH12	Project (Number/Name) RH5 / TROJAN - RH12 - MIP
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: Labor for two software (SW) engineers in support of GLAIVE and other above applicable efforts. Labor for one Material Developer (MAT DEV) technologist, one MAT DEV software and one MAT DEV Hardware (HW) engineer.</p> <p>FY 2016 Accomplishments: Resourced labor for two SW engineers in support of GLAIVE and other above applicable efforts. Resource labor for one MAT DEV technologist, one MAT DEV software and one MAT DEV HW engineer.</p> <p>FY 2017 Plans: Resource labor for one MAT DEV technologist, two MAT DEV software engineers and two MAT DEV HW engineers.</p> <p>FY 2018 Base Plans: Will continue to resource labor for one MAT DEV technologist, two MAT DEV software engineers and two MAT DEV HW engineers.</p>					
Accomplishments/Planned Programs Subtotals	5.022	4.273	4.431	1.200	5.631

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

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• BA0326: TROJAN (MIP) (OPA SSN BA0326)	23.046	25.680	16.052	21.310	37.362	16.863	17.368	17.612	18.144	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Acquisition Strategy for the TROJAN NexGEN Systems supported by TROJAN RDT&E is to adapt and leverage from Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) products. Additionally leverage off of development by DoD and other Government agencies to the greatest extent possible. TROJAN RDT&E is used to fund the development of enhancing these technologies to meet specific user requirements.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	12.686	18.425	14.616	-	14.616	12.885	17.880	37.197	56.885	Continuing	Continuing
EW5: <i>Electronic Warfare Development - MIP</i>	-	6.660	6.758	5.751	-	5.751	3.587	8.282	27.129	46.432	Continuing	Continuing
EW6: <i>ARAT-TSS - MIP</i>	-	6.026	11.667	8.865	-	8.865	9.298	9.598	10.068	10.453	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element encompasses engineering and manufacturing development for tactical EW. EW encompasses the development of tactical EW equipment and systems mounted in both ground and air vehicles. The systems under this program provides the Army with the capability to degrade or deny hostile forces the effective use of their communications, counter mortar/counterbattery radars, surveillance radars, infrared/optical battlefield surveillance systems and electronically fused munitions. Existing Army EW systems must be replaced or upgraded to maintain their capability in the face of threats. Prophet Enhanced is the current system under the Prophet Ground acquisition program. Its primary mission is to provide 24-hour Situation Development and Information Superiority to the supported maneuver brigade to enable the most effective engagement of enemy forces. Prophet Enhanced provides a modular, scalable, open architecture-based system solution optimized for ease of use in a variety of configurations (Stationary-Fixed, Mobile and Manpack). The Army Reprogramming Analysis Team (ARAT) is a Department of the Army established project to develop techniques, methods, tools and architecture to reprogram mission software embedded in Army EW systems, Force Protection Systems (FPS), and Target Sensing Systems (TSS) in response to changes in threat signatures. ARAT Research and Development enables continuous development of: 1) automated threat analysis tools to rapidly detect (flag) threat changes within intelligence systems, 2) tools to minimize the time to develop EW Mission Software and Products (MSP) for both air and ground EW systems, 3) tools and technology to minimize the time required to test and validate MSPs, 4) improved communications conduits to transmit mission software changes to field users, and 5) enhanced mission-software uploading tools. These efforts allow for rapid threat analysis, simulation, mission software development, distribution and uploading of mission software changes directly to the supported Soldier in the field. The ARAT project will develop, test and equip an Army-wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon system. Fiscal Year (FY) 2018 budget request funds Electronic Warfare (EW) Development for Prophet Enhanced efforts (Project EW5) and The Army Reprogramming Analysis Team (ARAT) efforts (Project EW6).

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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 0304270A / <i>Electronic Warfare Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	12.686	14.425	13.677	-	13.677
Current President's Budget	12.686	18.425	14.616	-	14.616
Total Adjustments	0.000	4.000	0.939	-	0.939
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	-1.527	-	-1.527
• Outyear Inflation Adjustment 1	0.000	0.000	0.254	-	0.254
• Signal of Interest Requirement Funding	0.000	0.000	2.212	-	2.212
• EW Mission Software Advancement	0.000	4.000	0.000	-	0.000

Change Summary Explanation

Funds realigned in FY2018 in the amount of \$1,527K from RDT&E to OPA (BZ9751 - Prophet Enhanced Modification) to provide sufficient funding to level out production. \$254K added to FY18 to adjust for inflation. \$2,212 added to FY18 to fund requirement for Signal of Interest upgrades.

Funding increased by an additional \$4M on the FY2017 EW6 line to provide additional funding to advance Electronic Warfare (EW) mission software capability to rapidly detect threat changes, determine impact to friendly EW systems, rapidly develop a mission software solution to detect and defeat threat systems, and distribute mission software to forward deployed combat forces.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>				Project (Number/Name) EW5 / <i>Electronic Warfare Development - MIP</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EW5: <i>Electronic Warfare Development - MIP</i>	-	6.660	6.758	5.751	-	5.751	3.587	8.282	27.129	46.432	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Prophet Enhanced is the current system under the Prophet Ground acquisition program. Funds provide for development and integration of Technical Insertion upgrades for Next Generation Signals and state-of-the-art Signals Intelligence (SIGINT) exploitation techniques to increase the capabilities of the Prophet Enhanced and maintain operational relevance. The Prophet Enhanced is the tactical commander's sole organic ground-based SIGINT/Electronic Warfare system for the Multi-Function Teams (MfTs), Stryker Brigade Combat Teams (SBCTs), and Expeditionary-Military Intelligence Brigades (E-MIBs). Its primary mission is to provide 24-hour Situation Development and Information Superiority to the supported maneuver brigade to enable the most effective engagement of enemy forces. Prophet Enhanced provides a modular, scalable, open architecture-based system solution optimized for ease of use in a variety of configurations (Stationary-Fixed, Mobile and Manpack). It also incorporates product modification, integration, and test of equipment for rapid integration of Technical Insertions (TI) and product development to ensure operational relevance.

Justification:

Fiscal Year (FY) 2018 Base dollars in the amount of \$5.751 million will support non-recurring engineering upgrades to the Prophet Enhanced Signals of Interest (SOI) baseline and implement Joint Interface Control Document (JICD) 4.2, enabling Theater Netcentric Geolocation (TNG) capabilities to leverage collaborative networks. Specifically, new signal capabilities will be developed, integrated, and tested/accredited to ensure that Prophet keeps pace with the constantly changing signal environment and to ensure that Prophet maintains its operational relevance against key enemy threats.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Next Generation Signals	3.139	-	-	-	-
Description: Development of next generation signals enable the Prophet system to remain operationally relevant with state-of-the-art Signal and Threat exploitation capabilities.					
FY 2016 Accomplishments: Funds are provided for hardware upgrades to increase system performance.					
Title: Enhanced SIGINT Exploitation	3.321	-	-	-	-
Description: Development of next generation signals enable the Prophet system to remain operationally relevant with state-of-the-art Signal and Threat exploitation capabilities.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>	Project (Number/Name) EW5 / <i>Electronic Warfare Development - MIP</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p><i>FY 2016 Accomplishments:</i> Funds are provided for S/W upgrades (receiver software upgrade) to increase system performance.</p>					
<p><i>Title:</i> Improved Manpack Signal Set</p> <p><i>Description:</i> Development and integration of the improved Manpack will enable the Prophet system to remain operationally relevant in the constantly changing signal environment.</p>	-	6.258	-	-	-
<p><i>FY 2017 Plans:</i> Funds will provide support for non-recurring engineering change and software qualification testing for the Prophet Enhanced Manpack system. In addition, funds will also provide for engineering and software development support for the Prophet program.</p>					
<p><i>Title:</i> Program Management</p> <p><i>Description:</i> Development of next generation signals, enhanced SIGINT exploitation, and improved manpack signal sets enable the Prophet system to remain operationally relevant with state-of-the-art Signal and Threat exploitation capabilities.</p>	0.200	0.500	0.130	-	0.130
<p><i>FY 2016 Accomplishments:</i> Funds are provided for core, matrix and contractor system engineering and program management support for the Prophet program.</p> <p><i>FY 2017 Plans:</i> Funds will provide for core, matrix and contractor system engineering and program management support for the Prophet program. In addition, the integration of the advanced signal types requires increased manpower for the oversight and system engineering support to the integration efforts.</p> <p><i>FY 2018 Base Plans:</i> Funds will provide for core, matrix and contractor system engineering and program management support for the Prophet program.</p>					
<p><i>Title:</i> Upgrade to JICD 4.2</p> <p><i>Description:</i> JCID 4.2 will allow Theater Netcentric Geolocation (TNG) capabilities to leverage collaborative networks.</p> <p><i>FY 2018 Base Plans:</i></p>	-	-	3.409	-	3.409

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>	Project (Number/Name) EW5 / <i>Electronic Warfare Development - MIP</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Development of new JICD 4.2 software and integration into Prophet Enhanced.					
Title: Redhawk Signal of Interest upgrades	-	-	2.212	-	2.212
Description: The Signal Environment that Prophet Systems exploit is constantly changing with evolving threats. This environment creates gaps in Prophet's ability to collect and exploit these signals. Prophet must constantly integrate software upgrades to remain relevant against these numerous, key, and high-priority emerging threats.					
FY 2018 Base Plans: Development of Next Generation SIGINT capabilities to include numerous key REDHAWK software applications and integration of the Next Generation Manpack software into the Prophet SIGINT Software (PS2) Baseline. The REDHAWK applications and Manpack Software address signal exploitation gaps in Prophet's ability to exploit key tactical signals and threats.					
Accomplishments/Planned Programs Subtotals	6.660	6.758	5.751	-	5.751

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SSN BZ9753: <i>Prophet Enhanced Modification MIP (BZ9753)</i>	-	41.450	46.793	2.300	49.093	41.952	40.562	11.669	-	Continuing	Continuing
• SSN BZ7326: <i>Prophet Ground (OPA) - BZ7326</i>	53.650	-	-	-	-	-	-	-	-	Continuing	Continuing
• SSN BZ9751: <i>Special Purpose Systems (MIP OPA) (Prophet Only) - BZ9751</i>	3.978	4.055	4.241	-	4.241	4.162	-	-	-	Continuing	Continuing
• SSN 0605766A: <i>National Integration to Tactical Systems (MIP) - DX9 (TNG, PE 0605766A)</i>	10.599	4.955	2.820	-	2.820	6.524	6.688	4.650	4.567	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Prophet Research and Development (R&D) Acquisition Strategy is structured to maintain operational relevancy of Prophet Enhanced systems in a dynamic threat environment while reducing risk and streamlining business and engineering processes. Contracting activities are to modify forty-seven previously fielded ground tactical SIGINT systems to the current technology baseline. The Technical Insertion (TI) contract supports R&D and other developmental work.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>	Project (Number/Name) EW5 / <i>Electronic Warfare Development - MIP</i>

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>				Project (Number/Name) EW6 / ARAT-TSS - MIP			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EW6: ARAT-TSS - MIP	-	6.026	11.667	8.865	-	8.865	9.298	9.598	10.068	10.453	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Army Reprogramming Analysis Team (ARAT) is a Department of the Army established program to develop techniques, methods, tools and architecture to rapidly reprogram mission software embedded in Army Electronic Warfare (EW) systems in response to changes in threat signatures. The regulatory guidance directing this mission is contained in AR 525-15, AR 525-22, and AR 95-1. The ARAT develops integrated technical solutions required to counter increasingly sophisticated EW threats to US Forces. The ARAT reprogramming infrastructure supports the Army Campaign Plan to provide the Regionally Aligned Forces tactical Commander timely rapid-reprogramming capability of EW systems with mission software. The ARAT mission responsibility is to develop and distribute Mission Software and Products to forward deployed combat forces. ARAT identifies and analyzes threat signature changes which affect EW systems; determine the impact of observed signature changes; rapidly develop new mission software to adapt friendly systems to detect and defeat enemy threats to U.S. Army ground and air platforms; disseminate the Mission Software and Products to forward deployed forces, and provide government developed tools and software to upload new mission software into the affected EW systems.

A. Mission Description and Budget Item Justification

Current military operations are conducted in a rapidly changing threat environment, where Improvised Explosive Devices (IEDs), Infra Red (IR) man-portable air defense systems (MANPADS) seekers, radar guided surface-to-air-missiles (SAM), laser guided weapons, anti-helicopter mines, and targeting sensors are proliferating and evolving. Integrated solutions are required to counter increasingly sophisticated EW threats. The ARAT reprogramming infrastructure supports the tactical Commander by providing timely rapid reprogramming of mission software and information dissemination for Army supported, Joint and allied services. ARAT supports integrated reprogramming of target acquisition, target engagement, vehicle survivability, and Aircraft Survivability Equipment (ASE). ARAT rapid-reprogramming infrastructure supports tactical requirements for deployed aircraft and ground-based (e.g. Counter Radio-Controlled Improvised Explosive Device (CREW)) survivability systems. ARAT identifies and analyzes threat signature changes which affect EW systems; determines the impact of observed signature changes; develops new mission software to adapt the system to the changes; disseminates the mission software; and provides methods to upload the new mission software into the affected EW systems. Each element within the ARAT infrastructure plays a specific role within the program's rapid reprogramming process, providing the Soldier with the capability to install mission and target identification software at the lowest possible level, thus maximizing flexibility for tactical commanders. ARAT participates in the operational and developmental test design of Army EW systems, and supports Joint Service Reprogramming Exercises in all theaters. ARAT Research and Development enables continuous development of: 1) automated threat analysis tools to rapidly detect (flag) threat changes within the intelligence system, 2) tools to minimize the time to develop Mission Software and Products (MSP), 3) tools and technology to minimize the time required to test and validate MSPs, 4) improved communications conduits to rapidly transmit mission software to upload into supported EW systems. These efforts allow for rapid threat analysis, threat modeling and simulation, mission software development and testing, distribution and uploading of mission software directly to the supported Soldier in the field.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Keeping Pace with the Enemy and Technology	3.987	5.826	4.872	-	4.872

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>	Project (Number/Name) EW6 / ARAT-TSS - MIP

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: This effort focuses on developing a capability for the Government to rapidly develop and distribute organic mission software solutions for multiple EW systems. The Army must continually modernize and enhance software tools and processes counter enemy technology. ARAT EW6 Military Intelligence Program (MIP) executes Research, Development, Test, and Evaluation (RDTE) funding to provide an organic Army capability for this organization to rapidly develop and distribute mission software solutions for forward deployed combat forces.</p> <p>FY 2016 Accomplishments: In FY16 ARAT enhanced the Ground Electronic Warfare (EW) Automated Test Set (ATS), a unique integrated testbed for development and evaluation of Ground EW threat devices and load sets, adding database functionality and additional automated test procedures. The ATS provides hardware in the loop (HWIL) automated testing of Army Ground EW systems against real-world legacy and advanced threat devices, including multiple cellular communications technologies. With ATS, the Army is now able to test and optimize Ground EW systems for optimal performance against multiple threat devices in a complex and congested RF environment. The ATS replaced a prior manual test set which was limited to single threat devices, human observation of basic test apparatus and manual data recording. Full use of the ATS in load set development will shorten timelines and reduce the overall costs of rapid reprogramming of Army Ground EW systems.</p> <p>FY 2017 Plans: This FY effort will continue to: 1) study the intelligence data requirements to support MSP development for EO/UV/IR spectrums and other multi-spectral sensors for aviation and non-aviation EW systems, 2) Develop government organic knowledge and application-base enabling reprogramming of future systems, 3) Perform requirements analysis and concept development for the reprogramming of multi-spectral EW systems.</p> <p>FY 2018 Base Plans: This FY effort will capitalize on accomplishments in FY17 and will continue to enhance: 1) Intelligence data requirements to support MSP development for EO/UV/IR spectrums and other multi-spectral sensors for aviation and non-aviation EW systems, 2) Government organic knowledge and application-base enabling reprogramming of future systems, 3)USG capability for the reprogramming of multi-spectral EW systems.</p>					
<p>Title: Infrastructure Improvements Multispectral</p> <p>Description: This effort focuses on enhancing the Army's multispectral Missile Warning System (MWS) software sustainment infrastructure. With the worldwide proliferation of MANPADS the Army must have the capability</p>	1.323	2.428	1.637	-	1.637

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>	Project (Number/Name) EW6 / ARAT-TSS - MIP			
B. Accomplishments/Planned Programs (\$ in Millions)					
to rapidly analyze and develop mission software solutions to detect and counter MANPADS to defend Army Aviation platforms against this lethal threat.					
FY 2016 Accomplishments: In FY16 ARAT enhanced the ARAT Common Missile Warning System (CMWS) User Data Module Generator (UDMG) software to support the CMWS GEN3 Juliet Operational Flight Program (OFP). This software, which runs on the Army approved Windows 7 Army Gold Master (AGM) replaces the obsolete and unsupported original equipment manufacturer (OEM) software which required the Information Assurance (IA) non-compliant Solaris 8 operating system. The Windows UDMG software is fully IA compliant. Developed software tools and databases for organic United States Government (USG) sustainment and support of the CMWS algorithm and Bulk File Data (BFD), including enhancements for the advanced Virtual Software Integration Lab (VSIL) software, which allows laboratory runs of archived test data to be performed at high speed on modern cluster processing computer systems. These infrastructure enhancements provide the basis for an Operational Flight Program (OFP) development environment to enable the (USG) to develop and deploy an OFP environment for CMWS. Previously, minimal government organic capability existed, increasing the risk that systems cannot be readily adapted to changing threats in the future.					
FY 2017 Plans: Will conduct infrastructure enhancements for an OFP software development environment to enable the USG to develop and deploy an OFP environment for MWS. Will determine data and conduct analysis requirements for MANPADS characterization and establish an organic government analysis and sustainment process to support OFPs and subsequently adapt MWSs to new threats. Will establish government organic capability, thereby decreasing the risk that systems cannot be readily adapted to changing threats. Currently, minimal government organic capability exists, increasing the risk that systems cannot be readily adapted to changing threats.					
FY 2018 Base Plans: Will continue to conduct infrastructure enhancements for an OFP software development environment to enable the USG to develop and deploy an OFP environment for MWS. Continue evaluation of data and conduct analysis requirements for MANPADS characterization and enhance the organic government analysis and sustainment process to support OFPs and subsequently adapt MWSs to new threats. Enhance government organic capability, thereby decreasing the risk that systems cannot be readily adapted to changing threats.					
Title: Infrastructure Improvement Radio Frequency General					
	0.507	2.491	1.538	-	1.538

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>	Project (Number/Name) EW6 / ARAT-TSS - MIP

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Description: This effort focuses on enhancing the Army's Radio Frequency (RF) EW system MSP development and distribution infrastructure. The Army must fight in a contested and congested EW environment. Mission software solutions to defend against RF threats must be rapidly developed, tested and distributed to Soldiers on an ever changing battlefield.</p> <p>FY 2016 Accomplishments: In FY16 ARAT developed enhancements to the Test Automation Suite (TAS) of software which provides computer-controlled automated HWIL RF testing for multiple Army Radar Warning Receivers. TAS allows engineers to pre-program multiple simulated threats and operating modes for test and evaluation of Mission Data Software in the laboratory. TAS allows for unmonitored batch testing and automated data collection, greatly reducing the man hours required for Mission Data Software validation. The latest versions of TAS will support three different advanced RF simulator platforms, allowing for more testing to be run concurrently and reducing the risk of mission failure due to component failures in critical simulator hardware.</p> <p>FY 2017 Plans: Will continue to enhance the ARAT communications architecture to facilitate the rapid secure transmission of mission software changes to EW systems, with emphasis on remote user and highly mobile Soldier connectivity. Will develop and implement an initial integrated EW development and test environment to ensure MSP and threat countermeasure integration on the respective EW platform.</p> <p>FY 2018 Base Plans: Will further augment the ARAT communications architecture to enhance the rapid secure transmission of mission software changes to EW systems, with emphasis on remote user and highly mobile Soldier connectivity. Will continue to enhance the USG integrated EW development and test environment to ensure MSP and threat countermeasure integration on the respective EW platform.</p>					
<p>Title: Threat Flagging and Mission Data Set Reprogramming Tool Development</p> <p>Description: This effort focuses on enhancing the Army's capability to monitor changes in enemy EW systems that affect system performance of onboard Army detection, declaration and countermeasure EW systems. The enemy is continuously developing or modifying it's EW systems. For Army platforms to have protection against enemy systems it must have a robust capability to immediately detect changes in threat system performance and rapidly develop, test, and distribute a mission software solution that counter the threat. This effort will enhance the Army's capability bridge detection of a change in enemy threat and the rapid development of MSP.</p>	0.209	0.922	0.818	-	0.818

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>	Project (Number/Name) EW6 / ARAT-TSS - MIP
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p><i>FY 2016 Accomplishments:</i> In FY16 ARAT enhanced the ARAT Display Emulator software, which precisely produces the symbology displayed by the UH-60M Multi-Function Display (MFD) and the AH-64D Multi-Purpose Display (MPD) using Commercial Off The Shelf (COTS) computer hardware and operating systems. ARAT leveraged the Display Emulator scalability, modifying it to emulate the IP-1150 legacy cockpit display and adding the capability to display multiple aircraft displays at the same time on a standard computer monitor. Enhanced threat flagging (threat performance change detection) and intelligence analytical tools, based on supported systems performance criteria, to rapidly identify and counter emerging and changing threats that adversely affect the performance of the EW systems. Conducted initial mission software development, develop testing and validation tools to decrease time from threat-change detection to the distribution of MSP in order to increase the accuracy and fidelity of threat identification, and reduce the engineering involvement/workload associated with the manually intensive analysis and MSP development processes. Defined requirements and developed tools to migrate to a data support infrastructure that employs the Electronic Warfare Integrated Reprogramming (EWIR) database.</p> <p><i>FY 2017 Plans:</i> Will develop enhanced spiral applications for ARAT internal system specific threat flagging, threat analysis, mission software generation and testing processes. Will conduct spiral enhancement of threat flagging (threat performance change detection) and intelligence analytical tools, based on supported systems performance criteria, to rapidly identify and counter emerging and changing threats that adversely affect the performance of the EW systems. Will develop enhanced mission software development, testing and validation tools to decrease time from threat-change detection to the distribution of MSP in order to increase the accuracy and fidelity of threat identification, and reduce the engineering involvement/workload associated with the manually intensive analysis and MSP development processes. Will continue to evaluate and define requirements to develop tools that enhance a data support infrastructure that employs the EWIR database.</p> <p><i>FY 2018 Base Plans:</i> Will continue to enhance spiral applications for ARAT internal system specific threat flagging, threat analysis, mission software generation and testing processes. Will conduct spiral enhancement of threat flagging (threat performance change detection) and intelligence analytical tools, based on supported systems performance criteria, to rapidly identify and counter emerging and changing threats that adversely affect the performance of the EW systems. Will continue to enhance mission software development, testing and validation tools to decrease time from threat-change detection to the distribution of MSP in order to increase the accuracy and</p>					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / <i>Electronic Warfare Development</i>	Project (Number/Name) EW6 / ARAT-TSS - MIP

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
fidelity of threat identification, and reduce the engineering involvement/workload associated with the manually intensive analysis and MSP development processes. Will continue to enhance software tools that enhance a data support infrastructure that employs the EWIR database.					
Accomplishments/Planned Programs Subtotals	6.026	11.667	8.865	-	8.865

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

N/A

Remarks

D. Acquisition Strategy

The efforts to be funded in this project will require a combination of systems specific and high-tech knowledge. The contractual services portion for the project will be obtained from both the Communications-Electronics Command (CECOM) Software Engineering Center (SEC) competitive omnibus and the Research, Development and Engineering Command (RDECOM) and the Defense Technical Intelligence Center (DTIC) high tech contracts.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army **Date:** May 2017

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 1205117A / <i>Tractor Bears</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	17.928	-	17.928	30.961	59.991	56.550	0.007	0.000	165.437
FG3: <i>Tractor Bears</i>	-	0.000	0.000	17.928	-	17.928	30.961	59.991	56.550	0.007	0.000	165.437

Note

This program is not a new start. PE 0603308A Project EB7 transitions to PE 1206308 Project FE6 and PE 1205117A Project FG3 beginning in FY 2018.

A. Mission Description and Budget Item Justification

PE 0603308A Project EB7 transitions to PE 1206308 Project FE6 and PE 1205117A Project FG3 beginning in FY 2018. 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 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	17.928	-	17.928
Total Adjustments	0.000	0.000	17.928	-	17.928
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	17.928	-	17.928

Change Summary Explanation

New PE and Project - Details of this program are reported in accordance with Title 10, United States Code, Section 119 (a)(1).