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**Department of Defense
Fiscal Year (FY) 2023 Budget Estimates**

April 2022



Army

Justification Book Volume 2b of 2

Research, Development, Test & Evaluation, Army

RDT&E – Volume II, Budget Activity 5A

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Army • Budget Estimates FY 2023 • RDT&E Program

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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, \$13,703,609,000.00 to remain available for obligation until September 30, 2024.

The FY 2023 Overseas Operations accounted for in the base budget are as follows:

Combat or direct combat support expenses that discontinue once combat operations end at major contingency location \$12,800,000.

In-theater and in-CONUS expenses that remain after combat operations cease and have been previously funded in OCO \$5,875,000.

COST STATEMENT

The following Justification Books were prepared at a cost of \$474,495.00: Aircraft (ACFT), Missiles (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 5C, Budget Activity 5D, Budget Activity 6, Budget Activity 7, and Budget Activity 8.

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FY 2023 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 2022.

2. **Relationship of the FY 2023 Budget Submitted to Congress to the FY 2022 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.

New Start Programs:

<i>Budget Activity</i>	<i>OSDPE / Project</i>	<i>Project Title</i>
02	0602002A / DC4	Army Applied Innovation
02	0602002A / DC5	Team Ignite
02	0602141A / CII	Advanced Armaments Lethality Technology
02	0602141A / CZ9	Foundational Hypersonic Weapons Research
02	0602144A / CV3	Engineer Enablers Maneuver, LOG, & Sustainment Apl
02	0602144A / DA1	SAFR Alternatives for Readiness Applied Research
02	0602145A / CU5	Platform Agnostic Armaments Applied Technology
02	0602146A / CU6	Adaptive Information Mediation and Analytics
02	0602146A / CV4	Pathfinder 3D Applied Technology
02	0602150A / CV7	High Energy Laser Direct Diode Apl Tech
02	0602150A / CV8	Vulnerability Modules for Multi-Domain Operations
02	0602150A / DA9	Radar Survivability through Dis Sensing Tech
02	0602180A / DA5	AI Enabled Talent Management Applied Research
02	0602180A / DA6	AI-Enabled Command and Coordination Apl Research
02	0602183A / CU7	Control & Autonomy for Tactical Superiority Tech
02	0602183A / CU8	Structures Tech for Enduring Efficient Resilience

02	0602183A / CU9	Systems Design Technology
02	0602184A / CV9	Technical-SAVVY Soldier Applied Research
03	0603025A / DA3	Army Advanced Innovation
03	0603040A / CN6	Predictive Maintenance Advanced Technology
03	0603040A / DA7	AI-Enabled Command and Coordination Adv Tech
03	0603041A / DA4	All Domain Convergence Engineering & Architectures
03	0603043A / CV1	Control & Autonomy for Tactical Superiority Adv
03	0603043A / CV2	Structures Platform Int Resilience & Efficiency
03	0603119A / CV5	Engineer Enablers Maneuver, LOG, & Sustainment Adv
03	0603119A / DA2	SAFR Alternatives for Readiness Advanced Tech
03	0603466A / CV6	Optimized High Energy Laser Source Adv Tech
03	0603466A / DB3	Radar Survivability through Dis Sensing Adv Tech
04	0604020A / DC8	Army Experimentation and Prototyping
05	0604641A / CF5	Robotic Combat Vehicle (BA5) NGCV-CFT
05	0604827A / S65	Platoon Power Generator
05	0604854A / 516	Paladin/FAASV
06	0605235A / CQ4	Mid-Range Capability

Program Element/Project Restructures:

<u>Budget Activity</u>	<u>Old OSDPE / Project: Title</u>	<u>New OSDPE / Project</u>
02	0602143A / BE6: Reactive/Resp Surfaces & Matls-Soldiers & Sys	0602184A / CW9
02	0602146A / AΘ2: Stand-In Advanced RF Effects (STARE)	0602146A / AP5
02	0602146A / AR3: Intelligent Environmental Battlefield Awareness	0602182A / CX3
02	0602146A / AR7: Sensing in Contested Environments Technology	0602182A / CX5
02	0602146A / AR9: Persistent Geophysical Sensing-Infrasound Tech	0602182A / CX4
02	0602146A / AT2: Subterranean Detection and Monitoring Technology	0602182A / CX6
02	0602146A / AV7: Atmospheric Modeling and Meterological Technology	0602182A / CW2
02	0602146A / CK1: Assured PNT Enabling Technologies	0602182A / CZ6
02	0602148A / AI9: Future UAS Engine Technology	0602183A / CW6

02	0602148A / AJ2: Next Generation Rotorcraft Transmission Technology	0602183A / CW8
02	0602148A / AJ6: Advanced Rotors Technology	0602183A / CW3
02	0602148A / AJ8: Experimental and Computational Aeromechanics Techn	0602183A / CW5
02	0602148A / AL2: High Performance Computing for Rotorcraft App Tech	0602183A / DC2
02	0602148A / AL4: High Speed and Efficient VTOL Vehicle Technology	0602183A / CW7
02	0602148A / AL5: Air Vehicle Structures and Dynamics Technology	0602183A / CW4
02	0602148A / AL8: Holistic Situational Awareness and Dec Making Tech	0602141A / CG4
02	0602150A / AD2: High Energy Laser (HEL) Enabling and Support Techn	0602150A / DC1
02	0602150A / AD3: Maneuver Air Defense Technology	0603466A / AD4
02	0602182A / CM9: Convergent CEMA Deception	0602182A / CZ7
03	0602145A / BJ9: Autonomous Mobility Tech	0603462A / BK1
03	0602146A / AM8: Protected SATCOM Technology	0603463A / AM9
03	0602148A / AK4: Multi-Role Small Guided Missile Technology	0603465A / AK5
03	0603463A / AR4: Intelligent Env Battlefield Awareness Adv Tech	0603042A / CX7
03	0603463A / AS9: Persistent Geophysical Sensing-Infrasound Adv Tech	0603042A / CX8
03	0603463A / AR8: Sensing in Contested Environments Adv Technology	0603042A / CX9
03	0603463A / AT3: Subterranean Detection and Monitoring Adv Technology	0603042A / CZ5
03	0603465A / AJ7: Advanced Rotors Advanced Technology	0603043A / CX1
03	0603043A / AJ3: Next Generation Rotorcraft Transmission Adv Technology	0603043A / CX2
03	0603043A / AL3: HPC for Rotorcraft Applications Adv Tech	0603043A / DC3
03	0603463A / AU2: Optimization of Geospatial Data for Visualization	0603463A / AT8
03	0603463A / AV1: GEOInt/Ops Logistics Integration-Planning Adv Tech	0603463A / AU4
03	0602147A / AF1: Long Range Maneuverable Fires (LRMF) Technology	0603464A / AF2
03	0603464A / AE8: Land-Based Anti-Ship Missile (LBASM) Advanced Tech	0603464A / CZ8
03	0603465A / CH6: Adapt & Resilnt Tach Autnmy Cont&Struct Adv Tech	0603043A / CV1
03	0603465A / CH6: Adapt & Resilnt Tach Autnmy Cont&Struct Adv Tech	0603043A / CV2
03	0603465A / CH8: UAS Survivability Advance Technology	0603465A / AK3
03	0603465A / CH8: UAS Survivability Advance Technology	0603465A / CG1
03	0602148A / BZ7: Future Vertical Lift Medical Technologies	0603465A / CJ5
04	0603466A / AD1: High Energy Laser Tactical Vehicle Demo Adv Tech	0604019A / BU9
04	0305251A / FA8: Cyberspace Operations Forces and Force Support	0305251A / DD3
04	0603801A / B47: Future Vertical Lift	0603801A / CS7
04	0604117A / FI4: Maneuver - Short Range Air Defense (M-SHORAD)	0604117A / CR9
04	0605054A / FI3: Rapid Capability Development and Maturation	0604117A / CR9
04	0604117A / FI4: Maneuver - Short Range Air Defense (M-SHORAD)	0604117A / CS1

04	0604644A / MR1: Mobile Intermediate Range Missile	0604135A / MR2
04	0604644A / MR1: Mobile Intermediate Range Missile	0604135A / MR3
04	0604644A / MR1: Mobile Intermediate Range Missile	0604135A / MR4
04	0604182A / HX1: Long Range Hypersonic Weapon	0604182A / HX3
04	0604182A / HX1: Long Range Hypersonic Weapon	0604182A / HX4
04	0604182A / HX1: Long Range Hypersonic Weapon	0604182A / HX5
04	0604182A / HX1: Long Range Hypersonic Weapon	0604182A / HX6
05	0604818A / EJ5: Mounted Computing Environment (MCE)	0604805A / 593
05	0605013A / T05: Army Business System Modernization Initiatives	0605013A / BY3
05	0608041A / CD1: Defensive Cyber - Software Prototype Devel	0605041A / XU3
05	0605042A / FA1: Manpack Radio	0605236A / CQ1
05	0605042A / FA2: Rifleman Radio (RR)	0605236A / CQ1
06	0605602A / 628: Developmental Test Technology & Sustainment	0605602A / FJ3
06	0605602A / 62C: Modeling and Simulation Instrumentation	0605602A / FJ3
07	0303142A / 456: MILSATCOM System Engineering	0303142A / CO7
07	0205778A / EG2: GMLRS Alternative Warheads	0205778A / EG3

Program Terminations (including transfers to Procurement and Sustainment):

<u>Budget Activity</u>	<u>OSDPE / Project</u>	<u>Project Title</u>
01	0601104A / CI9	University & Industry Rsch Ctrs / Strategic University Basic Research Alliance
02	0602141A / CJ6	Lethality Technology / Advanced Energetics for Missile Technologies
02	0602143A / BB9	Soldier Lethality Technology / Human Performance Tech for Mobility & Lethality
02	0602144A / CG5	Ground Technology / Ground Vehicle Sensor Concepts and Technologies
02	0602146A / AR1	Network C3I Technology / Robust, Resilient and Intelligent C3I Technology
02	0602150A / AD5	Air and Missile Defense Technology / Next Generation Fires Radar Technology
03	0603002A / MN3	Medical Advanced Technology / Immediate Cardiopulmonary Stabilization Adv Tech
03	0603002A / MN4	Medical Advanced Technology / Advanced Life Support Advanced Technology
03	0603002A / MN5	Medical Advanced Technology / Next Generation Blood Products Advanced Technology
03	0603002A / MN9	Medical Advanced Technology / Far Forward Behavioral Health Care Advanced Tech

03	0603463A / AN2	Network C3I Advanced Technology / Narrowband SATCOM Advanced Technology
03	0603466A / AD4	Air and Missile Defense Adv Technology / Maneuver Air Defense Advanced Technology
04	0604785A / DS4	Integrated Base Defense / Integrated Base Defense
05	0604854A / HB6	Artillery Systems EMD / Mobile 155MM Howitzer

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.

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Department of the Army
 FY 2023 President's Budget
 Exhibit R-1 FY 2023 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

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<u>Summary Recap of Budget Activities</u>	<u>FY 2021</u> <u>(Base + OCO)</u>	<u>FY 2022</u> <u>Enactment</u>	<u>FY 2023</u> <u>Request</u>
Basic Research	552,521	606,509	466,823
Applied Research	1,518,220	1,529,888	883,759
Advanced Technology Development	1,948,792	2,190,430	1,392,065
Advanced Component Development & Prototypes	3,589,313	3,818,276	4,098,749
System Development & Demonstration	2,979,946	3,254,230	4,031,334
Management Support	1,832,049	1,553,905	1,554,252
Operational Systems Development	1,719,691	1,466,180	1,188,403
Software and Digital Technology Pilot Programs	56,706	108,841	94,888
Total Research, Development, Test & Evaluation	14,197,238	14,528,259	13,710,273
<u>Summary Recap of FYDP Programs</u>			
General Purpose Forces	589,523	579,473	392,489
Intelligence and Communications	372,869	275,873	210,597
Research and Development	13,099,825	13,566,200	13,009,253
Central Supply and Maintenance	130,785	103,720	91,270
Administration and Associated Activities	253		
Classified Programs	3,983	2,993	6,664
Total Research, Development, Test & Evaluation	14,197,238	14,528,259	13,710,273

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

Line No	Program Element Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Enactment	FY 2023 Request	Se c
1	0601102A	Defense Research Sciences	01	344,031	368,751	279,328	U
2	0601103A	University Research Initiatives	01	84,697	91,241	70,775	U
3	0601104A	University and Industry Research Centers	01	118,716	126,267	100,909	U
4	0601121A	Cyber Collaborative Research Alliance	01	5,077	5,067	5,355	U
5	0601601A	Artificial Intelligence and Machine Learning Basic Research	01		15,183	10,456	U
		Basic Research		552,521	606,509	466,823	
6	0602002A	Army Agile Innovation and Development-Applied Research	02			9,534	U
7	0602115A	Biomedical Technology	02	11,403	11,925		U
8	0602134A	Counter Improvised-Threat Advanced Studies	02	1,927	1,976	6,192	U
9	0602141A	Lethality Technology	02	117,484	91,626	87,717	U
10	0602142A	Army Applied Research	02	29,257	28,654	27,833	U
11	0602143A	Soldier Lethality Technology	02	201,511	205,058	103,839	U
12	0602144A	Ground Technology	02	159,358	216,550	52,848	U
13	0602145A	Next Generation Combat Vehicle Technology	02	258,341	245,525	174,090	U
14	0602146A	Network C3I Technology	02	202,256	164,804	64,115	U
15	0602147A	Long Range Precision Fires Technology	02	119,007	93,785	43,029	U
16	0602148A	Future Verticle Lift Technology	02	169,536	133,158	69,348	U
17	0602150A	Air and Missile Defense Technology	02	107,584	93,549	27,016	U
18	0602180A	Artificial Intelligence and Machine Learning Technologies	02		15,034	16,454	U
19	0602181A	All Domain Convergence Applied Research	02		25,967	27,399	U
20	0602182A	C3I Applied Research	02		12,406	27,892	U
21	0602183A	Air Platform Applied Research	02		6,597	41,588	U

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Line No	Program Element Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Enactment	FY 2023 Request	Sec
22	0602184A	Soldier Applied Research	02		11,064	15,716	U
23	0602213A	C3I Applied Cyber	02	18,816	12,119	13,605	U
24	0602386A	Biotechnology for Materials - Applied Research	02		20,643	21,919	U
25	0602785A	Manpower/Personnel/Training Technology	02	20,399	18,701	19,649	U
26	0602787A	Medical Technology	02	101,341	120,747	33,976	U
Applied Research				1,518,220	1,529,888	883,759	
27	0603002A	Medical Advanced Technology	03	95,146	137,804	5,207	U
28	0603007A	Manpower, Personnel and Training Advanced Technology	03	11,344	14,273	15,598	U
29	0603025A	Army Agile Innovation and Demonstration	03		22,231	20,900	U
30	0603040A	Artificial Intelligence and Machine Learning Advanced Technologies	03		909	6,395	U
31	0603041A	All Domain Convergence Advanced Technology	03		17,743	45,463	U
32	0603042A	C3I Advanced Technology	03		3,151	12,716	U
33	0603043A	Air Platform Advanced Technology	03		754	17,946	U
34	0603044A	Soldier Advanced Technology	03		890	479	U
35	0603115A	Medical Development	03	26,711	26,508		U
36	0603116A	Lethality Advanced Technology	03		8,066	9,796	U
37	0603117A	Army Advanced Technology Development	03	64,163	76,815	134,874	U
38	0603118A	Soldier Lethality Advanced Technology	03	154,161	152,369	100,935	U
39	0603119A	Ground Advanced Technology	03	196,055	280,490	32,546	U
40	0603134A	Counter Improvised-Threat Simulation	03	24,087	24,747	21,486	U
41	0603386A	Biotechnology for Materials - Advanced Research	03		53,736	56,853	U
42	0603457A	C3I Cyber Advanced Development	03	43,357	61,426	41,354	U

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Line No	Program Element Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Enactment	FY 2023 Request	Sec
43	0603461A	High Performance Computing Modernization Program	03	221,161	229,123	251,964	U
44	0603462A	Next Generation Combat Vehicle Advanced Technology	03	309,860	299,712	193,242	U
45	0603463A	Network C3I Advanced Technology	03	215,337	211,068	125,565	U
46	0603464A	Long Range Precision Fires Advanced Technology	03	177,142	141,909	100,830	U
47	0603465A	Future Vertical Lift Advanced Technology	03	220,334	261,880	177,836	U
48	0603466A	Air and Missile Defense Advanced Technology	03	173,244	145,826	11,147	U
49	0603920A	Humanitarian Demining	03	16,690	19,000	8,933	U
Advanced Technology Development				1,948,792	2,190,430	1,392,065	
50	0603305A	Army Missile Defense Systems Integration	04	139,518	56,702	12,001	U
51	0603308A	Army Space Systems Integration	04	25,584	25,755	17,945	U
52	0603327A	Air and Missile Defense Systems Engineering	04	47,098	15,000		U
53	0603619A	Landmine Warfare and Barrier - Adv Dev	04	56,067	46,637	64,001	U
54	0603639A	Tank and Medium Caliber Ammunition	04	106,881	73,844	64,669	U
55	0603645A	Armored System Modernization - Adv Dev	04	130,485	164,328	49,944	U
56	0603747A	Soldier Support and Survivability	04	5,312	2,897	4,060	U
57	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	182,400	113,365	72,314	U
58	0603774A	Night Vision Systems Advanced Development	04	15,179	62,820	18,048	U
59	0603779A	Environmental Quality Technology - Dem/Val	04	20,906	22,921	31,249	U
60	0603790A	NATO Research and Development	04	4,589	3,777	3,805	U
61	0603801A	Aviation - Adv Dev	04	694,296	1,178,460	1,162,344	U
62	0603804A	Logistics and Engineer Equipment - Adv Dev	04	15,287	11,055	9,638	U
63	0603807A	Medical Systems - Adv Dev	04	36,006	37,053	598	U

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64	0603827A	Soldier Systems - Advanced Development	04	23,905	25,925	25,971	U
65	0604017A	Robotics Development	04	92,401	80,525	26,594	U
66	0604019A	Expanded Mission Area Missile (EMAM)	04		27,872	220,820	U
67	0604020A	Cross Functional Team (CFT) Advanced Development & Prototyping	04			106,000	U
68	0604021A	Electronic Warfare Technology Maturation (MIP)	04	15,034			U
69	0604035A	Low Earth Orbit (LEO) Satellite Capability	04	21,850	19,638	35,509	U
70	0604036A	Multi-Domain Sensing System (MDSS) Adv Dev	04		50,548	49,932	U
71	0604037A	Tactical Intel Targeting Access Node (TITAN) Adv Dev	04		28,347	863	U
72	0604100A	Analysis Of Alternatives	04	9,714	10,091	10,659	U
73	0604101A	Small Unmanned Aerial Vehicle (SUAV) (6.4)	04	1,328	926	1,425	U
74	0604113A	Future Tactical Unmanned Aircraft System (FTUAS)	04	59,183	76,349	95,719	U
75	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04	308,805	297,629	382,147	U
76	0604115A	Technology Maturation Initiatives	04	141,109	132,561	269,756	U
77	0604117A	Maneuver - Short Range Air Defense (M-SHORAD)	04	5,776	39,376	225,147	U
78	0604119A	Army Advanced Component Development & Prototyping	04	167,990	189,483	198,111	U
79	0604120A	Assured Positioning, Navigation and Timing (PNT)	04	115,688	83,952	43,797	U
80	0604121A	Synthetic Training Environment Refinement & Prototyping	04	112,093	206,335	166,452	U
81	0604134A	Counter Improvised-Threat Demonstration, Prototype Development, and Testing	04	13,326	13,379	15,840	U
82	0604135A	Strategic Mid-Range Fires	04			404,291	U
83	0604182A	Hypersonics	04	841,666	315,131	173,168	U
84	0604403A	Future Interceptor	04		6,895	8,179	U
85	0604531A	Counter - Small Unmanned Aircraft Systems Advanced Development	04		19,148	35,110	U

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86	0604541A	Unified Network Transport	04	39,192	35,172	36,966	U
87	0604644A	Mobile Medium Range Missile	04	88,100	286,445		U
88	0604785A	Integrated Base Defense (Budget Activity 4)	04	2,020	2,040		U
89	0305251A	Cyberspace Operations Forces and Force Support	04	50,525	55,895	55,677	U
Advanced Component Development & Prototypes				3,589,313	3,818,276	4,098,749	
90	0604201A	Aircraft Avionics	05	7,011	6,654	3,335	U
91	0604270A	Electronic Warfare Development	05	56,624	30,840	4,243	U
92	0604601A	Infantry Support Weapons	05	89,497	79,339	66,529	U
93	0604604A	Medium Tactical Vehicles	05	8,213	9,524	22,163	U
94	0604611A	JAVELIN	05	5,983	7,094	7,870	U
95	0604622A	Family of Heavy Tactical Vehicles	05	22,254	28,445	50,924	U
96	0604633A	Air Traffic Control	05	3,383	4,405	2,623	U
97	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05			115,986	U
98	0604642A	Light Tactical Wheeled Vehicles	05	4,371	2,055		U
99	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05	123,992	122,778	71,287	U
100	0604710A	Night Vision Systems - Eng Dev	05	52,959	43,417	62,679	U
101	0604713A	Combat Feeding, Clothing, and Equipment	05	2,734	1,658	1,566	U
102	0604715A	Non-System Training Devices - Eng Dev	05	27,013	26,514	18,600	U
103	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	62,058	59,518	39,541	U
104	0604742A	Constructive Simulation Systems Development	05	9,779	22,240	29,570	U
105	0604746A	Automatic Test Equipment Development	05	5,375	8,807	5,178	U
106	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	7,605	12,453	8,189	U

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

Line No	Program Element Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Enactment	FY 2023 Request	Sec
107	0604768A	Brilliant Anti-Armor Submunition (BAT)	05	20,175			U
108	0604780A	Combined Arms Tactical Trainer (CATT) Core	05	3,438			U
109	0604798A	Brigade Analysis, Integration and Evaluation	05	18,737	21,423	21,228	U
110	0604802A	Weapons and Munitions - Eng Dev	05	277,344	297,086	263,778	U
111	0604804A	Logistics and Engineer Equipment - Eng Dev	05	53,676	54,642	41,669	U
112	0604805A	Command, Control, Communications Systems - Eng Dev	05	10,674	20,107	40,038	U
113	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	48,285	44,400	5,513	U
114	0604808A	Landmine Warfare/Barrier - Eng Dev	05	9,239	29,137	12,150	U
115	0604818A	Army Tactical Command & Control Hardware & Software	05	126,676	155,017	111,690	U
116	0604820A	Radar Development	05	105,271	122,607	71,259	U
117	0604822A	General Fund Enterprise Business System (GFEBs)	05	15,428	15,979	10,402	U
118	0604823A	Firefinder	05	18,278			U
119	0604827A	Soldier Systems - Warrior Dem/Val	05	6,546	6,454	11,425	U
120	0604852A	Suite of Survivability Enhancement Systems - EMD	05	62,012	96,132	109,702	U
121	0604854A	Artillery Systems - EMD	05	36,187	25,000	23,106	U
122	0605013A	Information Technology Development	05	123,659	129,380	124,475	U
123	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	111,078	67,701	67,564	U
124	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	76,140	35,560		U
125	0605030A	Joint Tactical Network Center (JTNC)	05	15,671	16,350	17,950	U
126	0605031A	Joint Tactical Network (JTN)	05	30,540	28,905	30,169	U
127	0605033A	Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)	05	5,758			U
128	0605035A	Common Infrared Countermeasures (CIRCM)	05	29,770	16,630	11,523	U

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

Line No	Program Element Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Enactment	FY 2023 Request	Sec
129	0605038A	Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) Sensor Suite	05	4,669	7,618		U
130	0605041A	Defensive CYBER Tool Development	05	28,544	18,811	33,029	U
131	0605042A	Tactical Network Radio Systems (Low-Tier)	05	20,511	28,741	4,497	U
132	0605047A	Contract Writing System	05	22,025	20,960	23,487	U
133	0605051A	Aircraft Survivability Development	05	99,403	61,768	19,123	U
134	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05	152,399	182,257	131,093	U
135	0605053A	Ground Robotics	05	12,010	16,360	26,809	U
136	0605054A	Emerging Technology Initiatives	05	294,366	226,802	185,311	U
137	0605143A	Biometrics Enabling Capability (BEC)	05		4,326	11,091	U
138	0605144A	Next Generation Load Device - Medium	05		15,397	22,439	U
139	0605145A	Medical Products and Support Systems Development	05	919	962		U
140	0605148A	Tactical Intel Targeting Access Node (TITAN) EMD	05		54,972	58,087	U
141	0605203A	Army System Development & Demonstration	05	177,501	122,175	119,516	U
142	0605205A	Small Unmanned Aerial Vehicle (SUAV) (6.5)	05	5,780	2,275	6,530	U
143	0605224A	Multi-Domain Intelligence	05		9,313	19,911	U
144	0605225A	SIO Capability Development	05		22,713		U
145	0605231A	Precision Strike Missile (PrSM)	05		188,452	259,506	U
146	0605232A	Hypersonics EMD	05		111,473	633,499	U
147	0605233A	Accessions Information Environment (AIE)	05		16,790	13,647	U
148	0605235A	Strategic Mid-Range Capability	05			5,016	U
149	0605236A	Integrated Tactical Communications	05			12,447	U
150	0605450A	Joint Air-to-Ground Missile (JAGM)	05	7,566	2,134	2,366	U

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Line No	Program Element Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Enactment	FY 2023 Request	Se
151	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05	213,956	159,873	265,288	U
152	0605531A	Counter - Small Unmanned Aircraft Systems Sys Dev & Demonstration	05		33,386	14,892	U
153	0605625A	Manned Ground Vehicle	05	162,390	202,320	589,762	U
154	0605766A	National Capabilities Integration (MIP)	05	7,670	13,454	17,030	U
155	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05	1,500	2,564	9,376	U
156	0605830A	Aviation Ground Support Equipment	05	1,413	1,201	2,959	U
157	0303032A	TROJAN - RH12	05	3,451	3,362	3,761	U
158	0303667A	Citizen Broadband Radio System	05	900			U
159	0303767A	AMBIT - Pre-Auctioned SRF	05	9,785			U
160	0304270A	Electronic Warfare Development	05	59,755	75,520	56,938	U
System Development & Demonstration				2,979,946	3,254,230	4,031,334	
161	0604256A	Threat Simulator Development	06	41,487	61,422	18,437	U
162	0604258A	Target Systems Development	06	35,279	42,404	19,132	U
163	0604759A	Major T&E Investment	06	119,231	93,617	107,706	U
164	0605103A	Rand Arroyo Center	06	12,989	32,296	35,542	U
165	0605301A	Army Kwajalein Atoll	06	221,949	240,877	309,005	U
166	0605326A	Concepts Experimentation Program	06	46,847	79,585	87,122	U
167	0605502A	Small Business Innovative Research	06	369,715			U
168	0605601A	Army Test Ranges and Facilities	06	390,366	367,125	401,643	U
169	0605602A	Army Technical Test Instrumentation and Targets	06	81,829	59,253	37,962	U
170	0605604A	Survivability/Lethality Analysis	06	36,001	36,370	36,500	U
171	0605606A	Aircraft Certification	06	2,736	2,489	2,777	U

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

Line No	Program Element Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Enactment	FY 2023 Request	Se c
172	0605702A	Meteorological Support to RDT&E Activities	06	6,360	6,521	6,958	U
173	0605706A	Materiel Systems Analysis	06	21,830	21,558	22,037	U
174	0605709A	Exploitation of Foreign Items	06	8,936	13,631	6,186	U
175	0605712A	Support of Operational Testing	06	54,116	55,122	70,718	U
176	0605716A	Army Evaluation Center	06	56,827	65,854	67,058	U
177	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	2,478	2,633	6,097	U
178	0605801A	Programwide Activities	06	89,023	96,558	89,793	U
179	0605803A	Technical Information Activities	06	25,817	31,987	28,752	U
180	0605805A	Munitions Standardization, Effectiveness and Safety	06	50,648	63,042	48,316	U
181	0605857A	Environmental Quality Technology Mgmt Support	06	1,715	1,789	1,912	U
182	0605898A	Army Direct Report Headquarters - R&D - MHA	06	50,859	48,981	53,271	U
183	0606002A	Ronald Reagan Ballistic Missile Defense Test Site	06	74,089	80,921	90,088	U
184	0606003A	CounterIntel and Human Intel Modernization	06	5,200	5,363	1,424	U
185	0606105A	Medical Program-Wide Activities	06	18,973	39,041		U
186	0606942A	Assessments and Evaluations Cyber Vulnerabilities	06	6,496	5,466	5,816	U
187	0909999A	Financing for Cancelled Account Adjustments	06	253			U
		Management Support		1,832,049	1,553,905	1,554,252	
188	0603778A	MLRS Product Improvement Program	07	9,785	12,314	18,463	U
189	0605024A	Anti-Tamper Technology Support	07	8,436	8,868	9,284	U
190	0607131A	Weapons and Munitions Product Improvement Programs	07	24,666	35,828	11,674	U
191	0607134A	Long Range Precision Fires (LRPF)	07	100,146			U
192	0607136A	Blackhawk Product Improvement Program	07	8,300	14,773		U

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<u>Line No</u>	<u>Program Element Number</u>	<u>Item</u>	<u>Act</u>	<u>FY 2021 (Base + OCO)</u>	<u>FY 2022 Enactment</u>	<u>FY 2023 Request</u>	<u>S e c</u>
193	0607137A	Chinook Product Improvement Program	07	49,409	67,872	52,513	U
194	0607139A	Improved Turbine Engine Program	07	232,159	260,024	228,036	U
195	0607142A	Aviation Rocket System Product Improvement and Development	07	11,321	12,417	11,312	U
196	0607143A	Unmanned Aircraft System Universal Products	07	19,460	4,594	512	U
197	0607145A	Apache Future Development	07	52,502	10,067	10,074	U
198	0607148A	AN/TPQ-53 Counterfire Target Acquisition Radar System	07		47,752	62,559	U
199	0607150A	Intel Cyber Development	07	14,652	3,611	13,343	U
200	0607312A	Army Operational Systems Development	07	35,851	28,029	26,131	U
201	0607313A	Electronic Warfare Development	07		5,673	6,432	U
202	0607665A	Family of Biometrics	07	1,276	1,144	1,114	U
203	0607865A	Patriot Product Improvement	07	178,984	125,932	152,312	U
204	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07	43,060	25,489	19,329	U
205	0203735A	Combat Vehicle Improvement Programs	07	213,726	280,107	192,310	U
206	0203743A	155mm Self-Propelled Howitzer Improvements	07	217,959	175,076	136,680	U
207	0203744A	Aircraft Modifications/Product Improvement Programs	07	11,261	10,000		U
208	0203752A	Aircraft Engine Component Improvement Program	07	80	132	148	U
209	0203758A	Digitization	07	4,351	3,903	2,100	U
210	0203801A	Missile/Air Defense Product Improvement Program	07	1,241	127	3,109	U
211	0203802A	Other Missile Product Improvement Programs	07	15,268	10,265	9,027	U
212	0205412A	Environmental Quality Technology - Operational System Dev	07	250	262	793	U
213	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	72,817	60,733	20,180	U
214	0208053A	Joint Tactical Ground System	07	9,510	13,379	8,813	U

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

Line No	Program Element Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Enactment	FY 2023 Request	Sec
216	0303028A	Security and Intelligence Activities	07	23,367	24,531		U
217	0303140A	Information Systems Security Program	07	28,270	15,680	17,209	U
218	0303141A	Global Combat Support System	07	70,652	45,297	27,100	U
219	0303142A	SATCOM Ground Environment (SPACE)	07	18,002	15,222	18,321	U
222	0305179A	Integrated Broadcast Service (IBS)	07	382	5,430	9,926	U
223	0305204A	Tactical Unmanned Aerial Vehicles	07	38,151	8,410	4,500	U
224	0305206A	Airborne Reconnaissance Systems	07	28,858	24,460	17,165	U
225	0305208A	Distributed Common Ground/Surface Systems	07	40,771			U
226	0307665A	Biometrics Enabled Intelligence	07		2,066		U
227	0708045A	End Item Industrial Preparedness Activities	07	130,785	103,720	91,270	U
9999	9999999999	Classified Programs		3,983	2,993	6,664	U
		Operational Systems Development		1,719,691	1,466,180	1,188,403	
228	0608041A	Defensive CYBER - Software Prototype Development	08	56,706	108,841	94,888	U
		Software and Digital Technology Pilot Programs		56,706	108,841	94,888	
Total Research, Development, Test & Eval, Army				14,197,238	14,528,259	13,710,273	

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93	05	0604604A	Medium Tactical Vehicles.....	Volume 2b - 126
94	05	0604611A	JAVELIN.....	Volume 2b - 142
95	05	0604622A	Family of Heavy Tactical Vehicles.....	Volume 2b - 150
96	05	0604633A	Air Traffic Control.....	Volume 2b - 179
97	05	0604641A	Tactical Unmanned Ground Vehicle (TUGV).....	Volume 2b - 187
98	05	0604642A	Light Tactical Wheeled Vehicles.....	Volume 2b - 203
99	05	0604645A	Armored Systems Modernization (ASM) - Eng Dev.....	Volume 2b - 213
100	05	0604710A	Night Vision Systems - Eng Dev.....	Volume 2b - 230
101	05	0604713A	Combat Feeding, Clothing, and Equipment.....	Volume 2b - 261
102	05	0604715A	Non-System Training Devices - Eng Dev.....	Volume 2b - 269
103	05	0604741A	Air Defense Command, Control and Intelligence - Eng Dev.....	Volume 2b - 296
104	05	0604742A	Constructive Simulation Systems Development.....	Volume 2b - 329
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Air Traffic Control	0604633A	96	05.....	Volume 2b - 179
Aircraft Avionics	0604201A	90	05.....	Volume 2b - 1
Armored Systems Modernization (ASM) - Eng Dev	0604645A	99	05.....	Volume 2b - 213
Automatic Test Equipment Development	0604746A	105	05.....	Volume 2b - 347
Combat Feeding, Clothing, and Equipment	0604713A	101	05.....	Volume 2b - 261
Constructive Simulation Systems Development	0604742A	104	05.....	Volume 2b - 329
Distributive Interactive Simulations (DIS) - Eng Dev	0604760A	106	05.....	Volume 2b - 365
Electronic Warfare Development	0604270A	91	05.....	Volume 2b - 17
Family of Heavy Tactical Vehicles	0604622A	95	05.....	Volume 2b - 150
Infantry Support Weapons	0604601A	92	05.....	Volume 2b - 39
JAVELIN	0604611A	94	05.....	Volume 2b - 142
Light Tactical Wheeled Vehicles	0604642A	98	05.....	Volume 2b - 203
Medium Tactical Vehicles	0604604A	93	05.....	Volume 2b - 126
Night Vision Systems - Eng Dev	0604710A	100	05.....	Volume 2b - 230
Non-System Training Devices - Eng Dev	0604715A	102	05.....	Volume 2b - 269
Tactical Unmanned Ground Vehicle (TUGV)	0604641A	97	05.....	Volume 2b - 187

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604201A / <i>Aircraft Avionics</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	7.011	6.654	3.335	-	3.335	2.576	0.000	2.959	2.987	Continuing	Continuing
C97: <i>ACFT Avionics</i>	-	6.357	5.807	2.278	-	2.278	1.297	-	-	-	Continuing	Continuing
VU3: <i>Networking And Mission Planning</i>	-	0.654	0.847	1.057	-	1.057	1.279	-	2.959	2.987	Continuing	Continuing

A. Mission Description and Budget Item Justification

A portion of this funding line is directly aligned to the Assured Positioning, Navigation, & Timing (APNT) Army Modernization Priority. The Fiscal Year (FY) 2023 budget request funds the development of Aircraft Avionics systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this Program Element support research, development, and test efforts in the Engineering and Manufacturing Development phases of these systems. Alternate capabilities (non-GPS) and/or complimentary PNT solutions will be investigated, studied, evaluated and developed as standalone or blended navigation functions.

The Enhanced Aviation Global Air Traffic Management (GATM) Localizer Performance with Vertical Guidance (LPV) Embedded Global Positioning System (GPS) Inertial Navigation System (EGI) (EAGLE-M) development program upgrades existing EGI hardware by incorporating M-Code to provide Assured Positioning, Navigation and Timing (A-PNT) capability in a GPS degraded environment.

The Alternate Position, Navigation, and Time (ALT-PNT) enables precise navigation and timing during Multidomain Operations (MDO) operations in the absence of GPS by leveraging ALT-NAV and Vision Based Navigation (VBN) efforts, and providing a secure and reliable fused PNT solution utilizing new and existing high grade sensors available on manned aviation aircraft. ALT-PNT utilizes Modular Open System Architecture (MOSA) standards allowing rapid and affordable platform integration, adopting of new technologies, and adjustment to changes in adversarial capability.

The Degraded Visual Environment (DVE) Environment Exploitation System (EES) focuses on active and passive sensor technology, synthetic vision, sensor and software data fusion, imagery processing, user interface, and multicore processing technologies to enable current and future capabilities and innovative technical solutions for the Army aviation fleet.

The Improved Data Modem (IDM) is the common solution for digitizing Army Aviation and is fielded on every modernized, rotary-wing Army aircraft, including the CH-47 Chinook, AH-64 Apache and UH-60 Black Hawk. The IDM provides the Army rotary wing fleet with critical communication capabilities, enables connectivity to multiple radios used by rotary-wing aircraft and the Blue Force Tracking transceiver, and provides the means for rapid data transfer.

The Aviation Mission Common Server (AMCS) effort is a replacement and capability upgrade for the current Army IDM 401 and provides the future architecture, hardware, and software capabilities for the next generation of IDM functionality and expanded mission processing. The AMCS will provide Army aviation an Open System Architecture hardware and software digital backbone developed utilizing a Modular Open Systems Approach and aligns with the Enterprise Architecture

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604201A / <i>Aircraft Avionics</i>
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Framework (EAF). The AMCS program will implement Mission Command Information System (MCIS) and additional Common Operating Environment capabilities utilizing a flexible open systems architecture and distributed processing resources with the capacity and architecture to perform an array of additional non-flight critical computing, data processing, radio and communications management, and graphics generation functions for the enduring and future Army Aviation fleet while maintaining separation of non-flight critical mission system technology integration from flight critical components. The AMCS provides the ability to rapidly integrate technology upgrades required to keep pace with evolving threats on Multi-Domain Battlefield. The AMCS enables the hosting of enhanced capabilities to communicate, navigate, sense, deploy weapon systems and interoperate across the Joint Force, and will be the center of the future Common Digital Backbone for the enduring and future Army Aviation fleets. AMCS is a key enabler for Multi-Domain Operations.

The Aviation Mission Planning System (AMPS) is a system used to conduct pre-mission and aircraft performance planning. It receives data from multiple sources and provides that data digitally to the aircraft to support aviation missions. AMPS is used for automated mission planning, risk assessment, and transfer of mission data to aviation platforms within an Aviation unit. This includes route generation, performance planning, communications planning, terrain analysis, data transfer, and mission rehearsal. These efforts include development and testing of a new underlying architecture to support the move of Army Aviation Mission Planning from the current structure to one that supports synchronization both vertically and horizontally between Aviation and Ground forces. It will allow aircrews to continually plan and update route, threat, and performance data throughout all phases of an Aviation mission. Development of a mobile aircraft performance planning/weight and balance calculator is currently underway and will be the first migration of AMPS capabilities to a mobile hardware agnostic environment.

The AN/ARC-220 High Frequency (HF) Radio is a US Army rotary wing high frequency solution which is operational on over 2,400 Army helicopters (primarily CH-47, UH-60, and AH-64). Key capabilities are voice and data, Automatic Link Establishment, text messaging, position reporting, and Selective Calling. It is also Voice Interoperable with standard ground HF systems in use today. Efforts include development of an Airborne Radio Control Manager (ARCM) driver to enhance the modernization of the AN/ARC-220 HF Radio.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	7.011	6.654	0.000	-	0.000
Current President's Budget	7.011	6.654	3.335	-	3.335
Total Adjustments	0.000	0.000	3.335	-	3.335
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	3.335	-	3.335

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics				Project (Number/Name) C97 / ACFT Avionics			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
C97: ACFT Avionics	-	6.357	5.807	2.278	-	2.278	1.297	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Fiscal Year (FY) 2023 budget request funds the development of Aircraft Avionics systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this Program Element support research, development, and test efforts in the Engineering and Manufacturing Development phases of these systems. Alternate capabilities (non-GPS) and/or complimentary PNT solutions will be investigated, studied, evaluated and developed as standalone or blended navigation functions.

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The Alternate Position, Navigation, and Time (ALT-PNT) enables precise navigation and timing during Multidomain Operations (MDO) operations in the absence of GPS by leveraging ALT-NAV and Vision Based Navigation (VBN) efforts, and providing a secure and reliable fused PNT solution utilizing new and existing high grade sensors available on manned aviation aircraft. ALT-PNT utilizes Modular Open System Architecture (MOSA) standards allowing rapid and affordable platform integration, adopting of new technologies, and adjustment to changes in adversarial capability.

FY22 SBIR/STTR Transfer \$212k in accordance with Title 15 USC 638.

The AN/ARC-220 High Frequency (HF) Radio is a US Army rotary wing high frequency solution which is operational on over 2,400 Army helicopters (primarily CH-47, UH-60, and AH-64). Key capabilities are voice and data, Automatic Link Establishment, text messaging, position reporting, and Selective Calling. It is also Voice Interoperable with standard ground HF systems in use today. Efforts include development of an Airborne Radio Control Manager (ARCM) driver to enhance the modernization of the AN/ARC-220 HF Radio.

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

	FY 2021	FY 2022	FY 2023
Title: EAGLE Navigation System A-PNT Integration	1.857	5.595	2.278
Description: The Enhanced Aviation Global Air Traffic Management (GATM) Localizer Performance with Vertical Guidance (LPV) Embedded Global Positioning System (GPS) Inertial Navigation System (EGI) (EAGLE-M) development program upgrades existing EGI hardware by incorporating M-Code to provide Assured Positioning, Navigation and Timing (A-PNT) capability in a GPS degraded environment.			
FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) C97 / ACFT Avionics
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Continue EAGLE-M development through safety of flight (SOF) qualification followed by full airworthiness testing/qualification. FY 2023 Plans: Conclude EAGLE-M full airworthiness testing/qualification and begin ALT-PNT technological maturation development efforts. FY 2022 to FY 2023 Increase/Decrease Statement: FY23 funding decreases as a result of the predicted completions in EAGLE-M development.			
Title: AN/ARC-220 High Frequency Radio Modernization	4.500	-	-
Title: FY22 SBIR/STTR Transfer Description: FY22 \$212K SBIR/STTR transfer in accordance with Title 15 USC 638. FY 2022 Plans: FY22 \$212K SBIR/STTR transfer in accordance with Title 15 USC 638. FY 2022 to FY 2023 Increase/Decrease Statement: FY22 \$212K SBIR/STTR transfer in accordance with Title 15 USC 638.	-	0.212	-
Accomplishments/Planned Programs Subtotals	6.357	5.807	2.278

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• AA0723: Comms, Nav Surveillance	101.355	58.117	72.387	-	72.387	85.081	63.984	38.380	38.233	Continuing	Continuing
• AA0704: GATM - Rotary Wing Aircraft	12.180	16.776	14.683	-	14.683	9.099	5.049	5.086	-	Continuing	Continuing
• A01006: Aviation ASSURED PNT	53.509	45.862	71.130	-	71.130	60.300	59.578	61.130	60.902	Continuing	Continuing
• C97: ACFT Avionics	6.357	5.807	2.278	-	2.278	1.297	-	-	-	Continuing	Continuing

Remarks
APA funding associated with the Aircraft Avionics Project C97 RDT&E efforts is now in the Aviation Assured PNT line (SSN A01006) beginning in FY21. Aviation Assured PNT funding on the Comms, Nav Surveillance line (SSN AA0723) was realigned to A01006 beginning in FY21.

D. Acquisition Strategy
This project is comprised of multiple systems supporting aircraft avionics. While the detailed acquisition strategy varies from program to program, the general strategy is for each individual program to complete the development and testing efforts in coordination with the aircraft platforms on integration issues, use the various contracts of the aircraft platforms original equipment manufacturers on integration efforts, and utilize the United States Army Combat Capabilities Development Command Aviation

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

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

& Missile Center for software development. This requires the use of various contract methods and types to accomplish the aircraft avionics development efforts. All required acquisition program documentation is prepared.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) C97 / ACFT Avionics
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PM Services (EAGLE)	Various	Development Command Aviation & Missiles Center : Redstone Arsenal, AL	0.536	-		-		-		-		-	0.000	0.536	-
FY22 SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.212	Apr 2022	-		-		-	0.000	0.212	-
Subtotal			0.536	-		0.212		-		-		-	0.000	0.748	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EGI/EAGLE A-PNT Assessment and Upgrade/ M-Code Integration	SS/CPFF	Honeywell : Clearwater, FL	20.915	-		-		-		-		-	0.804	21.719	-
EAGLE M-Code	SS/CPFF	Honeywell International : Clearwater, FL	-	1.787	Jun 2021	5.595	Feb 2022	2.278	Jan 2023	-		2.278	Continuing	Continuing	-
AN/ARC-220 High Frequency Radio Modernization	SS/CPFF	Defense Microelectronics Activity (DMEA) : San Francisco, CA	-	3.500	Jun 2021	-		-		-		-	0.000	3.500	-
Airborne Radio Control Manager Driver (AN/ ARC-220 HF Radio)	SS/CPFF	Georgia Tech Research Institute : Tucson, AZ	-	1.000	Jun 2021	-		-		-		-	0.000	1.000	-
Subtotal			20.915	6.287		5.595		2.278		-		2.278	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EAGLE M-Code / EGI Flight Test Support	Various	Development Command Aviation & Missiles Center	0.173	0.035	Jun 2021	-		-		-		-	0.000	0.208	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) C97 / ACFT Avionics
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AN/ARC-220 High Frequency Radio Modernization																												
Airborne Radio Control Manager Driver (AN/ARC-220 HF Radio)																												
EAGLE-M Development																												
ALT-PNT																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
AN/ARC-220 High Frequency Radio Modernization	3	2021	3	2022
Airborne Radio Control Manager Driver (AN/ARC-220 HF Radio)	3	2021	3	2022
EAGLE-M Development	3	2021	4	2023
ALT-PNT	1	2024	4	2024

Note
 DGNS: Doppler Global Positioning System (GPS) Navigation Set
 A-PNT: Assured-Position Navigation and Timing
 M-Code: Military-Code
 EGI: Embedded GPS Inertial

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics				Project (Number/Name) VU3 / Networking And Mission Planning			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
VU3: <i>Networking And Mission Planning</i>	-	0.654	0.847	1.057	-	1.057	1.279	-	2.959	2.987	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Fiscal Year (FY) 2023 budget request funds the development of Networking and Mission Planning systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this Project support research, development, and test efforts in the Engineering and Manufacturing Development phases of these systems.

The Improved Data Modem (IDM) is the common solution for digitizing Army Aviation and is fielded on every modernized, rotary-wing Army aircraft, including the CH-47 Chinook, AH-64 Apache and UH-60 Black Hawk. The IDM provides the Army rotary wing fleet with critical communication capabilities, enables connectivity to multiple radios used by rotary-wing aircraft and the Blue Force Tracking transceiver, and provides the means for rapid data transfer.

The Aviation Mission Common Server (AMCS) family of systems (FoS) effort initially serves as an obsolescence replacement with an open systems architecture and processing capacity to support future capability upgrades for the current Army IDM 401 capability set and provides an architecture that supports enabling, hosting and integrating future hardware and software capabilities in an Integrated Modular Avionics solution for the next generation of IDM functionality and expanded mission processing. The AMCS, an Aviation Mission Computing Environment (AMCE) Modular Open Systems Approach (MOSA) aligned Solution prototype, will provide Army aviation a hardware and software Open System Architecture nested on a digital backbone developed and implemented utilizing the aviation enterprise-based MOSA principles and aligns with the FVL/Enterprise Architecture Framework (FAF/EAF). The AMCS program will implement Mission Command Information System (MCIS) and additional Common Operating Environment capabilities utilizing a flexible open systems architecture and distributed processing resources with the capacity and architecture to perform an array of additional non-flight critical computing, data processing, radio and communications management, and graphics generation functions for the enduring and future Army Aviation fleet with the ability to pursue the separation of non-flight critical and flight critical mission system technology integration from flight critical components. The AMCS provides the ability to rapidly integrate technology upgrades required to keep pace with evolving threats on Multi-Domain Battlefield. The AMCS enables the hosting of enhanced capabilities to communicate, navigate, sense, deploy weapon systems and interoperate across the Joint Force, and will be the center of the future Common Digital Backbone for the enduring and future Army Aviation fleets. AMCS is a key enabler for Multi-Domain Operations and Army 2030.

The Aviation Mission Planning System (AMPS) is a system used to conduct pre-mission and aircraft performance planning. It receives data from multiple sources and provides that data digitally to the aircraft to support aviation missions. AMPS is used for automated mission planning, risk assessment, and transfer of mission data to aviation platforms within an Aviation unit. This includes route generation, performance planning, communications planning, terrain analysis, data transfer, and mission rehearsal. These efforts include development and testing of a new underlying architecture to support the move of Army Aviation Mission Planning from the current structure to one that supports synchronization both vertically and horizontally between Aviation and Ground forces. It will allow aircrews to continually plan and update route, threat, and performance data throughout all phases of an Aviation mission. Development of a mobile aircraft performance planning/weight and balance calculator is currently underway and will be the first migration of AMPS capabilities to a mobile hardware agnostic environment.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) VU3 / Networking And Mission Planning

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Title: Aviation Mission Common Server (AMCS)</p> <p>Description: The Aviation Mission Common Server (AMCS) effort is an obsolescence replacement and capability upgrade for the current Army IDM 401 and has a Modular Open Systems Approach (MOSA) aligned architecture which allows for future integration of hardware and software capabilities for the next generation of IDM functionality and expanded mission processing.</p> <p>FY 2022 Plans: Perform and support production representative prototype assessments, testing, demonstration and qualification activities in support of the Aviation Mission Common Server (AMCS) Modular Capabilities Demonstration Qualification and Prototype Delivery Phase and developmental activities.</p> <p>FY 2023 Plans: Perform and support production representative prototype assessments, testing, demonstration and qualification activities in support of the Aviation Mission Common Server (AMCS) Modular Capabilities Demonstration Qualification and Prototype Delivery Phase and developmental activities. Support software functionality integration and testing activities required to support integration into the AMCS hardware and initial platform integration lab and Safety of Flight testing for platform airworthiness qualification.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increased funding is required to support testing and qualification requirements of the Aviation Mission Common Server (AMCS) transitioning from an Other Transaction Authority (OTA) development activity to production.</p>	0.654	0.816	1.057
<p>Title: FY22 SBIR/STTR Transfer</p> <p>FY 2022 Plans: SBIR/STTR amount in accordance with Title 15 USC 638.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: SBIR/STTR amount in accordance with Title 15 USC 638.</p>	-	0.031	-
Accomplishments/Planned Programs Subtotals	0.654	0.847	1.057

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• AA0712: Network And Mission Plan	77.432	29.206	44.526	-	44.526	44.379	36.288	41.837	41.684	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army Date: April 2022

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

The AMCS will complete development, testing and qualification efforts in coordination with the aircraft platforms, use the various contracts of the aircraft platforms original equipment manufacturers on integration efforts, and utilize the U.S. Army Combat Capabilities Development Command (CCDC) - Aviation & Missile Center (AvMC) for software development and integration at both the Line Replaceable Unit and platform level. The AMCS is leveraging a competitive Other Transaction Authority (OTA) prototype agreement to develop and demonstrate multiple AMCS Family of Systems (FoS) capabilities and hardware solutions to inform the Milestone Decision Authority's production decision.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) VU3 / Networking And Mission Planning
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (IDM)	MIPR	PdM A2E2 : Redstone Arsenal, AL	0.050	-		-		-		-		-	0.000	0.050	-
PM Support (AMCS)	Various	Combat Communications Development Command, Aviation & Missile Center : Redstone Arsenal, AL	0.010	-		0.110		-		-		-	Continuing	Continuing	-
SBIR/STTR	TBD	To Be Determined : To Be Determined	-	-		0.031	Apr 2022	-		-		-	0.000	0.031	-
Subtotal			0.060	-		0.141		-		-		-	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Develop software for IDM	C/Various	Combat Communications Development Command, Aviation & Missile Center : Redstone Arsenal, AL	1.518	-		-		-		-		-	0.000	1.518	-
Hardware and Software Development/ Demonstration for the Aviation Mission Common Server (AMCS)	C/Various	Combat Communications Development Command, Aviation & Missile Center : Redstone Arsenal, AL	-	0.618	Nov 2020	0.706	Dec 2021	-		-		-	Continuing	Continuing	-
AMCS Medical HUB Demonstration	MIPR	Combat Communications Development Command, Aviation	0.086	-		-		-		-		-	0.000	0.086	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) VU3 / Networking And Mission Planning
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		& Missile Center : Redstone Arsenal, AL													
AMCS Hardware and Software Prototype Development OTA	C/FFP	Mercury Systems : Mesa, AZ	0.199	-		-		0.171	Nov 2022	-		0.171	0.000	0.370	-
Hardware and Software Development/ Demonstration for the Aviation Mission Common Server (AMCS) C5	MIPR	PEO IEWS PM EW&C : APG, MD	0.042	0.036	Feb 2022	-		-		-		-	0.000	0.078	-
Subtotal			1.845	0.654		0.706		0.171		-		0.171	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 and Software Development Support for the Aviation Mission Common Server (AMCS)	C/Various	Combat Communications Development Command, Aviation & Missile Center, Redstone Test Center and Platform SIL : Redstone Arsenal, AL	0.447	-		-		0.886	Nov 2022	-		0.886	Continuing	Continuing	-
Subtotal			0.447	-		-		0.886		-		0.886	Continuing	Continuing	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2.352	0.654	0.847	1.057	-	1.057	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604201A / Aircraft Avionics	Project (Number/Name) VU3 / Networking And Mission Planning
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AMCS Alternative Systems Review (ASR)	■ AMCS ASR																											
AMCS OTA Prototype Contract Award Phase 2	▲ 1 Awarded Phase 2 OTA																											
AMCS preliminary Design Review (PDR)	■ AMCS PDR																											
AMCS OTA Prototype Contract Award Phase 3					▲ 2 Awarded Phase 3 OTA																							
AMCS Critical Design Review (CDR)					■ AMCS CDR																							
AMCS OTA Prototype Contract Award Phase 4									▲ 3 Awarded Phase 4 OTA																			
AMCS Deemonstrations									■ AMCS Demos																			
AMCS OTA Prototype Contract Award Phase 5									▲ 4 Awarded Phase 5 OTA																			
AMCS Aircraft Demo, Testing and Box Level Airworthiness Qualification									■ AMCS Aircraft Demo and Box Level Qualification																			
AMCS Application Integration and Prototype Qualification													■ AMCS Application Integration and Prototype Qualification															
AMCS Software and Hardware Capability Upgrades																	■ AMCS MCIS SW Capability Upgrades											

Note
The Aviation Mission Common Server Modular Capabilities Demonstration Other Transaction Authority awarded 24 June 20. The schedule depicts the OTA's 5 Individual phases and their associated award and effort duration.

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
Develop IDM Software	4	2018	4	2018
AMCS Airworthiness Studies and Assessments	2	2019	2	2019
AMCS OTA Prototype Contract Award Phase 1	3	2020	3	2020
AMCS Alternative Systems Review (ASR)	4	2020	1	2021
AMCS OTA Prototype Contract Award Phase 2	1	2021	1	2021
AMCS preliminary Design Review (PDR)	1	2021	2	2021
AMCS OTA Prototype Contract Award Phase 3	3	2021	3	2021
AMCS Critical Design Review (CDR)	3	2021	3	2022
AMCS OTA Prototype Contract Award Phase 4	3	2022	3	2022
AMCS Demonstrations	3	2022	4	2022
AMCS OTA Prototype Contract Award Phase 5	4	2022	4	2022
AMCS Aircraft Demo, Testing and Box Level Airworthiness Qualification	4	2022	2	2023
AMCS Application Integration and Prototype Qualification	1	2023	4	2023
AMCS Software and Hardware Capability Upgrades	2	2023	4	2033

Note

- ACN: Aircraft Notebook
- ADEC: Aviation Data Exploitation Capability
- AMCS: Aviation Mission Common Server
- AMPS: Aviation Mission Planning System
- EES: Environment Exploitation System
- IDM: Improved Data Modem

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	56.624	30.840	4.243	-	4.243	2.216	7.684	7.686	7.761	0.000	117.054
DX5: <i>Electronic Warfare And Management Tool</i>	-	13.910	16.813	2.063	-	2.063	-	6.040	6.041	6.100	0.000	50.967
DX6: <i>Multi-Function Electronic Warfare (MFEW)</i>	-	40.596	12.020	-	-	-	-	-	-	-	0.000	52.616
VS6: <i>Integrated Electronic Warfare Systems</i>	-	2.118	2.007	2.180	-	2.180	2.216	1.644	1.645	1.661	0.000	13.471

A. Mission Description and Budget Item Justification

A portion of this funding line is a key enabler of the Army Modernization Priorities in support of Electronic Warfare Planning and Management Tool (EWPMT) program.

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

The IEWS capability set is structured along four program lines of effort: 1) Project DX5 Electronic Warfare Planning and Management Tools (EWPMT), 2) Project DX6 Multi-Function EW (MFEW), 3) Project VS6 Counter Radio-Controlled Improvised Explosive Devices (RCIED) Electronic Warfare (CREW) which provides current defensive electronic attack capability.

Project DX5 - This funding line is a key enabler of the Army Modernization Priorities, APNT CFT and Network CFT, in support of the EWPMT which is the Commander's tool to control, manage, and dominate the EMS and Cyber Domains. EWPMT will provide the ability to conduct remote control & management of EW assets to execute offensive and defensive Electronic Attack, EW targeting and enable maneuver by synchronizing EW and Spectrum Management Operations (SMO) across Intelligence, Operations, and Signals to successfully execute Multi-Domain Operations (MDO). As a Commander's tool, EWPMT is predominantly utilized by the Cyber Electromagnetic Activities (CEMA) element's Electronic Warfare Officers (EWO) and Electromagnetic Spectrum Managers (ESM) for mission planning, access to national and strategic sensors and data repositories, as well as the synchronization of EW and SIGINT enabled platforms.

Project DX6 - MFEW-AL is the Army's only program providing tactical Commanders with deep look, organic, airborne, offensive electronic warfare (EW), empowering Commanders to shape the Electromagnetic Spectrum (EMS) to their advantage. The MFEW Air Large system will provide: 1) Offensive Electronic Attack (OEA) - Non-Kinetic Fires capability with the intent of denying, degrading, or disrupting enemy communications capability and non-communications emitters; 2) Electronic Warfare Support (ES) - Capability to search, intercept, identify, and locate or localize sources of intentional and unintentional radiated electromagnetic (EM) energy for the

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>
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purpose of immediate threat recognition, targeting, planning, and execution of future operations; 3) Dissemination of Military Information Support Operations (MISO) products; and 4) Support of Offensive Cyber Operations (OCO) and Multi-Domain Operations.

Project VS6 - Counter Radio Controlled Improvised Explosive Device (RCIED) Electronic Warfare (CREW) provides protection of ground forces operating in vehicle convoys, single vehicles and fixed locations in operational theaters which enables freedom of movement across the depth and breadth of the operational environment. Current CREW systems are programmable with techniques to mitigate emerging threats. In order to keep pace with the threat evolution, development efforts will provide fielded CREW systems as well as other Electronic Warfare (EW) systems with techniques that mitigate the range of threats as required. These development efforts may include development of new techniques, integration of existing techniques, as well as hardware and software development and integration in order to pace the threat.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	56.624	30.840	0.000	-	0.000
Current President's Budget	56.624	30.840	4.243	-	4.243
Total Adjustments	0.000	0.000	4.243	-	4.243
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	4.243	-	4.243

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>				Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>DX5: Electronic Warfare And Management Tool</i>	-	13.910	16.813	2.063	-	2.063	-	6.040	6.041	6.100	0.000	50.967
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is a key enabler of the Army Modernization Priorities, APNT CFT and Network CFT, in support of the Electronic Warfare Planning and Management Tool (EWPMT) which is the Commander's tool to control, manage, and dominate the Electromagnetic Spectrum (EMS) and Cyber Domains. EWPMT will provide the ability to conduct remote control & management of Electronic Warfare (EW) assets to execute offensive and defensive Electronic Attack, EW targeting and enable maneuver by synchronizing EW and Spectrum Management Operations (SMO) across Intelligence, Operations, and Signals to successfully execute Multi-Domain Operations (MDO). As a Commander's tool, EWPMT is predominantly utilized by the Cyber Electromagnetic Activities (CEMA) element's Electronic Warfare Officers (EWO) and Electromagnetic Spectrum Managers (ESM) for mission planning, access to national and strategic sensors and data repositories, as well as the synchronization of EW and SIGINT enabled platforms.

Justification:
Fiscal Year (FY) 2023 Base funds in the amount of \$2.063 million will fund EWPMT Version I relevancy to include sensor, tactical operations center (TOC), network, and Soldier Touch Points (STPs).

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

	FY 2021	FY 2022	FY 2023
Title: EWPMT	13.910	16.199	2.063
Description: The Electronic Warfare Planning Management Tool (EWPMT) software application provides Electronic Warfare and Spectrum Management soldiers the ability to plan, coordinate, integrate, and synchronize Cyber Electronic Magnetic Activities (CEMA) across all Warfighting Functions (WfF). EWPMT incorporates Electronic Attack (EA), Electronic Protection (EP), Electronic Support (ES), and Spectrum management functions in direct support of CEMA elements across all Army echelons.			
FY 2022 Plans: EWPMT Version I relevancy to include sensor, TOC, and network. Participate in user engagements to include Soldier Touch Points (STPs) events and evaluations. Further implementation of JICD 4.2 standards allowing for further sensor integration and a concentrated effort to improve usability and stability of EWPMT in preparation for FDD.			
FY 2023 Plans: Minor EWPMT Version I relevancy to include sensor, TOC, network, and STPs.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Decrease due to reduced capability development and testing while the Army continues to evaluate current and determines future requirements.			
Title: FY22 SIBR/STTR Transfer	-	0.614	-
FY 2022 Plans: Funding transferred in accordance with Title 15 USC 2638			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 2638			
Accomplishments/Planned Programs Subtotals	13.910	16.813	2.063

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• K00002: <i>EW Planning & Management Tools (EWPMT)</i>	7.849	0.783	0.000	-	0.000	9.287	9.387	3.237	3.235	0.000	33.778

Remarks
EWPMT Support which includes logistics and travel.

D. Acquisition Strategy
EWPMT is an Automated Information System (AIS) that follows an evolutionary acquisition strategy utilizing Capability Drop (CD) requirement documents that enable rapid development and integration of new Electronic Warfare and Spectrum Management capabilities. The strategy allows for timely response and delivery based on changing threat, technology and in support of Multi-Domain Operations (MDO).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMO Staff/Travel	Various	PM Electronic Warfare & Cyber : Aberdeen Proving Ground, MD	13.053	0.861	Mar 2021	0.653	Mar 2022	0.555	Mar 2023	-		0.555	Continuing	Continuing	-
SBIR / STTR Transfer	TBD	TBD : TBD	0.604	-		0.614	Mar 2022	-		-		-	0.000	1.218	-
Subtotal			13.657	0.861		1.267		0.555		-		0.555	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EMD Contract - EWPMT CD1	C/IDIQ	Raytheon : Fort Wayne, IN	18.200	-		-		-		-		-	0.000	18.200	18.200
EMD Contract - EWPMT CD2	C/IDIQ	Raytheon : Fort Wayne, IN	24.359	-		-		-		-		-	0.000	24.359	24.359
EMD Contract - EWPMT CD3	C/IDIQ	Raytheon : Fort Wayne, IN	26.380	-		-		-		-		-	0.000	26.380	26.380
EMD Contract - EWPMT CD4	C/IDIQ	Raytheon : Fort Wayne, IN	22.928	7.707	Nov 2020	-		-		-		-	0.000	30.635	30.635
EMD Contract- EWPMT system integration, relevancy, and STPs	C/IDIQ	Raytheon : Fort Wayne, IN	-	0.674	Jan 2021	8.823	Dec 2021	-		-		-	0.000	9.497	14.953
Contract - EWPMT fielding, training, support, and product improvement	C/TBD	TBD : TBD	-	-		-		0.050	Jun 2023	-		0.050	0.000	0.050	-
Subtotal			91.867	8.381		8.823		0.050		-		0.050	0.000	109.121	N/A

Remarks
Contract - EWPMT fielding, training, support, and product improvement.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</i>
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EWPMT Technical and Engineering Support	Option/CPFF	Various : Various	34.002	2.934	Dec 2020	6.463	Dec 2021	1.458	Dec 2022	-		1.458	Continuing	Continuing	-
Subtotal			34.002	2.934		6.463		1.458		-		1.458	Continuing	Continuing	N/A

Remarks
Fiscal Year (FY) 2023 RDT&E funding of \$2.063 million funds minor EWPMT Version I relevancy to include sensor, TOC, network, and STPs.

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EWPMT Test Support	MIPR	Various : Various	6.510	1.734	Dec 2020	0.260	Dec 2021	-		-		-	Continuing	Continuing	Continuing
Subtotal			6.510	1.734		0.260		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
	Project Cost Totals		146.036	13.910	16.813	2.063	-	2.063	Continuing	Continuing

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>		Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</i>	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EWPMT Contract																												
Development for CD4 and Test for EWPMT Increment I																												
Initial Operational Test & Evaluation (IOT&E)																												
EWPMT Integration, Relevancy, and Soldier Touch Points																												
Full Deployment Decision (FDD)																												
Full Operational Capability (FOC)																												
NET/NEF COMPO 1																												
NET/NEF COMPOs 2 & 3																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX5 / <i>Electronic Warfare And Management Tool</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EWPMT Contract	1	2014	4	2023
Development and Test for CD1	4	2014	3	2016
Test CD1 (Government Confidence test)	2	2016	2	2016
Limited Deployment Decision for CD1	4	2016	4	2016
CD1 Fielding	4	2016	3	2018
Initial Operational Capability (IOC)	1	2017	1	2017
Development and Test for CD2	4	2016	4	2018
Development and Test for CD3	3	2018	3	2020
Development for CD4 and Test for EWPMT Increment I	4	2019	4	2021
Initial Operational Test & Evaluation (IOT&E)	3	2021	4	2021
EWPMT Integration, Relevancy, and Soldier Touch Points	4	2021	4	2023
Full Deployment Decision (FDD)	4	2022	4	2022
Full Operational Capability (FOC)	4	2025	4	2025
NET/NEF COMPO 1	1	2024	4	2026
NET/NEF COMPOS 2 & 3	1	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>				Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
DX6: <i>Multi-Function Electronic Warfare (MFEW)</i>	-	40.596	12.020	-	-	-	-	-	-	-	0.000	52.616
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MFEW-AL is the Army's only program providing tactical Commanders with deep look, organic, airborne, offensive electronic warfare (EW), empowering Commanders to shape the Electromagnetic Spectrum (EMS) to their advantage. The MFEW Air Large system will provide: 1) Offensive Electronic Attack (OEA) - Non-Kinetic Fires capability with the intent of denying, degrading, or disrupting enemy communications capability and non-communications emitters; 2) Electronic Warfare Support (ES) - Capability to search, intercept, identify, and locate or localize sources of intentional and unintentional radiated electromagnetic (EM) energy for the purpose of immediate threat recognition, targeting, planning, and execution of future operations; 3) Dissemination of Military Information Support Operations (MISO) products; and 4) Support of Offensive Cyber Operations (OCO) and Multi-Domain Operations.

Justification:

Fiscal Year 2023 has no funding request.

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

	FY 2021	FY 2022	FY 2023
<p>Title: Multi-Function Electronic Warfare (MFEW) Air Large</p> <p>Description: MFEW-Air Large is an airborne Electronic Warfare payload to be integrated onto the Gray Eagle Unmanned Aerial Vehicle to provide offensive Electronic Attack (EA) and Electronic Warfare Support (ES) capability to the BCT.</p> <p>FY 2022 Plans: Complete EMD activities, to include 4 EMD articles, conduct flight testing and a LUT. Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR).</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: No planned RDT&E funded activities in (FY) 2023.</p>	40.596	11.581	-
<p>Title: FY22 SBIR/STTR Transfer</p> <p>FY 2022 Plans: Funding transferred in accordance with Title 15 USC 7638</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>	-	0.439	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred in accordance with Title 15 USC 7638			
Accomplishments/Planned Programs Subtotals	40.596	12.020	-

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• B05000: <i>Multi-Function Electronic Warfare (MFEW) Systems</i>	8.669	-	3.060	-	3.060	-	-	-	-	0.000	11.729

Remarks

D. Acquisition Strategy

MFEW Air has employed a tailored acquisition approach to rapidly deliver capability to the field. The MFEW Air Large employed a competitive acquisition approach for the Engineering & Manufacturing Development (EMD) phase of the program. The development is using a modular open-system approach to rapidly deliver an initial airborne Electronic Warfare (EW) capability to the Army using the Consortium for Command, Control, Communications, and Computer Technologies (C5) Other Transaction Agreement (OTA). Phase 1 will build two (2) MFEW-AL systems to demonstrate select Offensive Electronic Attack (OEA) and Electronic Warfare Support (ES) capabilities. Phase 2 will build four (4) EMD systems for testing, evaluation, qualification and certification, verification of OEA, ES, Military Information Support Operations (MISO) and Offensive Cyber Operations (OCO) performance capabilities, and flight testing.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Office Support - MFEW Air	Various	PM Electronic Warfare & Cyber (PM EW&C) : Aberdeen Proving Ground, MD	1.704	0.040	Jan 2021	0.200	Jan 2022	-		-		-	0.000	1.944	-
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	0.131	-		-		-		-		-	0.000	0.131	-
FY22 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.439		-		-		-	0.000	0.439	-
Subtotal			1.835	0.040		0.639		-		-		-	0.000	2.514	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MFEW OTA Prototype Design&Development Contract	C/FFP	C5 Consortium OTA : Acquisition Contracting Center-New Jersey	25.100	-		-		-		-		-	0.000	25.100	-
Command and Control Development Contract	C/CPFF	EWPMT / APP EW : Aberdeen Proving Ground, MD	0.457	-		-		-		-		-	0.000	0.457	-
MFEW Techniques and risk reduction activities	C/CPFF	Various (JHU, GTRI, MITRE, etc) : Aberdeen Proving Ground, MD	1.759	-		-		-		-		-	0.000	1.759	-
MFEW OTA EMD Contract	C/FFP	C5 Consortium OTA : Acquisition Contracting Center-New Jersey	32.366	35.313	Feb 2021	5.367	Nov 2021	-		-		-	0.000	73.046	-
Gray Eagle Integration	Option/CPFF	General Atomics : San Diego, CA	2.261	-		-		-		-		-	0.000	2.261	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 & Logistics Development	SS/CPFF	Lockheed Martin Corporation : Owego, NY	-	3.907	Jan 2021	0.411	Jan 2022	-		-		-	0.000	4.318	-
Subtotal			61.943	39.220		5.778		-		-		-	0.000	106.941	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Engineering - MFEW Air	C/CPFF	Various : Aberdeen Proving Ground, MD	3.389	0.307	Dec 2020	-		-		-		-	0.000	3.696	-
Matrix Engineering - MFEW Air	Various	Various : Aberdeen Proving Ground, MD	3.050	1.029	Dec 2020	1.203	Dec 2021	-		-		-	0.000	5.282	-
Subtotal			6.439	1.336		1.203		-		-		-	0.000	8.978	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 range and test support	Various	Yuma Proving Grounds : Yuma, AZ	2.246	-		1.900	Jan 2022	-		-		-	0.000	4.146	-
Modeling & Simulation / Test Infrastructure	Various	Various : Aberdeen Proving Ground, MD	10.790	-		-		-		-		-	0.000	10.790	-
Limited User Test	MIPR	Army Test Command : Aberdeen Proving Ground, MD	-	-		2.500	Jan 2022	-		-		-	0.000	2.500	-
Subtotal			13.036	-		4.400		-		-		-	0.000	17.436	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>		Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MFEW Air OTA EMD																												
Tailored Milestone C																												
Limited User Test																												
MFEW Air Production and Fielding																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) DX6 / <i>Multi-Function Electronic Warfare (MFEW)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Tailored Milestone B	3	2018	3	2018
MFEW Air OTA Award	4	2018	4	2018
MFEW Air OTA Prototype Design & Development	4	2018	2	2020
MFEW Air OTA EMD	2	2020	4	2022
Tailored Milestone C	3	2021	3	2021
Limited User Test	4	2022	4	2022
MFEW Air Production and Fielding	3	2021	4	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>				Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
VS6: <i>Integrated Electronic Warfare Systems</i>	-	2.118	2.007	2.180	-	2.180	2.216	1.644	1.645	1.661	0.000	13.471
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Counter Radio Controlled Improvised Explosive Device (RCIED) Electronic Warfare (CREW) provides protection of ground forces operating in vehicle convoys, single vehicles and fixed locations in operational theaters which enables freedom of movement across the depth and breadth of the operational environment. Current CREW systems are programmable with techniques to mitigate emerging threats. In order to keep pace with the threat evolution, development efforts will provide fielded CREW systems as well as other Electronic Warfare (EW) systems with techniques that mitigate the range of threats as required. These development efforts may include development of new techniques, integration of existing techniques, as well as hardware and software development and integration in order to pace the threat.

Justification:

Fiscal Year (FY) 2023 Base funding in the amount of \$2.180 million funds the continued support of CREW systems as well as other EW systems with techniques that mitigate the range of threats as required. These efforts include development of new techniques, integration of existing techniques, as well as hardware and software enhancement and integration in order to pace the threat.

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

	FY 2021	FY 2022	FY 2023
Title: IEWS - CREW	2.118	1.934	2.180
Description: The Integrated Electronic Warfare System (IEWS) will provide multiple capabilities, to include but not limited to, Electronic Warfare Planning and Management Tool (EWPMT), Multi-Function EW (MFEW), and Defensive Electronic Attack (DEA). The Army's only current Defensive Electronic Attack solution is Counter Radio Controlled Improvised Explosive Device (RCIED) Electronic Warfare (CREW).			
FY 2022 Plans: Continue IEWS development of new techniques, integration of existing techniques, and hardware and software development and integration in order to pace the threat. Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR).			
FY 2023 Plans: Continue IEWS development of new techniques, integration of existing techniques, and hardware and software development and integration in order to pace the threat.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Increase of funding reflects the continued development of new techniques, integration of existing techniques, and hardware and software development.			
Title: FY22 SBIR/STTR Transfer	-	0.073	-
FY 2022 Plans: Funding transferred in accordance with Title 15 USC 2638			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 2638			
Accomplishments/Planned Programs Subtotals	2.118	2.007	2.180

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

N/A

Remarks

D. Acquisition Strategy

VS6 funding supports hardware and software enhancement and integration to pace the threat and will leverage Other Government Agencies' competitively awarded contracts and task orders.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMO Staff/Travel for EWPMPT	Allot	PM Electronic Warfare & Cyber : Aberdeen Proving Ground, MD	4.956	-		-		-		-		-	0.000	4.956	-
Program and Technical Assistance support	C/CPFF	TBD : Aberdeen Proving Ground, MD	3.789	-		-		-		-		-	0.000	3.789	-
PMO Staff/Travel for CREW	Allot	PM Electronic Warfare & Cyber : Aberdeen Proving Ground, MD	2.880	0.020	Dec 2020	0.020	Dec 2021	0.020	Dec 2022	-		0.020	0.000	2.940	-
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	0.023	-		-		-		-		-	0.000	0.023	-
FY22 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.073		-		-		-	0.000	0.073	-
Subtotal			11.648	0.020		0.093		0.020		-		0.020	0.000	11.781	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EMD Contract - EWPMPT	C/CPIF	SOTERA Defense Solutions Herndon, VA : RAYTHEON Fort Wayne, IN	38.318	-		-		-		-		-	0.000	38.318	-
IEWS Engineering and Development	MIPR	I2WD : Aberdeen Proving Ground, MD	5.557	2.098	Dec 2020	1.914	Dec 2021	1.860	Dec 2022	-		1.860	0.000	11.429	-
Risk Reduction Studies for MFEW	MIPR	Various : Various	7.969	-		-		-		-		-	0.000	7.969	-
Develop CREW H/W and S/W solutions	C/CPFF	SRC, Inc. : Syracuse, NY	27.133	-		-		-		-		-	0.000	27.133	-
Development of H/W and S/W for CREW and other EW systems	SS/CPFF	Various : Various	4.118	-		-		-		-		-	0.000	4.118	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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			83.095	2.098		1.914		1.860		-		1.860	0.000	88.967	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MFEW Technical/ Engineering Support - Contractor	C/CPFF	GTRI : Atlanta, GA	2.046	-		-		-		-		-	0.000	2.046	-
Matrix Engineering Support	MIPR	CERDEC : Aberdeen Proving Ground, MD	7.766	-		-		-		-		-	0.000	7.766	-
EWPMT Architecture Study	MIPR	Various : Various	1.194	-		-		-		-		-	0.000	1.194	-
Engineering support	C/CPFF	Various : Various	4.045	-		-		-		-		-	0.000	4.045	-
FY 2019 MDAP Tax	TBD	FY 2019 Pending Rescission : FY 2019 Pending Rescission	0.006	-		-		-		-		-	0.000	0.006	-
Subtotal			15.057	-		-		-		-		-	0.000	15.057	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EWPMT Test support	MIPR	Various : TBD	1.096	-		-		-		-		-	0.000	1.096	-
Operational Assessment (OA) of DV4 systems	MIPR	Yuma Proving Ground : Yuma, AZ	1.950	-		-		-		-		-	0.000	1.950	-
Continuous evaluation of CREW Technologies	MIPR	Yuma Proving Ground Yuma, AZ : YPG, AZ	1.718	-		-		0.300	Dec 2022	-		0.300	0.000	2.018	-
Subtotal			4.764	-		-		0.300		-		0.300	0.000	5.064	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>		Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Integrated Electronic Warfare System Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604270A / <i>Electronic Warfare Development</i>	Project (Number/Name) VS6 / <i>Integrated Electronic Warfare Systems</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Integrated Electronic Warfare System Development	2	2021	3	2026

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	89.497	79.339	66.529	-	66.529	58.051	53.775	57.406	57.905	Continuing	Continuing
CF3: <i>Integrated Soldier Systems (SL CFT)</i>	-	4.429	4.371	4.403	-	4.403	4.501	4.539	4.631	4.674	0.000	31.548
ES9: <i>Advanced Tactical Parachute System</i>	-	3.027	1.770	3.029	-	3.029	2.835	3.806	4.148	4.189	0.000	22.804
EW4: <i>Crew Served Weapons Engineering Development</i>	-	9.608	8.943	4.958	-	4.958	4.391	3.847	4.152	4.191	0.000	40.090
FF2: <i>Small Arms Fire Control</i>	-	9.782	7.008	8.179	-	8.179	10.263	5.065	5.066	5.116	0.000	50.479
FL8: <i>84mm MAAWS Ammunition</i>	-	3.017	6.117	-	-	-	-	-	-	-	0.000	9.134
FM4: <i>Next Generation Squad Weapons</i>	-	32.001	13.599	15.816	-	15.816	16.482	11.278	11.282	11.393	0.000	111.851
S58: <i>Soldier Enhancement Program</i>	-	9.000	13.655	5.182	-	5.182	-	5.196	5.198	5.197	0.000	43.428
S60: <i>Clothing & Equipment</i>	-	6.472	5.393	6.313	-	6.313	3.499	6.490	9.048	9.136	0.000	46.351
S61: <i>Acis Engineering Development</i>	-	2.190	2.528	2.427	-	2.427	1.488	0.475	0.475	0.480	Continuing	Continuing
S63: <i>Individual Weapons Engineering Development</i>	-	3.493	3.651	3.956	-	3.956	3.624	3.579	3.863	3.899	0.000	26.065
S70: <i>Personnel Recovery Support System (PRSS)</i>	-	-	3.132	2.963	-	2.963	2.646	0.617	0.665	0.671	Continuing	Continuing
VS5: <i>Soldier Protective Equipment</i>	-	6.478	9.172	9.303	-	9.303	8.322	8.883	8.878	8.959	0.000	59.995

A. Mission Description and Budget Item Justification

A portion of this funding line directly aligns to the Soldier Lethality Army Modernization Priority. This Program Element (PE) Engineering and Manufacturing Development (EMD) manages the Soldier as a system, with the goal of increasing Soldiers' combat effectiveness, increasing survivability, and improving the Soldiers' quality of life. It develops and tests prototypes of weapons, clothing, equipment, and other items useful to support the Soldier.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	
<p>Project CF3 (Integrated Soldier Systems (SL CFT)) supports the Adaptive Squad Architecture (ASA) effort that will develop a full system architecture for the Soldier and the Squad. The focus will be full integration of all mission-specific equipment into the ASA as well as full configuration management of the Configuration Database, Architecture Assessment Tool, Squad Performance Metric and Soldier Integration Facility.</p> <p>Project ES9 (Advanced Tactical Parachute System) improves personnel parachute systems and associated equipment for low and high altitude operations to include canopy improvements based on integration of new technology with the goal of enhancing the insertion capability and safety of the airborne Soldier and increasing the performance, reliability, and durability of personnel airdrop equipment.</p> <p>Project EW4 (Crew Served Weapons Engineering Development) supports efforts to transition components or prototypes from Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) and other domestic and foreign sources of small arms weapons to demonstrate, test and evaluate capability near or at planned operational requirements.</p> <p>Project FF2 (Small Arms Fire Control) supports the development of an advanced fire control for the Next Generation Automatic Rifle (NGSW-AR) and Rifle (NGSW-R). The Next Generation Fire Control will increase the probability of hit and decrease the time to engage through a variable powered direct view optic with integrated range finder, ballistic calculator, and digital display capable of providing an adjusted aim point.</p> <p>Project FI2 (Lightweight 30mm Cannon) provides increased lethality modification to Product Directorate Counter-Rocket Artillery Mortars (PD C-RAM) under a JUONS. An upgraded medium caliber weapon will be developed, tested and evaluated for integration into a modified remote weapon station under an Urgent Materiel Release (UMR).</p> <p>Project FL8 (84mm MAAWS Ammunition) supports test, evaluation and quality up to seven types of 84 millimeter (mm) munitions for the U.S. Army use with the M3/M3A1 Multi-Role Anti-Personnel Weapon Systems (MAAWS).</p> <p>Project FM4 (Next Generation Squad Weapons) supports the rapid prototyping and development of a NGSW-AR, NGSW-R and common cartridge to provide capability improvements in accuracy, range and lethality, in order to maintain overmatch and meet future warfighter requirements.</p> <p>Project S58 (Soldier Enhancement Program) supports accelerated integration, modernization, and enhancement efforts of lighter, more lethal weapons, and improved Soldier items including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigational aids.</p> <p>Project S60 (Clothing & Equipment) supports pre-production development of state-of-the-art individual clothing and equipment to improve the survivability, mobility and sustainment affecting the quality of life of the individual Soldier.</p> <p>Project S61 (Acis Engineering Development) provides System Development programs with improved aircrew safety, survivability, and human performance that amplify the warfighting effectiveness and facilitates full-spectrum dominance of the Army aircraft including the AH-64 Apache/Longbow, CH-47 Chinook, UH/HH-60 Blackhawk, Light Utility Helicopter, and Future Vertical Lift (FVL) platforms.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>
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Project S63 (Individual Weapons Engineering Development) demonstrates engineering development models or integrated commercial items designed to enhance lethality, target acquisition, fire control, training effectiveness, and reliability for small arms weapon systems and ammunition. Programs include Improved Weapons Coatings, Personal Defense Weapon, 30 Round 5.56mm Magazine, Modular Handgun System (MHS), Precision Sniper Rifle (PSR), Sub Compact, and Interim Combat Service Rifle (ICR).

Project S70 (Personnel Recovery Support System (PRSS)) provides system research, development and testing of the Personal Recovery Support System/Personnel Recovery Support Equipment supporting operations to report and locate isolated, missing, detained or captured Soldiers.

Project VS5 (Soldier Protective Equipment) supports engineering and manufacturing development of Individual Soldier Ballistic Protection equipment. It will leverage advancements in technology to continue incremental improvements to body armor (to include improved outer tactical vests, plate carriers, and helmets) and other personal protective equipment.

The total cost of the the Next Generation Squad Weapons Rapid Prototyping Middle Tier of Acquisition effort is \$156.83 million RDT&E from FY19 to FY23. The remainder of the Next Generation Squad Weapons Rapid Prototyping is fully funded across the Future Years Defense Program.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	88.552	67.873	0.000	-	0.000
Current President's Budget	89.497	79.339	66.529	-	66.529
Total Adjustments	0.945	11.466	66.529	-	66.529
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-5.034			
• Congressional Rescissions	-	-			
• Congressional Adds	-	16.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.945	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	66.529	-	66.529

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

Project: EW4: *Crew Served Weapons Engineering Development*

Congressional Add: *FY 2020 Congressional Add: Cannon Life Extension Program*

Congressional Add: *Program increase - turret gunner survivability and simulation environment*

Congressional Add Subtotals for Project: EW4

	FY 2021	FY 2022
	1.500	1.500
	4.000	5.000
Congressional Add Subtotals for Project: EW4	5.500	6.500

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>
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Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: S58: *Soldier Enhancement Program*

Congressional Add: *Program increase - soldier enhancement program*

Congressional Add Subtotals for Project: S58

Congressional Add Totals for all Projects

	FY 2021	FY 2022
	9.000	10.000
	9.000	10.000
	14.500	16.500

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) CF3 / <i>Integrated Soldier Systems (SL CFT)</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CF3: <i>Integrated Soldier Systems (SL CFT)</i>	-	4.429	4.371	4.403	-	4.403	4.501	4.539	4.631	4.674	0.000	31.548
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Adaptive Squad Architecture (ASA), Squad Performance Metrics (SPM) and Soldier Integration Facility (SIF) are Program Executive Office-Soldier (PEO-S) led efforts which will allow optimization of "Soldiers as Integrated Weapons Systems" and "Squad as an Integrated Combat Platform". The CF3 ASA focus will be the system-of-systems full virtual integration of all mission-specific equipment as well as full configuration management of the Configuration Database (CD), Architecture Assessment Tool (AAT) (ASA/SPM/SIF CF2 focuses on system level virtual, constructive and live prototyping integration). The SPM SF3 focus is adapting mature technologies and metrics at the Soldier and Squad levels to enhance human performance during training and operational events. The SIF CF3 focus is both team and squad level constructive and live experimentation to support ongoing PEO-S and Soldier Lethality Cross Functional Team optimization priorities. The ASA/SPM/SIF will develop a metric-based approach that will include virtual, constructive and live evaluations and tools across the Department of Defense (DoD), academia and industry which will be used for senior leaders to make deliberate decisions based on the analysis of Soldier/Squad performance. Funding for this project aligns with the Army's priorities in support of the National Defense Strategy and is a priority of the Soldier Lethality Cross Functional Team.

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

	FY 2021	FY 2022	FY 2023
Title: Integrated Soldier Systems	4.429	4.211	4.403
Description: Test, maintain and evolve a Soldier/squad equipment configuration baseline and conduct configuration management at the system level. Physically integrate components, improve compatibility and interoperability across programs. Establish and maintain tools that provide Systems Engineering, Configuration Management and Evaluation in a virtual and physical environment. Conduct Squad Performance Metric (SPM) evaluations and integrate mission-specific equipment into the Adaptive Squad Architecture (ASA) with continued emphasis on development of ICDs, evaluations, and improved fidelity of the SPM.			
FY 2022 Plans: Continue to develop and integrate mission-specific equipment with other combat platforms into initial version of ASA.			
FY 2023 Plans: Continue to develop and integrate mission-specific equipment with other combat platforms into initial version of ASA.			
FY 2022 to FY 2023 Increase/Decrease Statement: Increased due to development and integration of mission-specific equipment needed to support ASA.			
Title: FY 2022 SBIR/STTR Transfer	-	0.160	-
Description: FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) CF3 / <i>Integrated Soldier Systems (SL CFT)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<i>FY 2022 Plans:</i> FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.			
Accomplishments/Planned Programs Subtotals	4.429	4.371	4.403

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CF2: <i>Integrated Soldier Systems Prototyping (SL CFT)</i>	2.449	3.077	3.858	-	3.858	3.766	3.802	4.064	4.103	0.000	25.119

Remarks

D. Acquisition Strategy

PEO Soldier will utilize available Adaptive Squad Architecture (ASA) and Squad Performance Metrics (SPM) tools plus exercise the SIF with Team level and Squad level experimentation to assess system-of-systems capabilities for evaluation and integration, using current Systems Engineering and Technical Assistance (SETA) contracts, Federally Funded Research and Development Center personnel (FFRDCs) as necessary, plus tools/deliverables built under project CF2. The ASA/SPM/SIF will develop a metric-based approach that will include virtual, constructive and live evaluations and tools across the Department of Defense (DoD), academia and industry which will be used for senior leaders to make deliberate decisions based on the analysis of Soldier/Squad performance. The PEO will utilize project CF3 to leverage any data, architectural products or designs from the IVAS program and other PEO-S and Soldier Lethality Cross Functional Team priorities.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) CF3 / <i>Integrated Soldier Systems (SL CFT)</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FY 2022 SBIR/STTR Transfer	TBD	PEO Soldier HQ : FT Belvoir	-	-		0.160		-		-		-	0.000	0.160	-
Subtotal			-	-		0.160		-		-		-	0.000	0.160	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ASA and SPM Engineering, Manufacturing, Development	MIPR	TBD : Various	4.735	1.711	Jan 2021	0.886	Jan 2022	0.152	Jan 2023	-		0.152	0.000	7.484	-
Subtotal			4.735	1.711		0.886		0.152		-		0.152	0.000	7.484	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ASA/SPM/SIF evaluations	MIPR	Various : To Be Determined	2.083	2.718	Jan 2021	3.325	Jan 2022	4.251	Jan 2023	-		4.251	0.000	12.377	-
Subtotal			2.083	2.718		3.325		4.251		-		4.251	0.000	12.377	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
	Project Cost Totals		6.818	4.429	4.371	4.403	-	4.403	0.000	20.021

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) CF3 / <i>Integrated Soldier Systems (SL CFT)</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ASA Integration																												
SPM Evaluations																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) CF3 / <i>Integrated Soldier Systems (SL CFT)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ASA Integration	2	2020	4	2027
SPM Evaluations	2	2020	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) ES9 / Advanced Tactical Parachute System			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
ES9: <i>Advanced Tactical Parachute System</i>	-	3.027	1.770	3.029	-	3.029	2.835	3.806	4.148	4.189	0.000	22.804
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding in this project supports the Army's Cross Functional Teams (CFT) initiatives. Advanced Tactical Parachute System funding improves Low Altitude and High Altitude personnel parachutes and associated equipment to include test and evaluation of items transitioning from Advanced Component Development and prototype (6.4) efforts, with the goal of enhancing the insertion capability and safety of the airborne Soldier and increasing the performance, reliability, and durability of personnel airdrop equipment. Funds improvements and testing/evaluation of personnel parachute systems including integration and interface on the Soldier system. This project will continue to support cross-service initiatives to improve commonality.

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

	FY 2021	FY 2022	FY 2023
<p>Title: Advanced Tactical Parachute System</p> <p>Description: Advanced Tactical Parachute System funds improvements and testing/evaluation of personnel parachute systems. Project supports improved Low Altitude and High Altitude personnel parachute systems and associated equipment to include test and evaluation of items transitioning from Advance Component Development and prototype (6.4) efforts, with the goal of enhancing the insertion capability and safety of the airborne Soldier and increasing the performance, reliability, and durability of personnel airdrop equipment.</p> <p>FY 2022 Plans: Initiate Developmental Testing (DT) for PERS. Continue to conduct testing for service life extension for the T-11 parachute. Enhance high and low altitude insertion capabilities, software improvements for PARANAVSYS, and continue to support modernization initiatives to parachute systems and ancillary equipment.</p> <p>FY 2023 Plans: Developmental Testing and Operational Testing (DT/OT) for Parachutist Emergency Release System (PERS). Conduct integration and function testing for cotton buffer for both the T-11 and RA-1 parachute systems. Enhance high and low altitude insertion capabilities and continue to support modernization initiatives to parachute systems and ancillary equipment.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase due to increase in scope of testing.</p>	3.027	1.705	3.029
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC 638.</p>	-	0.065	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) ES9 / <i>Advanced Tactical Parachute System</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<i>FY 2022 Plans:</i> Funding transferred in accordance with Title 15 USC 638.			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC 638.			
Accomplishments/Planned Programs Subtotals	3.027	1.770	3.029

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MA7801: <i>Advanced Tactical Parachute System</i>	54.747	34.959	42.444	-	42.444	40.046	36.722	33.791	33.774	0.000	276.483
• ET8: <i>Personnel Airdrop System Development</i>	1.219	1.155	1.853	-	1.853	2.254	0.951	2.355	2.378	Continuing	Continuing

Remarks

D. Acquisition Strategy

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604601A / Infantry Support Weapons				ES9 / Advanced Tactical Parachute System								
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.065		-		-		-	0.000	0.065	-	
Subtotal			-	-		0.065		-		-		-	0.000	0.065	N/A	
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Dev Contracts	C/FFP	Various : Various	10.811	0.085		0.500		0.673		-		0.673	6.335	18.404	Continuing	
Dev Sys Engineering Spt	MIPR	Various : Various	1.050	0.647		0.235		0.400		-		0.400	1.190	3.522	Continuing	
Subtotal			11.861	0.732		0.735		1.073		-		1.073	7.525	21.926	N/A	
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Support Costs	MIPR	NSRDEC : Natick, MA	1.400	1.545		0.203		0.350		-		0.350	0.491	3.989	Continuing	
Subtotal			1.400	1.545		0.203		0.350		-		0.350	0.491	3.989	N/A	
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
DT/OT	MIPR	various : various	7.370	0.750		0.767		1.606		-		1.606	4.913	15.406	Continuing	
Subtotal			7.370	0.750		0.767		1.606		-		1.606	4.913	15.406	N/A	
Project Cost Totals			20.631	3.027		1.770		3.029		-		3.029	12.929	41.386	N/A	
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) ES9 / <i>Advanced Tactical Parachute System</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Enhanced Electronic Auto Activation Device (EEAAD) Dev																												
EEAAD Milestone C																												
T-11/MC-6 Service Life Enhancements																												
PFD Development																												
PFD Milestone C																												
Evaluate T-11R Pack Tray Modifications																												
Airborne Insertion Enhancements																												
Parachutist Emergency Release System (PERS) MDD																												
PERS Development																												
PERS Milestone C																												
T-11R Automatic Activation Device (AAD) Milestone B																												
T-11R AAD Development																												
T-11R AAD Milestone C																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) ES9 / <i>Advanced Tactical Parachute System</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Develop and Test Smart Universal Static line Hook (SUSH)																												
Next Generation Low Altitude Parachute System																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) ES9 / <i>Advanced Tactical Parachute System</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Enhanced Electronic Auto Activation Device (EEAAD) Dev	1	2019	4	2022
EEAAD Milestone C	4	2022	4	2022
T-11/MC-6 Service Life Enhancements	1	2019	4	2021
PFD Development	3	2019	4	2021
PFD Milestone C	4	2021	4	2021
Evaluate T-11R Pack Tray Modifications	1	2020	3	2021
Airborne Insertion Enhancements	1	2019	4	2028
Parachutist Emergency Release System (PERS) MDD	4	2021	4	2021
PERS Development	4	2021	1	2024
PERS Milestone C	1	2024	1	2024
T-11R Automatic Activation Device (AAD) Milestone B	1	2024	1	2024
T-11R AAD Development	1	2024	4	2026
T-11R AAD Milestone C	1	2027	1	2027
Develop and Test Smart Universal Static line Hook (SUSH)	1	2025	4	2026
Next Generation Low Altitude Parachute System	1	2026	4	2028

Note

Note: Towed Jumper Retrieval System (TJRS) is now Parachutist Emergency Release System (PERS).

Airborne Insertion Enhancements includes the following programs: Glide Augmentation, Situational Awareness Aids, High Altitude Combo Drops, GPS Denied Navaid, Glide Modulation, C-17 Over the Ramp (OTR), Riser Improvement, Above 25K Operations, Low Observables, and Reserve Deployment Bag.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
EW4: <i>Crew Served Weapons Engineering Development</i>	-	9.608	8.943	4.958	-	4.958	4.391	3.847	4.152	4.191	0.000	40.090
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

	FY 2021	FY 2022	FY 2023
Title: Design and Development	3.482	1.193	3.663
Description: Design and development of Crew Served Weapons			
FY 2022 Plans: M3/M3E1 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS): Will complete all operational and qualification test efforts required to obtain Type Classification and Full Materiel Release (TC/FMR) of the M3E1 and Fire Control. Will continue to evaluate, test and qualify selected capabilities and improvements for the M3E1 weapon and Fire Control systems to include Smart Rail integration and Fire Control thermal magnification efforts.			
Mounted Machinegun Optic (MMO): Will continue MMO pre-planned product improvement (PPPI) R&D efforts for integration with High Explosive Dual Purpose (HEDP) airburst programmer ammo.			
FY 2023 Plans: Mounted Machinegun Optic (MMO) will continue MMO pre-planned product improvement (PPPI) R&D efforts for integration with High Explosive Dual Purpose (HEDP) airburst programmer ammo.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Adaptive Lubricious Coatings will develop manufacturing technology to support production of super hydrophobic and other coatings in support of preserving barrel, operating group and bolt life of crew served weapons while improving weapon readiness. Continue to assess and evaluate current manufacturing process studies and assessments to adapt the coating technology into weapon Original Equipment Manufacturer manufacturing processes.</p> <p>Advanced Combat Optics will continue engineering evaluations, verification and validation of weapon optics performance requirements, covert target isolation and hand-off.</p> <p>New Weapons and Enabling Technology Evaluations and Assessments will continue to explore new technologies and perform initial evaluations and assessments required to facilitate rapid acquisition of increased capabilities where applicable.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY2022 to FY2023 for mounted counter defilade integration and lightweight M2A1 characterization and development.</p>				
<p>Title: Test and Evaluation</p> <p>Description: Test and evaluation of Crew Served Weapons</p> <p>FY 2022 Plans: New and Legacy Weapon Test and Evaluation: Will continue to test and evaluation new technology that can lead to enhancements of current and legacy weapon systems or create new weapon systems, as well as advanced combat optics and improvement of small arms munitions.</p> <p>FY 2023 Plans: New Weapons and Enabling Technology Evaluations and Assessments will continue to test and evaluate new technology that can lead to enhancements of current and legacy weapon systems or create new weapon systems, as well as advanced combat optics and improvement of small arms munitions.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase due to slight price and costs increase of new technology.</p>		0.626	1.161	1.295
<p>Title: FY 2022 SBIR/STTR Transfer</p> <p>FY 2022 Plans: FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		-	0.089	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Discrepancy due to FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.				
Accomplishments/Planned Programs Subtotals		4.108	2.443	4.958
		FY 2021	FY 2022	
Congressional Add: FY 2020 Congressional Add: Cannon Life Extension Program		1.500	1.500	
<p>FY 2021 Accomplishments: Advance and optimize the explosive bonding process of tantalum-tungsten alloy liners to create improved, longer life small and medium caliber barrels. Investigate alternative rifling methods (i.e. pressure form, roller form, waterjet) for tantalum lined barrels. Develop manufacturing technologies that enable the affordable production and sustainment of future weapon systems.</p> <p>FY 2022 Plans: Will continue to advance and optimize the explosive bonding process of tantalum-tungsten alloy liners to create improved, longer life small and medium caliber barrels. Will continue to investigate alternative rifling methods (i.e. pressure form, roller form, waterjet) for tantalum lined barrels and develop manufacturing technologies that enable the affordable production and sustainment of future weapon systems.</p>				
Congressional Add: Program increase - turret gunner survivability and simulation environment		4.000	5.000	
<p>FY 2021 Accomplishments: Develop smart, full-scale, virtual and augmented reality simulation environments for next-generation of Gunner protection kits that will significantly enhance the operational evaluation of turret designs in a secure, immersive, navigable, and interactive arena.</p> <p>Develop and install simulation environments that will lead to advanced and affordable engineered solutions while accelerating the development lifecycle through reduced design iterations and physical prototyping.</p> <p>FY 2022 Plans: Continue to develop smart, full-scale, virtual and augmented reality simulation environments for next-generation of Gunner protection kits that will significantly enhance the operational evaluation of turret designs in a secure, immersive, navigable, and interactive arena.</p> <p>Continue to develop and install simulation environments that will lead to advanced and affordable engineered solutions while accelerating the development lifecycle through reduced design iterations and physical prototyping.</p>				
Congressional Adds Subtotals		5.500	6.500	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>

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

Line Item	FY 2021	FY 2022	FY 2023	FY 2023	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cost To	
			Base	OCO	Total					Complete	Total Cost
• S54: <i>Small Arms Improvement</i>	16.216	10.911	9.248	-	9.248	9.286	9.366	9.359	9.448	0.000	73.834
• FL8: <i>84mm MAAWS Ammunition</i>	3.017	6.117	0.000	-	0.000	-	-	-	-	0.000	9.134
• FM4: <i>Next Generation Squad Weapons</i>	32.001	13.599	15.816	-	15.816	16.482	11.278	11.282	11.393	0.000	111.851
• GZ1500: <i>Sniper Rifles Modifications</i>	1.898	-	0.000	-	0.000	-	-	0.020	0.019	Continuing	Continuing
• GZ1300: <i>M240 Medium Machine Gun MODS</i>	6.385	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• GB3000: <i>MK-19 Grenade Machine Gun MODS</i>	6.444	23.027	0.000	-	0.000	-	-	-	-	0.000	29.471
• GB4000: <i>M2 50 Cal Machine Gun MODS</i>	-	6.612	0.000	-	0.000	-	-	-	-	0.000	6.612
• GC0925: <i>Modifications Less Than \$5.0m (WOCV-WTCV)</i>	2.604	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• GL3200: <i>Items Less Than \$5.0m (WOCV-WTCV)</i>	2.763	1.068	2.138	-	2.138	1.170	1.075	2.277	2.278	Continuing	Continuing
• G13000: <i>M240 Medium Machine Gun (7.62mm)</i>	12.500	10.500	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• G01506: <i>Precision Sniper Rifle</i>	8.895	9.240	6.436	-	6.436	5.350	6.161	6.216	6.216	Continuing	Continuing
• G13101: <i>MULTI-ROLE ANTI-ARMOR ANTI-PERSONNEL WEAPON SYSTEM</i>	22.629	31.623	26.627	-	26.627	-	-	-	-	Continuing	Continuing

Remarks

In support of Small Arms Requirements, components or prototypes developed in BA 4 PE 0603827A Soldier Systems - Advanced Development Project S54 Small Arms Improvement transition to BA 5 PE 0604601A Infantry Support Weapons Project EW4 Crew Served Weapons Engineering Development to conduct engineering and manufacturing development. Once the component, prototype or operational prototype achieves Milestone C and type classification the item transitions to small arms weapon systems production or modification programs.

D. Acquisition Strategy

Primary strategy is to mature and finalize design efforts, award Research, Development, Test and Evaluation (RDT&E), contracts, and/or Department of Defense Ordnance Technology Consortium (DOTC) and other OTA type hardware contracts. Test and evaluate systems that result in type classification, material release, and follow-on production contract awards.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604601A / Infantry Support Weapons				EW4 / Crew Served Weapons Engineering Development							
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	Allot	PM Soldier Weapons, : Picatinny Arsenal	1.766	-		0.400		0.205	Mar 2023	-		0.205	Continuing	Continuing	Continuing
Travel	MIPR	PM Soldier Weapons, : Picatinny Arsenal	0.365	0.012	Mar 2021	0.010	Mar 2022	0.020	Mar 2023	-		0.020	Continuing	Continuing	Continuing
FY2019 SBIR / STTR Transfer	FFRDC	Army Budget Office : Pentagon, Washington DC	0.984	-		-		-		-		-	0.000	0.984	-
FY2022 SBIR/STTR Transfer	FFRDC	Army Budget Office : Pentagon, Washington DC	-	-		0.089		-		-		-	0.000	0.089	-
Subtotal			3.115	0.012		0.499		0.225		-		0.225	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Fabrication	Various	Various : Multiple Contractors	5.219	6.304	Mar 2021	0.100	Mar 2022	0.207	Mar 2023	-		0.207	Continuing	Continuing	Continuing
Hardware Development	MIPR	Army Research Development Engineers Centers : Multiple	19.890	1.603	Mar 2021	5.327	Mar 2022	2.754	Mar 2023	-		2.754	Continuing	Continuing	Continuing
Subtotal			25.109	7.907		5.427		2.961		-		2.961	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering	MIPR	Army Research Development	9.014	0.960	Mar 2021	1.956	Mar 2022	0.272	Mar 2023	-		0.272	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604601A / Infantry Support Weapons				EW4 / Crew Served Weapons Engineering Development							
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Engineering Centers : Multiple													
Logistics	MIPR	Tank & Automotive Command (TACOM), : Warren	0.730	-		0.050	Mar 2022	0.080	Mar 2023	-		0.080	Continuing	Continuing	Continuing
Human Research and Engineering	MIPR	Army Research Laboratory, : Aberdeen Proving Ground	0.770	0.103	Mar 2021	0.050	Mar 2022	0.125	Mar 2023	-		0.125	Continuing	Continuing	Continuing
Subtotal			10.514	1.063		2.056		0.477		-		0.477	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Testing	MIPR	Army Developmental Test Command, : Aberdeen Proving Ground	6.568	0.600	Mar 2021	0.455	Mar 2022	0.717	Mar 2023	-		0.717	Continuing	Continuing	Continuing
Operational Testing	MIPR	Army Test and Evaluation Command, : Aberdeen Proving Ground	3.633	0.026	Mar 2021	0.456	Mar 2022	0.523	Mar 2023	-		0.523	Continuing	Continuing	Continuing
Validation Testing	MIPR	Army Test and Evaluation Centers, : Multiple	0.808	-		0.050	Mar 2022	0.055	Mar 2023	-		0.055	Continuing	Continuing	Continuing
Subtotal			11.009	0.626		0.961		1.295		-		1.295	Continuing	Continuing	N/A
Project Cost Totals			49.747	9.608		8.943		4.958		-		4.958	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DESIGN AND DEVELOPMENT	[Redacted]																											
M3/M3E1 Multi-Role Anti-Armor Anti-Personnel Weapon System	[Redacted]																											
Mounted Machinegun Optic (MMO)	[Redacted]																											
Enhanced System for Remote Weapon Stations & Kinetic Counter-UAS Weapons	[Redacted]																											
Weapon Enhancements for Improved Ammunition	[Redacted]																											
Advanced Combat Optics	[Redacted]																											
New Weapons and Enabling Technology Evaluations and Assessments	[Redacted]																											
TEST AND EVALUATION	[Redacted]																											
Test and Evaluation of new technology	[Redacted]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DESIGN AND DEVELOPMENT	1	2020	4	2027
M3/M3E1 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS)	1	2017	4	2022
Mounted Machinegun Optic (MMO)	1	2020	4	2023
Enhanced System for Remote Weapon Stations & Kinetic Counter-UAS Weapons	1	2024	4	2027
Weapon Enhancements for Improved Ammunition	1	2025	4	2027
Advanced Combat Optics	1	2023	4	2027
New Weapons and Enabling Technology Evaluations and Assessments	1	2023	4	2027
TEST AND EVALUATION	1	2020	4	2027
Test and Evaluation of new technology	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
FF2: <i>Small Arms Fire Control</i>	-	9.782	7.008	8.179	-	8.179	10.263	5.065	5.066	5.116	0.000	50.479
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The XM157 Next Generation Squad Weapon - Fire Control (NGSW-FC) is an advanced fire control device to support the Next Generation Squad Weapons. NGSW-FC increases the probability of hit and decreases the time to engage through a variable powered direct view optic with integrated range finder, ballistic calculator, and digital display capable of providing an adjusted aim point. The XM157 NGSW-FC will utilize open architecture to deliver the initial increased core capability followed by increasing increments of capability/enhancements over time as technology matures and evolves.

The total cost of the the Next Generation Squad Weapons Rapid Prototyping Middle Tier of Acquisition effort is \$156.83 million RDT&E from FY19 to FY23. The remainder of the Next Generation Squad Weapons Rapid Prototyping is fully funded across the Future Years Defense Program.

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

	FY 2021	FY 2022	FY 2023
Title: Design, Develop and Fabricate	1.727	3.652	4.786
Description: Includes contract awards for iterative prototyping of all Fire Control configurations, enhancements, and hand held devices.			
FY 2022 Plans: Will continue to conduct iterative prototype efforts to design, develop, and fabricate enhancements to the NGSW-FC, conduct technical system engineering reviews, and implementation plans for iterative prototype components. Will award agreements or contracts to conduct iterative prototype efforts. Capability enhancements to be developed through iterative prototyping that may include technology such as advanced camera based capabilities; optical augmentation; aim augmentation; weapon stabilization; wind sensing; optimization of size, weight, and power; advanced network lethality; advanced ruggedization; and augmented reality.			
FY 2023 Plans: Complete integration and testing of mature iterative prototyping capabilities with prototype design transitioning to production. Continue to conduct iterative prototyping efforts with the selected NGSW Fire Control. Efforts with the selected vendor will include: prototype development on target tracking/recognition, target data transfer, integrated advanced multispectral camera-based capabilities; increased Rapid Target Acquisition capability through networked integration with IVAS, ENGV-B, and FWS-I; aim error reduction technologies progressing toward Generation 4 Fire Control, including advanced stabilization and trigger interrupt solutions; continued optimization of system size, weight, and power, to reduce soldier load.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
FY2022 decreased due to the Congressional Mark				
<p>Title: Engineering Support</p> <p>Description: Government engineering support, providing oversight of design development and contractor performance.</p> <p>FY 2022 Plans: Will continue to provide government engineering support at laboratories and engineering centers; providing design, limited testing and oversight of development and contractor performance. Continues planning and documentation required for iterative prototyping for system enhancements.</p> <p>FY 2023 Plans: Will continue to provide government engineering support at laboratories and engineering centers; providing design, limited testing and oversight of development and contractor performance.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY2022 funding decreased due to Congressional Mark</p>		3.456	1.400	1.883
<p>Title: Test and Evaluation</p> <p>Description: Government testing and evaluation of prototypes, articles and improvements. Includes Soldier Touch Point evaluations.</p> <p>FY 2022 Plans: NGSW-FC will test and evaluate proposed additional capability upgrades resulting from iterative prototyping. Prototypes will undergo technical testing and soldier touch point user evaluations. Conduct Operational Testing to determine the Fire Control Systems' ability to accomplish its designed mission when used by representative personnel as well as to ensure the system can be placed and sustained satisfactorily in the field.</p> <p>FY 2023 Plans: Complete Operational Testing to determine the Fire Control Systems' ability to accomplish its designed mission when used by representative personnel as well as to ensure the system can be placed and sustained satisfactorily in the field. Continuing to test and evaluate proposed improvements and capability upgrades resulting from iterative prototyping. Prototypes will undergo technical testing and soldier touch point user evaluations.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY2022 funding decreased due to Congressional Mark</p>		4.330	1.500	1.310
<p>Title: Program Management</p> <p>Description: Program management office non-labor activities, to include travel and other indirect costs.</p>		0.269	0.200	0.200

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p><i>FY 2022 Plans:</i> Will continue to provide for administrative costs incurred by the Program Management office, to include travel, contractor service support, and other requirements to support the program.</p> <p><i>FY 2023 Plans:</i> Will continue to provide for administrative costs incurred by the Program Management office, to include travel, contractor service support, and other requirements to support the program.</p>			
<p><i>Title:</i> FY 2022 SBIR/STTR Transfer</p> <p><i>FY 2022 Plans:</i> Description: FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Discrepancy due to FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.</p>	-	0.256	-
Accomplishments/Planned Programs Subtotals	9.782	7.008	8.179

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• S54: <i>Small Arms Improvement</i>	16.216	10.911	9.248	-	9.248	9.286	9.366	9.359	9.448	0.000	73.834
• G14513: <i>Next Generation Squad Weapon - Fire Control</i>	35.822	72.595	147.645	-	147.645	231.413	264.685	163.021	163.038	0.000	1,078.219

Remarks

D. Acquisition Strategy

The NGSW-FC program is a Middle Tier Acquisition (MTA) program utilizing Rapid Prototyping authority under Section 804 of the FY 2016 National Defense Authorization Act (NDAA). A full and open competition selected two vendors for fixed amount Other Transaction Authority (OTA) awards to mature and finalize system designs and conduct test and evaluation. Following successful completion of the initial prototyping effort, the Government awarded a follow-on production Other Transaction Agreement (OTA) for the NGSW-FC without further competition. Iterative prototyping RDT&E efforts will continue to support increased capability sets to the NGSW-FC and may transition to rapid fielding as technology improves.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FY 2019 Rescission (0604601A/S62)	Allot	Army Budget Office : Pentagon	0.104	-		-		-		-		-	0.000	0.104	-
FY 2022 SBIR/STTR Transfer	TBD	PEO Soldier HQ : FT Belvoir, VA	-	-		0.256		-		-		-	0.000	0.256	-
Subtotal			0.104	-		0.256		-		-		-	0.000	0.360	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Next Generation Fire Control - Rapid Prototyping OTA	C/FFP	Vortex Optics Army Contracting Command - New Jersey (ACC-NJ) : Picatinny Arsenal, NJ	5.700	0.917	Nov 2021	-		-		-		-	0.000	6.617	-
Next Generation Fire Control - Rapid Prototyping OTA	C/FFP	L3 Harris: Army Contracting Command - New Jersey (ACC-NJ) : Picatinny Arsenal, NJ	5.700	0.810	Nov 2021	-		-		-		-	0.000	6.510	-
Next Generation Fire Control - Iterative Prototyping OTA	C/FFP	VENDOR TBD : ACC-NJ, Picatinny Arsenal, NJ	-	-		3.652	Apr 2022	4.786	Jan 2023	-		4.786	Continuing	Continuing	-
Subtotal			11.400	1.727		3.652		4.786		-		4.786	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	MIPR	Combat Capability Development Command - Armaments Center	2.462	3.456	Nov 2020	1.400	Nov 2021	1.883	Nov 2022	-		1.883	Continuing	Continuing	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Rapid Prototyping - Fire Control																												
L3 Harris - Contractor Design and Prototype Fabrication																												
Vortex Optics- Contractor Design and Prototype Fabrication																												
Prototype Testing and Evaluation																												
Production Decision - NGFC																												
Iterative Prototyping - Fire Control Enhancements																												
OTA Awards - Iterative Prototyping																												
Contractor Design and Prototype Fabrication																												
Test and Evaluation - Iterative Prototyping Testing 1 3Q FY22																												
Operational Testing																												
Test and Evaluation - Iterative Prototyping Testing 1 4Q FY23																												
Test and Evaluation - Iterative Prototyping Testing 2																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Rapid Prototyping - Fire Control	1	2019	4	2021
Prototype Opportunity Notice	3	2019	3	2019
Other Transaction Agreement (OTA) Award - Rapid Prototyping	3	2020	3	2020
L3 Harris - Contractor Design and Prototype Fabrication	3	2020	4	2021
Vortex Optics- Contractor Design and Prototype Fabrication	3	2020	4	2021
Prototype Testing and Evaluation	1	2021	3	2021
Production Decision - NGFC	4	2021	4	2021
Iterative Prototyping - Fire Control Enhancements	1	2021	4	2027
OTA Awards - Iterative Prototyping	1	2022	1	2022
Contractor Design and Prototype Fabrication	1	2022	4	2027
Test and Evaluation - Iterative Prototyping Testing 1 3Q FY22	3	2022	3	2022
Operational Testing	3	2023	4	2023
Test and Evaluation - Iterative Prototyping Testing 1 4Q FY23	4	2023	4	2023
Test and Evaluation - Iterative Prototyping Testing 2	4	2024	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FL8 / 84mm MAAWS Ammunition			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
FL8: 84mm MAAWS Ammunition	-	3.017	6.117	-	-	-	-	-	-	-	0.000	9.134
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project FL8 84mm MAAWS Ammunition will test, evaluate and qualify up to seven types of 84 millimeters (mm) munitions for United States (U.S.) Army use with the M3/M3A1 Multi-Role Anti-Armor Anti-Personnel Weapon Systems (MAAWS). In addition to type classifying existing rounds, funds will also provide for the evaluation and qualification of the new High Explosive Programmable Airbursting Round. These rounds will provide improved lethality and a higher probability of hit in defilade positions for close combat forces against varying target sets and increased ranges in support of Infantry Squad formations. The M3/M3A1 was a HQDA G8 directed requirement scheduled for Type Classification 4th Quarter (Q) Fiscal Year (FY) 2022.

FY 2022 funding in the amount of \$6.639 million was used to complete type classification efforts for the new programmable round therefore no funding will be required in FY2023.

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

	FY 2021	FY 2022	FY 2023
<p>Title: Munition Prototype Development & Demonstration</p> <p>Description: Includes ammunition engineering and manufacturing, contract awards for prototypes, development and demonstration.</p>	2.435	-	-
<p>Title: Engineering Support</p> <p>Description: Government engineering support, providing oversight of design development and contractor performance.</p> <p>FY 2022 Plans: Will continue to provide engineering support and oversight of ammunition design and function. Will continue to participate in IPT, technical reviews and T&E efforts.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease is based on a projected decline in requirements in FY 2023.</p>	0.130	1.847	-
<p>Title: Test and Evaluation</p> <p>Description: Funds will support the following efforts:</p> <p>FY 2022 Plans:</p>	0.250	2.692	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FL8 / <i>84mm MAAWS Ammunition</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Will complete delta testing of existing rounds, along with developmental test and evaluation efforts of the programmable round. Complete production qualification testing. FY 2022 to FY 2023 Increase/Decrease Statement: Decrease is based on a projected decline in requirements in FY 2023.			
Title: Program Management Description: Funds will support the following efforts: FY 2022 Plans: Will continue to provide project oversight, program management, non-labor operations, and contractor support. FY 2022 to FY 2023 Increase/Decrease Statement: Decrease is based on a projected decline in requirements in FY 2023.	0.202	0.645	-
Title: TC-STD Efforts Description: Type Classification efforts for Full Material Release of the programmable round. FY 2022 Plans: Complete Type Classification efforts for Full Material Release of the programmable round. FY 2022 to FY 2023 Increase/Decrease Statement: Decrease is based on a projected decline in requirements in FY 2023.	-	0.709	-
Title: FY 2022 SBIR/STTR Transfer FY 2022 Plans: FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638. FY 2022 to FY 2023 Increase/Decrease Statement: Discrepancy due to FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.	-	0.224	-
Accomplishments/Planned Programs Subtotals	3.017	6.117	-

C. Other Program Funding Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• EW4: <i>Crew Served Weapons Engineering Development</i>	9.608	8.943	4.958	-	4.958	4.391	3.847	4.152	4.191	0.000	40.090

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FL8 / <i>84mm MAAWS Ammunition</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• G13101: <i>MULTI-ROLE ANTI-ARMOR ANTI-PERSONNEL WEAPON SYSTEM</i>	22.629	31.623	26.627	-	26.627	-	-	-	-	Continuing	Continuing
• OMA - 137010000: <i>RESET</i>	-	0.707	0.735	-	0.735	0.721	0.728	0.735	-	0.000	3.626

Remarks

D. Acquisition Strategy

Used Other Transaction Authority (OTA) via the DoD Ordnance Technology Consortium (DOTC) to obtain commercially available 84mm ammunition for test and evaluation purposes.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FL8 / <i>84mm MAAWS Ammunition</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	MIPR	PMSW : Picatinny Arsenal, NJ	0.500	0.202	Oct 2020	0.645	Oct 2021	-		-		-	0.000	1.347	-
FY 2022 SBIR/STTR Transfer	TBD	Army Budget Office : Pentagon, Washington DC	-	-		0.224		-		-		-	0.000	0.224	-
Subtotal			0.500	0.202		0.869		-		-		-	0.000	1.571	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Munitions Prototype	SS/CPFF	SAAB : Sweden	1.842	2.435	Nov 2020	-		-		-		-	0.000	4.277	-
Subtotal			1.842	2.435		-		-		-		-	0.000	4.277	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	MIPR	CCDC : Picatinny Arsenal, NJ	0.500	0.130	Oct 2020	1.847	Mar 2022	-		-		-	0.000	2.477	-
TC-STD Efforts	MIPR	CCDC : Picatinny Arsenal, New Jersey	-	-		0.709	Apr 2022	-		-		-	0.000	0.709	-
Subtotal			0.500	0.130		2.556		-		-		-	0.000	3.186	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test & Evaluation	MIPR	ATEC : Aberdeen, MD	1.032	0.250	Oct 2020	2.692	Apr 2022	-		-		-	0.000	3.974	-
Subtotal			1.032	0.250		2.692		-		-		-	0.000	3.974	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FL8 / <i>84mm MAAWS Ammunition</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Prototype Delivery	▲ 1																											
Developmental & Operational Testing																												
MS-C & TC-STD								▲ 2																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FL8 / <i>84mm MAAWS Ammunition</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Matériel Development Decision	4	2019	4	2019
DOTC Contract Award	1	2020	1	2020
Critical Design Review	2	2020	2	2020
Prototype Delivery	1	2021	1	2021
Developmental & Operational Testing	4	2020	3	2022
MS-C & TC-STD	3	2022	3	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
FM4: <i>Next Generation Squad Weapons</i>	-	32.001	13.599	15.816	-	15.816	16.482	11.278	11.282	11.393	0.000	111.851
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Next Generation Squad Weapons (NGSW) program will develop weapon systems and common 6.8mm cartridge to maintain overmatch and meet future force warfighter needs.

The XM5 Next Generation Squad Weapon-Rifle (NGSW-R) is the planned replacement for the M4A1 Carbine in the close combat force and select support units. The NGSW-R will provide capability improvements in accuracy, range, and lethality.

The XM250 Next Generation Squad Weapon-Automatic Rifle (NGSW-AR) is the planned replacement for the M249 Squad Automatic Weapon (SAW) in the close combat force and select support units. The NGSW-AR combines the firepower and range of a machine gun with the precision and ergonomics of a carbine, yielding capability improvements in accuracy, range, and lethality.

The XM5 NGSW-R and XM250 NGSW-AR will use a common 6.8mm cartridge in a variety of ammunition types including but not limited to general purpose (GP), special purpose (SP), reduced range, and blank.

Development efforts for additional NGSW variants may follow to replace other legacy systems or provide additional enhanced capabilities.

The total cost of the the Next Generation Squad Weapons Rapid Prototyping Middle Tier of Acquisition effort is \$156.83 million RDT&E from FY19 to FY23. The remainder of the Next Generation Squad Weapons Rapid Prototyping is fully funded across the Future Years Defense Program.

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

	FY 2021	FY 2022	FY 2023
Title: Contractor Design and Prototype Fabrication	6.960	10.485	6.989
Description: Contractor design, development and fabrication of prototypes.			
FY 2022 Plans: Will begin the next phase of iterative prototyping with the selected rifle and automatic rifle, in order to develop capability enhancements and design improvements. Effort will include the integration of additional cartridge and ammunition types, integration of new technologies and training systems, enhanced smart rail capabilities, and weapon system performance increases.			
FY 2023 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
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<p>Will continue prototyping with the selected Next Generation Squad Weapon rifle and automatic rifle. Efforts with the selected vendor will include: continued improvements in the reliability of the weapons, as well as system reliability in extreme environmental conditions; improved dispersion and accuracy, including changes to the weapon designs to integrate modifications to the 6.8mm projectile and cartridge design and reduce weapon recoil; continue rapid prototyping and development of powered rail and intra-Soldier wireless data transfer solutions in order to improve the interface between the weapons and the Next Generation Squad Weapon Fire Control, as well as other optics and enablers; enhanced barrel technologies and improved barrel manufacturing techniques. Will purchase additional prototype weapons to support integration, developmental and operational testing, as well as user evaluations.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase of funding from FY2022 to FY2023 reflects the ongoing and additional development and prototyping efforts with the selected vendor.</p>			
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<p>Title: Engineering Support</p> <p>Description: Government engineering support, providing oversight of design, development and contractor performance.</p> <p>FY 2022 Plans: Will continue government engineering support to provide design, limited testing and oversight of development and contractor performance for capability enhancement and design improvements.</p> <p>FY 2023 Plans: Will continue government engineering support to provide design, limited testing and oversight of development and contractor performance for capability enhancement and design improvements.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to projected slight increases in engineering support, providing oversight of design, development and contractor performance.</p>	6.336	1.062	1.725
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<p>Title: Test and Evaluation</p> <p>Description: Testing and evaluation at government ranges and facilities.</p> <p>FY 2022 Plans: Government testing and evaluation will include safety confirmation for the reduced range cartridge integration and for multiple ammunition variants with the weapons. Will also begin Live Fire Test and Evaluation (LFT&E) and Initial Operational Test and Evaluation (IOT&E) of production representative weapons.</p> <p>FY 2023 Plans:</p>	5.984	0.520	6.217
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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Will conduct Production Qualification Testing (PQT), integration testing with other enablers, maintainability testing, Initial Operational Test and Evaluation (IOT&E) of production representative weapons, and provide support for Live Fire Test and Evaluation (LFT&E). Will also conduct testing at government ranges and facilities of vendor prototypes.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY2023 will include program costs to conduct Live Fire Test and Evaluation (LFT&E) and Initial Operational Test and Evaluation (IOT&E).</p>				
<p>Title: Program Management</p> <p>Description: Program office management and oversight of government and contractor efforts.</p> <p>FY 2022 Plans: Program management office will continue to provide oversight of contract actions, engineering support and test activities.</p> <p>FY 2023 Plans: Program management office will continue to provide oversight of contract actions, engineering support and test activities.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to additional FY22 PMA requirements (TAC, travel, other internal costs)</p>		1.136	1.036	0.250
<p>Title: Blank Cartridge and Blank Firing Weapon Adaption Kit Development</p>		3.786	-	-
<p>Title: Reduced Range Cartridge Development and Integration</p> <p>FY 2023 Plans: Will complete work to finalize integration of the Reduced Range cartridge with NGSW Rifle and Automatic Rifle.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in funding is due to remaining Reduced Range cartridge integration efforts completed on this line in FY2023.</p>		7.799	-	0.254
<p>Title: Special Purpose Cartridge Development and Integration</p> <p>FY 2023 Plans: Will complete work to finalize integration of the Special Purpose cartridge with NGSW Rifle and Automatic Rifle.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in funding is due to remaining Special Purpose cartridge integration efforts completed on this line in FY2023.</p>		-	-	0.381
<p>Title: SBIR/STTR Transfer</p> <p>Description: SBIR/STTR Transfer</p> <p>FY 2022 Plans:</p>		-	0.496	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred in accordance with Title 15 USC 638			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	32.001	13.599	15.816

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• S54: <i>Small Arms Improvement</i>	16.216	10.911	9.248	-	9.248	9.286	9.366	9.359	9.448	0.000	73.834
• EW4: <i>Crew Served Weapons Engineering Development</i>	9.608	8.943	4.958	-	4.958	4.391	3.847	4.152	4.191	0.000	40.090
• S63: <i>Individual Weapons Engineering Development</i>	3.493	3.651	3.956	-	3.956	3.624	3.579	3.863	3.899	0.000	26.065
• FL4: <i>Small Caliber Ammo for Next Gen Squad Weapons</i>	26.483	28.372	25.558	-	25.558	12.058	12.168	12.172	12.291	0.000	129.102
• G14511: <i>Next Generation Squad Weapon-Automatic Rifle</i>	-	3.630	13.548	-	13.548	21.079	24.116	14.405	14.406	0.000	91.184
• G14512: <i>NEXT GENERATION SQUAD WEAPON-RIFLE</i>	-	20.862	60.100	-	60.100	92.201	105.438	63.015	63.021	0.000	404.637
• E06001: <i>NEXT GENERATION SQUAD WEAPON AMMUNITION</i>	14.386	71.234	128.662	-	128.662	196.146	210.746	344.266	344.257	0.000	1,309.697

Remarks

D. Acquisition Strategy
 The NGSW program is a Middle Tier Acquisition (MTA) program utilizing Rapid Prototyping authority under Section 804 of the FY 2016 National Defense Authorization Act (NDAA). A full and open competition selected three vendors for fixed amount Other Transaction Authority (OTA) awards to mature and finalize system designs and conduct test and evaluation. Following successful completion of the prototyping effort, the Government will award a follow-on contract for production and continued improvements of the XM5 NGSW-R, the XM250 NGSW-AR, and 6.8mm common ammunition.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Allot	PM Soldier Weapons : Picatinny Arsenal, NJ	0.419	1.136	Oct 2020	1.036	Oct 2021	0.250	Oct 2022	-		0.250	0.000	2.841	-
SBIR/STTR tax	TBD	PEO Soldier HQ : FT Belvoir, VA	-	-		0.496		-		-		-	0.000	0.496	-
Subtotal			0.419	1.136		1.532		0.250		-		0.250	0.000	3.337	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prototype Opportunity Notice	C/FFP	SIG Sauer Inc. : Newington, NH	1.188	1.212	Oct 2020	-		-		-		-	0.000	2.400	-
Prototype Opportunity Notice	C/FFP	LoneStar Future Weapons, LLC : Waco, TX	13.980	2.997	Oct 2020	-		-		-		-	0.000	16.977	-
Prototype Opportunity Notice	C/FFP	Textron Systems : Hunt Valley, MD	12.018	2.751	Oct 2020	-		-		-		-	0.000	14.769	-
Blank Cartridge and Blank Firing Weapon Adaptation Kit Development	C/FFP	VENDOR TBD : ACC-NJ, Picatinny Arsenal, NJ	-	3.786	Sep 2021	-		-		-		-	0.000	3.786	-
Reduced Range Cartridge Development and Integration	C/FFP	VENDOR TBD : ACC-NJ, Picatinny Arsenal, NJ	-	7.799	Sep 2021	-		0.254	Feb 2023	-		0.254	0.000	8.053	-
Special Purpose Cartridge Development and Integration	C/FFP	VENDOR TBD : ACC-NJ, Picatinny Arsenal, NJ	-	-		-		0.381	Feb 2023	-		0.381	0.000	0.381	-
Prototyping / Design Improvements	C/FFP	VENDOR TBD : ACC-NJ, Picatinny Arsenal, NJ	-	-		10.485	Jan 2022	6.989	Feb 2023	-		6.989	0.000	17.474	-
Subtotal			27.186	18.545		10.485		7.624		-		7.624	0.000	63.840	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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
Reduced Range Cartridge Development and Integration and Special Purpose Cartridge Development and Integration will be vendor efforts awarded to the company selected for production of the NGSW Rifle and Automatic Rifle.

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	MIPR	Combat Capability Development Center - Armament Center (CCDC-AC) : Picatinny Arsenal, NJ	2.258	6.336	Oct 2020	1.062	Oct 2021	1.725	Oct 2022	-		1.725	0.000	11.381	-
Subtotal			2.258	6.336		1.062		1.725		-		1.725	0.000	11.381	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, ND	1.856	5.984	Dec 2020	0.520	Dec 2021	6.217	Dec 2022	-		6.217	0.000	14.577	-
Subtotal			1.856	5.984		0.520		6.217		-		6.217	0.000	14.577	N/A

			Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			31.719	32.001	13.599	15.816	-	15.816	0.000	93.135	N/A

Remarks
Prototyping agreement with General Dynamics novated to LoneStar Future Weapons, LLC in June 2021.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Rapid Prototyping - Rifle / AR / Common Cartridge																												
Sig Sauer Inc.- Contractor Design and Prototype Fabrication																												
General Dynamics- OTS Inc- Contractor Design and Prototyp																												
AAJ CorpTextron Systems - Contractor Design and Prototype																												
VENDOR TBD - Production Down-Selection					▲ 1																							
Blank Cartridge & Firing Weapon Adaptation Kit Development																												
Reduced Range Cartridge Development and Integration																												
Special Purpose Cartridge Development and Integration																												
Prototype Testing (Phase II) - Test and Evaluation																												
Prototyping - Improvements																												
Contract Award - Iterative Prototyping					▲ 2																							
Contractor Design and Prototype Fabrication																												
Test and Evaluation - Prototyping																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Production Qualification Testing (PQT)									■																			
Test and Evaluation - LFT&E													■															
Test and Evaluation - IOT&E													■															

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Rapid Prototyping - Rifle / AR / Common Cartridge	4	2019	4	2021
Prototype Opportunity Notice	2	2019	2	2019
Other Transaction Agreements (OTA) Award - Rapid Prototyping	4	2019	4	2019
Sig Sauer Inc.- Contractor Design and Prototype Fabrication	4	2019	4	2021
General Dynamics- OTS Inc- Contractor Design and Prototype Fabrication	4	2019	4	2021
AAJ CorpTextron Systems - Contractor Design and Prototype Fabrication	4	2019	4	2021
VENDOR TBD - Production Down-Selection	1	2022	1	2022
Blank Cartridge & Firing Weapon Adaptation Kit Development	2	2021	1	2023
Reduced Range Cartiridge Development and Integration	3	2021	4	2023
Special Purpose Cartridge Development and Integration	4	2021	4	2023
Prototype Testing (Phase I) - Test and Evaluation	3	2020	4	2020
Prototype Testing (Phase II) - Test and Evaluation	2	2021	4	2021
Prototyping - Improvements	1	2022	4	2025
Contract Award - Iterative Prototyping	2	2022	2	2022
Contractor Design and Prototype Fabrication	2	2022	4	2027
Test and Evaluation - Prototyping	3	2022	4	2027
Production Qualification Testing (PQT)	2	2023	3	2023
Test and Evaluation - LFT&E	4	2023	4	2023
Test and Evaluation - IOT&E	3	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>S58: Soldier Enhancement Program</i>	-	9.000	13.655	5.182	-	5.182	-	5.196	5.198	5.197	0.000	43.428
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Soldier Enhancement Program (SEP) was established by the National Defense Authorization Act for Fiscal Years 1990 to provide a rapid approach to evaluate Commercial off-the-shelf (COTS), Government off-the shelf (GOTS), or Non-Developmental Items (NDI) capabilities to increase the combat effectiveness of the Soldier. Using a "buy, try and decide" methodology, SEP provides significant savings and acceleration in the evaluation of leading edge Soldier capabilities in order to provide combat overmatch. The SEP tri-chair leadership consists of the Director, Maneuver Capabilities Development and Integration Directorate (MCDID), The Infantry Commandant, and Program Executive Office (PEO) Soldier. Proposals are submitted by Soldiers and industry at any time, are reviewed monthly and new starts are approved semi-annually by the SEP Council of Colonels (CoC). Approved proposals are validated by the Director, Maneuver Capability Development and Integration Directorate (MCDID). Validated SEP initiatives are procured and evaluated by Soldiers for feasibility and suitability. Based on the evaluation findings, the SEP CoC provides one or more of the following courses of action: (1) inform deliberate or urgent/emerging requirements generation, (2) initiate a new Program of Record (POR) or improve an existing POR, (3) provide a national stock number (NSN) for unit procurement or (4) the item did not meet objectives and no further action is necessary. The funding supports SEP evaluation preparation, conducting evaluations, and documenting results. Funding for this project aligns with the Army's priorities in support of the National Defense Strategy and is a priority of the Army Futures Command (AFC).

Justification: FY2023 RDT&E funding supports SEP evaluations and documentation of results.

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

	FY 2021	FY 2022	FY 2023
Title: Evaluate COTS/GOTS/NDI equipment that have the potential to enhance Soldier combat effectiveness.	-	3.522	5.182
FY 2022 Plans: Funding will support evaluation of SEP Council of Colonels approved and validated initiatives. Evaluations will include safety testing, collection, and analysis of user feedback and documentation of results.			
FY 2023 Plans: Funding will support evaluation of approximately 15 SEP Council of Colonels approved and validated initiatives to enhance Soldier combat effectiveness. Product evaluations will include safety testing, collection and analysis of Soldier feedback/results and documentation of results.			
FY 2022 to FY 2023 Increase/Decrease Statement: FY22 to FY23 funding increase due to increase number of initiatives to be evaluated.			
Title: FY 2022 SBIR/STTR Transfer	-	0.133	-
FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> FY 2022 SBIR/STTR Transfer in accordance with Title 15 USC ?638.			
Accomplishments/Planned Programs Subtotals	-	3.655	5.182

	FY 2021	FY 2022
<i>Congressional Add:</i> Program increase - soldier enhancement program	9.000	10.000
<i>FY 2021 Accomplishments:</i> Funding will support evaluation of SEP Council of Colonels approved and validated initiatives. Coordinate with industry and Army to ensure submitted proposals satisfy Army needs. Manage and distribute funding for SEP evaluations. Evaluations will include safety testing, collection, and analysis of user feedback and documentation of results for close-out.		
<i>FY 2022 Plans:</i> Funding will support evaluation of SEP Council of Colonels approved and validated initiatives. Evaluations will include safety testing, collection, and analysis of user feedback and documentation of results.		
Congressional Adds Subtotals	9.000	10.000

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MA6800: <i>Soldier Enhancement</i>	-	1.286	0.000	-	0.000	-	-	-	-	0.000	1.286

Remarks

Other

D. Acquisition Strategy

SEP focuses on COTS/GOTS/NDI initiatives submitted by Soldiers and industry. SEP proposals are reviewed monthly and approved semi-annually. The funding supports procuring SEP COTS/GOTS/NDI items in quantities sufficient for Soldier evaluation, conducting product evaluations which includes safety testing, data collection, analysis of Soldier feedback/results and documenting results. Product Managers responsible for the portfolio in which the SEP initiative falls into develops the procurement and evaluation strategy and procures the items using a variety of means from Government purchase card to full contracts. Soldier's evaluations are performed by various means from Battle Lab surveys to full scale Army Test and Evaluation testing depending on the item.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FY 2022 SBIR/STTR Transfer	TBD	PEO Soldier HQ : FT Belvoir	-	-		0.133		-		-		-	0.000	0.133	-
Various	MIPR	PEO SOLDIER : Ft. Belvoir, VA	14.825	0.361	Sep 2021	0.370		0.373	Aug 2023	-		0.373	0.000	15.929	-
Subtotal			14.825	0.361		0.503		0.373		-		0.373	0.000	16.062	N/A

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

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SEP Evaluations	MIPR	Various : Various	57.533	8.639		13.152		4.809		-		4.809	0.000	84.133	-
Subtotal			57.533	8.639		13.152		4.809		-		4.809	0.000	84.133	N/A

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

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	72.358	9.000	13.655	5.182	-	5.182	0.000	100.195	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
SEP Council of Colonels approve/prioritization process FY21.2	▲1																												
Evaluate Initiatives 2-4QFY21	■																												
SEP Council of Colonels approve/prioritization process FY21.3		▲2																											
Evaluate Initiatives 3QFY21-1QFY22		■																											
SEP Council of Colonels approve/prioritization process FY22.1			▲3																										
Evaluate Initiatives 1-3QFY22			■																										
SEP Council of Colonels approve/prioritization process FY22.2				▲4																									
Evaluate Initiatives 3QFY22-1QFY23				■																									
SEP Council of Colonels approve/prioritization process FY23.1						▲5																							
Evaluate Initiatives 1-3QFY23						■																							
SEP Council of Colonels approve/prioritization process FY23.2							▲6																						
Evaluate Initiatives 3QFY23-1QFY24							■																						

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
SEP Council of Colonels approve/prioritization process FY21.2	2	2021	2	2021
Evaluate Initiatives 2-4QFY21	2	2021	4	2021
SEP Council of Colonels approve/prioritization process FY21.3	3	2021	3	2021
Evaluate Initiatives 3QFY21-1QFY22	3	2021	1	2023
SEP Council of Colonels approve/prioritization process FY22.1	1	2022	1	2022
Evaluate Initiatives 1-3QFY22	1	2022	3	2022
SEP Council of Colonels approve/prioritization process FY22.2	3	2022	3	2022
Evaluate Initiatives 3QFY22-1QFY23	3	2022	1	2023
SEP Council of Colonels approve/prioritization process FY23.1	1	2023	1	2023
Evaluate Initiatives 1-3QFY23	1	2023	3	2023
SEP Council of Colonels approve/prioritization process FY23.2	3	2023	3	2023
Evaluate Initiatives 3QFY23-1QFY24	3	2023	1	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S60 / <i>Clothing & Equipment</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
S60: <i>Clothing & Equipment</i>	-	6.472	5.393	6.313	-	6.313	3.499	6.490	9.048	9.136	0.000	46.351
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding in this effort supports the Army's Cross Functional Teams (CFT) initiatives. It supports engineering and manufacturing development tasks related to clothing and individual equipment with the goal of enhancing the lethality, survivability, and mobility as well as the quality of life of the Warfighter. It funds formal Developmental Testing/Operational Testing (DT/OT) of preproduction and prototypes leveraging technological advancements. Those advancements focus on materials, fabrication techniques, moisture management, flame resistance, vector protection, extreme environmental protection and camouflage. This effort also funds evaluations of Organizational Clothing and Individual Equipment (OCIE) appropriate for use in extreme or multi-climate environments. Product Manager Soldier Clothing and Individual Equipment (PM SCIE) goal is to increase the capabilities and durability of tactical and non-tactical clothing and individual equipment. This results in the Soldier as an integrated system. This effort will transition capabilities from our Science and Technology partners to increase performance and safety of Warfighter clothing and equipment. PM SCIE will continue to support multi-service commonality initiatives through technology that enables combat operations in a gender integrated fighting force.

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

	FY 2021	FY 2022	FY 2023
Title: Soldier Uniforms and Clothing	3.632	2.628	3.483
Description: Evaluate superior and sustainable integrated clothing for the Soldier in a rapidly changing global environment.			
FY 2022 Plans: Perform technical testing, user evaluations, and qualify new fabrics with appropriate level of Flame Resistant (FR) protection for combat clothing and Cold Weather/Extreme Cold Weather Clothing. Continue clothing improvements and multi-service commonality efforts. Conduct user evaluations to support material changes to enhance tactical and environmental Soldier clothing. Procure test assets and perform Developmental tests/Operational Tests (DT/OT) on uniforms produced with microwave protective materials to defeat emerging threats and on uniforms designed to mitigate Ground Surveillance Radar (GSR) detection. Annual evaluation of domestic material solution submissions to support the Athletic Footwear program providing Soldiers a greater variety of athletic footwear from which to choose. Continue Clothing Bag Upgrades and Evaluations. Conduct ensemble level evaluations of novel materials and fabrics in clothing, footwear and equipment in all climates. Support the Secretary of the Army's directive to identify opportunities for commonality in OCIE across all Services (Army, Navy, Air Force, Marines, Coast Guard).			
FY 2023 Plans: Perform technical testing, user evaluations, and qualify new fabrics with improved vector protections. Support the Secretary of the Army's directive to identify opportunities for commonality in Organizational Clothing and Individual Equipment (OCIE) across all Services (Army, Navy, Air Force, Marines, and Coast Guard). Evaluation of Flame Resistant (FR) printing inks and other technologies to greatly reduce the cost of FR clothing. Conduct user evaluations of Parachutists clothing above twenty-			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
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<p>five thousand feet for high altitude insertion missions. Long term evaluation study for Army Green Service Uniform and user evaluation for Maternity Army Green Service Uniform in conjunction with Defense Logistics Agency Maternity Pilot Program. Continued development of Improved Combat Vehicle Crewman Uniform to include female and male variant patterns. Annual evaluation of domestic material solution submissions to support the Athletic Footwear program providing Soldiers a greater variety of athletic footwear from which to choose. Continue Clothing Bag Upgrades and Evaluations as directed by the Army Uniform Board. Conduct ensemble level evaluations of novel materials and fabrics in clothing, footwear and equipment in all climates.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase from FY 2022 to FY 2023 due to anticipated technology maturation.</p>			
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<p>Title: Individual Equipment</p> <p>Description: Develop and provide superior and sustainable integrated individual equipment for the Soldier in a rapidly changing global environment.</p> <p>FY 2022 Plans: Development of the Welding Individual Protection System (WIPS) ensemble. WIPS will provide welders with Occupational Safety Health Act (OSHA) compliant Personal Protective Equipment (PPE); and will enable units with a capability to execute mission essential welding tasks. Procure test assets and perform Developmental tests/Operational Tests (DT/OT) as required for GEN II Individual Water Treatment Device for Toxic Industrial Chemicals and Toxic Industrial Materials (TICs/TIMs) and desalinization. Procure test assets and perform DT/OT as required for Cold Weather Gear. Procure and test assets and perform DT/OT for survival blanket for use in Zone 7 environments. Procure and test skin paint to camouflage and reduce thermal signature on exposed skin (face, neck, hands, etc) and to temporarily camouflage individual equipment. Validation of load carriage equipment in support of weapon modernization. Continue athletic shoe certification. Continue testing of load carriage equipment to address interoperability with improved Army capabilities. Support the Secretary of the Army's directive to identify opportunities for commonality in OCIE across all Services (Army, Navy, Air Force, Marines, Coast Guard).</p> <p>FY 2023 Plans: Procure test assets and perform Developmental Tests/Operational Tests (DT/OT) as required for Water Treatment Devices for Toxic Industrial Chemicals and Toxic Industrial Materials (TICs/TIMs) and desalinization. Continue to develop the Welding Individual Protection System (WIPS) ensemble to provide welders with Occupational Safety Health Act (OSHA) compliant Personal Protective Equipment (PPE). Support the Secretary of the Army's directive to identify opportunities for commonality in Organizational Clothing and Individual Equipment (OCIE) across all Services (Army, Navy, Air Force, Marines, and Coast Guard). Procure and test quick reaction camouflage to reduce thermal signature and to enhance individual equipment camouflage. Procure test assets and perform DT/OT on multi-purpose and specialized load carriage equipment.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>	2.840	2.568	2.830
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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding increase from FY 2022 to FY 2023 due to anticipated technology maturation.			
Title: SBIR/STTR Transfer	-	0.197	-
Description: Funding transferred in accordance with Title 15 USC 638			
FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	6.472	5.393	6.313

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• S53: <i>Clothing And Equipment</i>	1.742	6.504	4.578	-	4.578	4.799	8.312	8.957	9.044	Continuing	Continuing

Remarks

D. Acquisition Strategy

Acquisition strategies for these programs vary in methods, and range from: 1) Materiel Change Proposals 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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Allot	PM SCIE : Ft Belvoir	11.891	0.812		0.749		0.698		-		0.698	Continuing	Continuing	Continuing
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.197		-		-		-	0.000	0.197	-
Subtotal			11.891	0.812		0.946		0.698		-		0.698	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	Various	NSRDEC : Natick, MA	17.316	0.608		0.623		0.845		-		0.845	Continuing	Continuing	Continuing
Development Contracts	Various	Various : Various	54.151	2.390		1.898		1.674		-		1.674	Continuing	Continuing	Continuing
Subtotal			71.467	2.998		2.521		2.519		-		2.519	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Support Costs	Various	Natick, MA : Natick, MA	18.951	0.465		0.469		1.468		-		1.468	Continuing	Continuing	Continuing
Subtotal			18.951	0.465		0.469		1.468		-		1.468	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Testing	MIPR	Various : Various	32.741	2.197		1.457		1.628		-		1.628	Continuing	Continuing	Continuing
Subtotal			32.741	2.197		1.457		1.628		-		1.628	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UNIFORM CLOTHING																												
Continue Fabric & FR Upgrades																												
Clothing Bag Upgrades and Evaluations																												
Develop Extreme Cold Weather Boot																												
Continue Upgrades for Extreme Cold Weather Protections																												
FR Next Gen Materials Testing																												
Footwear Last Development and Evaluation																												
Spectral Mitigation																												
INDIVIDUAL EQUIPMENT																												
On-the-Move Hydration Operational Life Testing (TIC/TIM/Desalination)																												
Evaluate of Cold Weather Mobility items																												
Athletic Shoe Certification																												
Welding Individual Protection System (WIPS)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Quick Reaction Camouflage																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
UNIFORM CLOTHING	1	2011	4	2027
Continue Fabric & FR Upgrades	3	2009	4	2027
Clothing Bag Upgrades and Evaluations	1	2013	4	2027
Develop Extreme Cold Weather Boot	1	2020	4	2021
Continue Upgrades for Extreme Cold Weather Protections	1	2020	4	2021
FR Next Gen Materials Testing	3	2020	4	2027
Footwear Last Development and Evaluation	1	2022	4	2023
Spectral Mitigation	1	2020	4	2027
INDIVIDUAL EQUIPMENT	2	2008	4	2027
On-the-Move Hydration Operational Life Testing (TIC/TIM/Desalinization)	2	2021	4	2027
Evaluate of Cold Weather Mobility items	1	2024	4	2025
Athletic Shoe Certification	1	2021	4	2021
Welding Individual Protection System (WIPS)	1	2022	4	2023
Quick Reaction Camouflage	1	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S61 / <i>Acis Engineering Development</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
S61: <i>Acis Engineering Development</i>	-	2.190	2.528	2.427	-	2.427	1.488	0.475	0.475	0.480	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project conducts development, integration, and qualification activities in support of the Air Soldier System (Air SS). The Air SS is Army aircrew survival and mission equipment that improves safety, survivability, and mission performance. The Air SS addresses capability gaps identified during combat operations as well as emerging challenges to Army aircrew safety and performance caused by the bulk and weight of body-worn equipment, limited Situational Awareness (SA), lack of protection from emerging threats, and a lack functionally integrated mission electronics and protective/survival equipment. Air SS delivers improved aircrew survivability, SA, interoperability, and mission performance. The Air SS provides enhanced mission planning and execution, connectivity between aircrew members, other aircraft, and ground assets; improved terrain, threat, and obstacle avoidance information thorough improved heads up display (HUD) technologies; the capability to perform extended missions in extreme environmental and chemical/biological threat conditions; a digital replacement for paper-based DoD Flight Information Publications; and the Aircrew Combat Equipment (ACE), a replacement for the legacy survival vest with integral Modular Scalable Vest body armor. These enhanced capabilities support the enduring fleet as well as the Future Long Range Assault Aircraft (FLRAA) and Future Attack and Reconnaissance Aircraft (FARA).

This project also funds the development and test of deferred Capability Development Document (CDD) capabilities as enablers to meet current and Large Scale Combat Operations (LSCO) gaps in protection, survivability, and SA. These include: improved laser eye protection to counter and defeat current and future threats; next generation Heads-Up Display for FVL platforms; power output improvement and weight and bulk reductions to aircrew-worn Personal Electronics; secure enhanced wireless audio capabilities aimed at further enhancement of crewmember mobility; and, aircrew helmet protection. This program does not duplicate any aircraft platform program efforts. Includes integration and interface of products on Soldiers and aircraft platforms.

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

	FY 2021	FY 2022	FY 2023
Title: Air Soldier System	2.190	2.436	2.427
Description: This project conducts development, integration and qualification activities in support of the Air Soldier System (Air SS) program. The Air SS addresses capability gaps identified during previous combat operations. This includes crew station compatibility challenges caused by the burden of excessive equipment bulk and weight; impacts to safety resulting from excessive pilot workload and limited aircrew situational awareness (SA); and inadequate aircrew protection from environmental extremes, hostile threats, and induced threats resulting from aircraft mishaps or crashes.			
FY 2022 Plans: Completes development and testing of improved laser eye protection (LEP) solution in order to provide enhanced protection better aligned for current and future MDO threats. Begins development of additional deferred capabilities and candidate technologies for use on current and future fleet (e.g. Future Vertical Lift) including, but not limited to: development and initial flight qualification			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
of Helmet Sub-System (HSS); development of Combat Survivor/Evader Locator (CSEL) battery eliminator; and, obsolescence replacement for the Encrypted Aircraft Wireless Intercom System (EAWIS) leveraging Voice over Internet Protocol (VoIP) or ultra-wideband (UWB) technologies. FY 2023 Plans: Specific activities planned for FY 23 will focus on the transition of several Small Business Innovative Research (SBIR) initiatives associated with the Air SS integrated soldier power and personal area network capabilities. These activities include, but are not limited to an obsolescence replacement for the Encrypted Aircraft Wireless Intercom System (EAWIS) leveraging Voice over Internet Protocol (VoIP) or ultra-wideband (UWB) technologies, high density/lightweight power storage devices, miniaturization and integration of the personal helicopter oxygen delivery system, and expansion of universal soldier power to head (or helmet) worn devices reducing head borne weight and further reducing the need for device specific batteries. FY 2022 to FY 2023 Increase/Decrease Statement: Funding decrease from FY 2022 to FY 2023 due to changes in Tactical Personal Area Network (TacPAN) requirements.			
Title: SBIR/STTR Transfer Description: Funding transferred in accordance with Title 15 USC 638 FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638 FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638	-	0.092	-
Accomplishments/Planned Programs Subtotals	2.190	2.528	2.427

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• AZ3110: <i>Aircrew Integrated Systems</i>	49.293	41.425	25.773	-	25.773	24.938	9.126	14.080	14.089	0.000	178.724

Remarks

D. Acquisition Strategy

Air Soldier System Milestone C was conducted in April 2019 for initial capabilities to include: Aircraft-mounted hardware and helmet worn displays that provide integrated helmet capabilities and increase aircrew situational awareness; and, Protective and Survival Soldier Kit items that reduce equipment weight and bulk and improve aircrew mission effectiveness and survivability. Air SS capabilities are being phased into production over time. Efforts for the Air SS program include development,

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army Date: April 2022

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

integration, test, and airworthiness qualification of aviator flight display symbology technologies that will increase crew member situational awareness, and aircrew protective and survival equipment that reduces bulk and weight and improves crew station compatibility and mission effectiveness. Air SS includes improvements to the current flight helmet; improvements to the survival gear carriage system; lightweight body armor; environmental protective clothing and personal survival equipment; and a day/night helmet-mounted flight symbology display for Rotary Wing platform aviators. Efforts continue to develop deferred capabilities as defined within the Capability Development Document (CDD) to include Large Scale Combat Operations (LSCO) enablers and modernization initiatives for protection and situational awareness. These efforts migrate from program/platform-unique hardware and software solutions to common integrated air/ground solutions that align with Network, Soldier Lethality, and FVL modernization priorities

Development efforts are conducted using a mix of both Cost and Firm Fixed Price Contracts with industry utilizing full and open competition. Each development effort is individually evaluated and the appropriate contract type is selected in order to appropriately share risk between industry and the government. Risk reduction, developmental, and operational testing are also conducted.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Administration	Allot	Various Government : Huntsville, Alabama	4.359	0.050		0.064		0.059		-		0.059	Continuing	Continuing	Continuing
SBIR/STTR	Allot	Various : Various	-	-		0.092		-		-		-	0.000	0.092	-
Subtotal			4.359	0.050		0.156		0.059		-		0.059	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Air Warrior and Air Soldier System Development	C/CPFF	Various Government : Various Locations	64.280	1.083		2.014		2.036		-		2.036	Continuing	Continuing	Continuing
Subtotal			64.280	1.083		2.014		2.036		-		2.036	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Matrix Support	RO	Various Government : Various Locations	4.475	0.057		0.058		0.054		-		0.054	Continuing	Continuing	Continuing
Subtotal			4.475	0.057		0.058		0.054		-		0.054	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental and Operational Testing	RO	Various Activities : Various Locations	19.256	1.000		0.300		0.278		-		0.278	Continuing	Continuing	Continuing
Subtotal			19.256	1.000		0.300		0.278		-		0.278	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>
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	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	92.370	2.190	2.528	2.427	-	2.427	Continuing	Continuing	N/A

Remarks
 Funds for this project are allocated amongst a number of smaller development/qualification programs at various stages of technical maturity intended to address capability gaps associated with deferred Air SS capabilities being implemented as pre-planned product improvements to the baseline Air SS program. Efforts are largely focused on transitioning technologies and products initially developed under Small Business Innovative Research (SBIR) programs, Technology Maturation Initiatives (TMI), and/or the identification and qualification of COTS/GOTS capabilities that have the potential of satisfying remaining capability gaps as documented in the Air SS CDD.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Air SS Pre-planned Product Improv (P3I) Phase																												
Aircrew Combat Equipment (ACE) Integration and Qualification																												
ACE Developmental Test/Operational Test (DT/OT)																												
ACE Production Decision																												
Air SS Capabilities Develop & Qual																												
Laser Eye Protection (LEP) Integration & Qualification																												
LEP DT & OT																												
LEP Production Decision																												
Enhanced Personal Electronics Develop, Integration, and Qual																												
Next Gen EAWIS Integration & Qualification																												
Enhanced Personal Electronics & Next Gen EAWIS DT & OT																												
Enhanced Personal Electronics & Next Gen EAWIS Production Decision																												
Next Generation Heads Up Display (HUD) Integration & Qualification																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Enhanced Helmet Protection																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
Air SS Pre-planned Product Improv (P3I) Phase	1	2016	4	2027
Aircrew Combat Equipment (ACE) Integration and Qualification	1	2017	4	2022
ACE Developmental Test/Operational Test (DT/OT)	2	2020	4	2022
ACE Production Decision	3	2022	4	2022
Air SS Capabilities Develop & Qual	1	2019	4	2027
Laser Eye Protection (LEP) Integration & Qualification	3	2021	2	2022
LEP DT & OT	2	2022	3	2022
LEP Production Decision	4	2022	4	2022
Enhanced Personal Electronics Develop, Integration, and Qual	3	2021	3	2024
Next Gen EAWIS Integration & Qualification	2	2022	2	2024
Enhanced Personal Electronics & Next Gen EAWIS DT & OT	2	2023	4	2024
Enhanced Personal Electronics & Next Gen EAWIS Production Decision	4	2024	1	2026
Next Generation Heads Up Display (HUD) Integration & Qualification	1	2024	4	2027
Enhanced Helmet Protection	3	2024	4	2025

Note

Next Generation Heads Up Display (HUD) Integration & Qualification is the follow-on effort to the current Integrated Visual Augmentation System-Aviation (IVAS-A) Technical Maturation Initiative (TMI) effort.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S63 / <i>Individual Weapons Engineering Development</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
S63: <i>Individual Weapons Engineering Development</i>	-	3.493	3.651	3.956	-	3.956	3.624	3.579	3.863	3.899	0.000	26.065
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Individual Weapons Engineering Development program provides funds to transition components or prototypes from Budget Activity 4 (BA 4) Element (PE) 0603827A Soldier Systems - Advanced Development Project S54 Small Arms Improvement Program and other domestic and foreign sources of small arms weapon systems to demonstrate, test and evaluate capability near or at planned operational requirements. The Maneuver Center of Excellence (MCoE), Fort Benning, GA (User Community) identifies the Individual Weapons Engineering Development as a critical capability gap for our Soldiers in combat and Soldier Lethality Cross Functional Team (CFT) has assumed this need as a task. Small arms systems include weapons up to 40 millimeter (mm) in caliber. Current and future efforts focus on system improvements designed to enhance lethality, target acquisition, fire control, usability, training effectiveness and reliability of weapons to include ammunition when developing and/or evaluating standard and non-standard weapons. Focus areas include system development, integration (to include human-systems), demonstration, test and evaluate components, prototypes and operational system prototypes of small arms weapon systems and/or enhancements. Benefits include continuous improvements to small arms weapon systems, fire control equipment, optics, gun barrels, ancillary equipment, training devices, component mounts, weapon mounts, and weapon/ammunition interface of current small arms fleet or new weapon systems.

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

	FY 2021	FY 2022	FY 2023
Title: Design and Development	3.202	2.580	3.018
Description: Design and development of Individual Weapons			
FY 2022 Plans: New and Legacy Weapon Assessment and Product Development: Will continue to focus on weapon design and development utilizing current state-of-the-art technologies and integration of those technologies for individual weapons across the spectrum of small arms from pistols through rifles and grenade launchers. Evaluation will focus on terminal effects and those technologies utilized to achieve on-target effects, as well as increase sustainability, reliability, and producibility and will include advanced combat optics and improvement of small arms munitions.			
FY 2023 Plans: New Weapons and Enabling Technology Evaluation and Assessment will continue to focus on weapon design and development utilizing current state-of-the-art technologies and integration of those technologies for individual weapons across the spectrum of small arms from pistols through rifles and grenade launchers. Evaluation will focus on terminal effects and those technologies			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Individual Weapons Engineering Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
utilized to achieve on-target effects, as well as increase sustainability, reliability, and producibility and will include advanced combat optics and improvement of small arms munitions. FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY2022 to FY2023 for New Weapons and Enabling Technology Evaluations and Assessments.			
Title: Testing and Evaluation Description: Test and evaluation of Individual Weapons FY 2022 Plans: New and Legacy Weapon Testing and Evaluation: Will continue to test and evaluate new technology that can lead to enhancements of current and legacy weapon systems or create new weapon systems, as well as advanced combat optics and improvement of small arms munitions. FY 2023 Plans: New Weapons and Enabling Technology Testing and Evaluation will continue to test and evaluate new technology that can lead to enhancements of current and legacy weapon systems or create new weapon systems, as well as advanced combat optics and improvement of small arms munitions.	0.291	0.938	0.938
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Description: Funding transferred in accordance with Title 15 USC 638 FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638 FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638	-	0.133	-
Accomplishments/Planned Programs Subtotals	3.493	3.651	3.956

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• S54: <i>Small Arms Improvement</i>	16.216	10.911	9.248	-	9.248	9.286	9.366	9.359	9.448	0.000	73.834
• G01507: <i>COMPACT SEMI-AUTOMATIC SNIPER SYSTEM</i>	0.999	-	0.000	-	0.000	-	-	-	-	0.000	0.999
• G13503: <i>M4A1 CARBINE</i>	5.411	4.434	0.000	-	0.000	-	-	-	-	0.000	9.845

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Individual Weapons Engineering Development</i>

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

Line Item	FY 2021	FY 2022	FY 2023	FY 2023	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cost To	
			Base	OCO	Total					Complete	Total Cost
• GB3007: <i>M4 Carbine Mods</i>	4.824	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• G01501: <i>XM320 Grenade Launcher Module (GLM)</i>	5.969	8.666	11.703	-	11.703	14.361	17.985	18.146	18.148	Continuing	Continuing
• G15325: <i>Handgun</i>	4.662	4.930	0.000	-	0.000	-	-	-	-	0.000	9.592
• GL3200: <i>Items Less Than \$5.0m (WOCV-WTCV)</i>	2.763	1.068	2.138	-	2.138	1.170	1.075	2.277	2.278	Continuing	Continuing
• GC0925: <i>Modifications Less Than \$5.0m (WOCV-WTCV)</i>	2.604	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing

Remarks

In support of Small Arms Requirements, components or prototypes developed in BA 4 PE 0603827A Soldier Systems - Advanced Development Project S54 Small Arms Improvement Program is transitioned to BA 5 PE 0604601A Infantry Support Weapons Project S63 Individual Weapons Engineering Development to conduct engineering and manufacturing development. Once the component, prototype or operational prototype achieves Milestone C and type classification the item transitions to small arms weapon systems production or modification program.

D. Acquisition Strategy

Primary strategy is to mature and finalize design efforts, award Research, Development, Test and Evaluation (RDT&E) Defense Ordnance Technology Consortium (DOTC) and Other Transaction Authority (OTA) type hardware contracts. Test and evaluate systems that result in type classification, material release, and follow-on production contract awards.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604601A / Infantry Support Weapons				S63 / Individual Weapons Engineering Development							
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	Allot	PM Soldier Lethality, : Picatinny Arsenal	10.566	0.746	Sep 2021	0.050	Mar 2022	0.050	Mar 2023	-		0.050	Continuing	Continuing	Continuing
Travel	MIPR	PM Soldier Lethality, : Picatinny Arsenal	1.584	0.003	Jun 2021	0.010	Mar 2022	0.010	Mar 2023	-		0.010	Continuing	Continuing	Continuing
FY2022 SBIR / STTR Transfer	FFRDC	Army Budget Office : Pentagon, Washington DC	0.211	-		0.133		-		-		-	Continuing	Continuing	Continuing
Subtotal			12.361	0.749		0.193		0.060		-		0.060	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Fabrication	Various	Various : Multiple Contractors	4.120	-		0.917	Apr 2022	0.408	Mar 2023	-		0.408	Continuing	Continuing	Continuing
Hardware Development	MIPR	DEVCOM AC, : Multiple	17.240	1.368	Jul 2021	1.050	Apr 2022	1.631	Mar 2023	-		1.631	Continuing	Continuing	Continuing
Subtotal			21.360	1.368		1.967		2.039		-		2.039	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering	MIPR	DEVCOM AC, : Multiple	68.294	0.940	Mar 2021	0.391	Mar 2022	0.719	Mar 2023	-		0.719	Continuing	Continuing	Continuing
Logistics	MIPR	TACOM, : Warren	5.178	-		0.100	Mar 2022	0.100	Mar 2023	-		0.100	Continuing	Continuing	Continuing
Human Research and Engineering	MIPR	Army Research Laboratory, : Aberdeen Proving Ground	4.103	-		0.100	Mar 2022	0.100	Mar 2023	-		0.100	Continuing	Continuing	Continuing

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Individual Weapons Engineering Development</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DESIGN AND DEVELOPMENT																												
TEST AND EVALUATION																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Individual Weapons Engineering Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DESIGN AND DEVELOPMENT	1	2021	4	2027
TEST AND EVALUATION	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>S70: Personnel Recovery Support System (PRSS)</i>	-	-	3.132	2.963	-	2.963	2.646	0.617	0.665	0.671	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Personnel Recovery Support System (PRSS) consists of items including Personnel Recovery Devices (PRD), e.g. Personal Locator Beacons, and other Personnel Recovery Support Equipment (PRSE) items that provide the capability to report and locate isolated, missing, detained and captured (IMDC) Soldiers. Funding supports system research, development, testing, and evaluation of next-generation PRSS/PRSE items to enhance capability with Low Probability of Intercept (LPI)/Low Probability of Detection (LPD) while operating in increasingly contested environments utilizing secure signals of opportunity that meet Army qualifications. It ensures continued successful interoperability within the relevant theaters of operations and the Continental United States (CONUS).

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

	FY 2021	FY 2022	FY 2023
Title: Personnel Recovery Systems	-	3.018	2.963
FY 2022 Plans: Begins evaluation, development, and testing of of component replacements, enhancements, and operational security measures for Classified Personnel Recovery Support Equipment (PRSE).			
FY 2023 Plans: Continues research, development, and evaluation of components and hardware directly supporting Army personnel recovery requirements.			
FY 2022 to FY 2023 Increase/Decrease Statement: The FY23 decrease is due to anticipated ECP completion for the next-generation Radar Electronic Assembly (REA).			
Title: SBIR/STTR Transfer	-	0.114	-
Description: Funding transferred in accordance with Title 15 USC 638			
FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	-	3.132	2.963

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</i>

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• G01101: <i>Personnel Recovery Support System (PRSS)</i>	8.346	9.741	4.691	-	4.691	5.461	6.780	9.565	9.561	Continuing	Continuing

Remarks

D. Acquisition Strategy

Execute PRSS/PRSE program development efforts for performance optimization through contracts with industry and reimbursable support agreements with other Government agencies, labs, and Federally Funded Research and Development Centers. Perform continuing development and test of new waveforms and hardware to ensure successful interoperability for personnel recovery and to mitigate potential security compromises to the PRSS/PRSE program.

Future program strategy is to adapt PRSS/PRSE products to align with changing doctrine and concepts of operations (CONOPS) to ensure integration and interoperability between ground and air forces and increase coverage within the relevant theaters of operations and the CONUS to ensure Soldier safety, recovery, and survivability.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604601A / Infantry Support Weapons				S70 / Personnel Recovery Support System (PRSS)							
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Administration	Allot	Various Government : Huntsville, Alabama	0.988	-		0.060		0.065		-		0.065	Continuing	Continuing	Continuing
SBIR.STTR	Allot	Various : Various	-	-		0.114		-		-		-	0.000	0.114	-
Subtotal			0.988	-		0.174		0.065		-		0.065	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Personnel Recovery System Development Systems Engineering	MIPR	Various Organizations : Various Locations	8.788	-		2.888		2.119		-		2.119	Continuing	Continuing	Continuing
Subtotal			8.788	-		2.888		2.119		-		2.119	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Matrix Support	MIPR	Various Organizations : Various Locations	2.348	-		0.070		0.075		-		0.075	Continuing	Continuing	Continuing
Subtotal			2.348	-		0.070		0.075		-		0.075	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Testing/ Operational Testing	MIPR	Various Organizations : Various Locations	3.509	-		-		0.704		-		0.704	Continuing	Continuing	Continuing

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Personnel Recovery (PR) Development																												
PR Component, Integration, and Testing																												
Next Generation PR Upgrades and Adaptations to New Platforms																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Personnel Recovery (PR) Development	1	2022	4	2027
PR Component, Integration, and Testing	3	2022	4	2027
Next Generation PR Upgrades and Adaptations to New Platforms	3	2023	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) VS5 / <i>Soldier Protective Equipment</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>VS5: Soldier Protective Equipment</i>	-	6.478	9.172	9.303	-	9.303	8.322	8.883	8.878	8.959	0.000	59.995
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding in this project supports the Army's Cross Functional Teams (CFT) initiatives. It supports Engineering and Manufacturing Development (EMD) to include design integration and manufacturing of production representative articles, formal DT/OT and Soldier touchpoints, and continued development of SPS technologies transitioning from VS4. It leverages advancements in technology to continue improvements to the Army's Personal Protective Equipment (PPE) portfolio to include hard and soft body armor components (including Vital Torso Protection (VTP) and Torso and Extremity Protection (TEP) respectfully), helmets (including Integrated Head Protection System (IHPS) and Next Generation (NG) IHPS), Military Protective Eyewear systems and other personal protective equipment to include female specific design and development. This project will continue to support cross-service initiatives to increase commonality.

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

	FY 2021	FY 2022	FY 2023
Title: Soldier Protective Equipment	6.478	8.837	9.303
Description: Project VS5 (Soldier Protective Equipment) supports engineering and manufacturing development of Individual Soldier Ballistic Protection equipment. It will leverage advancements in technology to continue incremental improvements to Personal Protective Equipment (PPE).			
FY 2022 Plans: Evaluate and develop system and subsystem technologies across the PPE portfolio from emerging ballistic/blast threats. Continue to test ballistic properties of current PPE after exposure to extreme storage conditions to improve service life predictions and support repurposing efforts. Continue Soldier Protection System (SPS) gender focused human factor evaluations and environmental/exposure testing, including Cold & Tropical regions, and durability testing. Introduce advanced Technology and materials into production processes as these technologies mature and enable expanded opportunities associated with gender specific PPE. Improve PPE test methodologies and support the Secretary of the Army's directive to identify opportunities for commonality across all Services (Army, Navy, Air Force, Marines, and Coast Guard).			
FY 2023 Plans: Evaluate and develop system and subsystem technologies across the PPE portfolio from emerging ballistic/blast threats. Continue to test ballistic properties of current PPE after exposure to extreme storage conditions to improve service life predictions and support repurposing efforts. Continue improving the Soldier Protection System (SPS), Next Generation Soldier Protection and Non-Destructive Test Equipment (NDTE) methodology, female and small statured soldier focused human factor evaluations that includes environmental/exposure testing, including Cold & Tropical regions, and durability testing. Continue to advance technology			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) VS5 / <i>Soldier Protective Equipment</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
and materials into production processes as these technologies mature and enable expanded opportunities associated with gender specific PPE.			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding increase supports Soldier Protection Systems improvements focus on female and small stature Soldiers.			
<i>Title:</i> SBIR/STTR	-	0.335	-
<i>FY 2022 Plans:</i> Funding transferred in accordance with Title 15 USC 638.			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC 638.			
Accomplishments/Planned Programs Subtotals	6.478	9.172	9.303

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• VS4: <i>Soldier Protective Equipment</i>	2.279	4.278	6.434	-	6.434	8.160	8.147	8.146	8.222	Continuing	Continuing

Remarks

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) VS5 / <i>Soldier Protective Equipment</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Allot	Various SSV : Fort Belvoir, VA	2.353	0.645		0.496		0.637		-		0.637	Continuing	Continuing	Continuing
SBIR/STTR	TBD	Various : Various	-	-		0.335		-		-		-	Continuing	Continuing	Continuing
Subtotal			2.353	0.645		0.831		0.637		-		0.637	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prototype Contracts	Various	Various : Various	35.711	0.381		0.751		1.026		-		1.026	Continuing	Continuing	Continuing
Prod Sys Engineering Spt	MIPR	Various : Various	9.660	1.875		2.496		2.475		-		2.475	Continuing	Continuing	Continuing
Subtotal			45.371	2.256		3.247		3.501		-		3.501	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Engineering Spt	MIPR	CCDC-SC : Natick, MA	4.754	1.585		1.435		1.230		-		1.230	Continuing	Continuing	Continuing
Subtotal			4.754	1.585		1.435		1.230		-		1.230	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Environmental/HFE	MIPR	Various DTC & OTC : Various DTC & OTC	13.843	-		1.114		1.315		-		1.315	Continuing	Continuing	Continuing
Surveillance Testing - Base Threat/Emerging Threat	TBD	TBD : TBD	0.590	1.992		2.545		2.620		-		2.620	Continuing	Continuing	Continuing
Subtotal			14.433	1.992		3.659		3.935		-		3.935	Continuing	Continuing	N/A

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
Test and Qualify Improvements to SPS	1	2015	4	2027
Torso Protection Improvements	4	2020	4	2027
Head Protection Improvements	4	2020	4	2027
Hard Armor Protection Improvements	4	2020	4	2027
SPS System Level Test Technology Insertions	4	2020	4	2027
Non-Destructive Test Equipment	1	2023	1	2025

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	8.213	9.524	22.163	-	22.163	18.566	3.563	3.564	3.598	0.000	69.191
BX8: <i>Cold Weather All-Terrain Vehicle (CATV)</i>	-	6.665	1.825	-	-	-	-	-	-	-	0.000	8.490
H07: <i>Family Of Med Tac Veh</i>	-	1.548	7.699	22.163	-	22.163	18.566	3.563	3.564	3.598	0.000	60.701

A. Mission Description and Budget Item Justification

This Program Element (PE) supports continued modernization of the Army's Medium Tactical Wheeled Vehicle fleets by investigating technology insertions including, but not limited to: Predictive Logistics, vetronics, vehicle electrification and other climate change initiatives, Victory Architecture, autonomous operations and other emerging technologies. Furthermore, the PE supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement operating concepts.

The Family of Medium Tactical Vehicles (FMTV) includes Cargo, Tractor, Load Handling System (LHS), Wrecker, Expandable Van, Shop Van, and Dump variants with payloads ranging from 3-tons to 10-tons and associated companion trailers. FMTV trucks perform over 55 percent of the Army's local haul, line haul, and unit resupply missions. It operates throughout theater as multi-purpose transportation vehicles in combat, combat support, and combat service support units.

Funding from this Program Element will be used to support the continued evolution of the future FMTV fleet as well as tech insertion opportunities to keep the current FMTV fleet relevant on today's battlefield. This includes upgrades in survivability and crew protection, improved safety by leveraging advancements in commercial active safety technologies, modernizing the aging Low Velocity Air Drop (LVAD) fleet of vehicles, improved utilization through modularity, integration of advanced high efficiency powertrains and fuel saving technologies, and insertion of autonomous vehicle capabilities that will change the way transportation missions are conducted around the world.

FY 2023 Project H07 Base funds in the amount of \$18.5 million will be used for Climate Initiatives, Improved Vehicle Safety Technologies, and implementation of Predictive Logistics (PL).

FY 2023 Project H07 Base funds in the amount of \$3.663 million will be used to conduct Production Verification Testing (PVT) of the FMTVA2 based LVAD, Live Fire Test Assets, and Live Fire Testing. The three FMTV LVAD models (M1081, M1093, M1094) ended production in 2009 and represent the oldest vehicles in the FMTV fleet. These vehicles suffer from poor readiness due to maintenance and supply issues as many parts have gone obsolete. Updates to the LVAD fleet are needed to modernize the fleet.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	8.213	11.374	0.000	-	0.000
Current President's Budget	8.213	9.524	22.163	-	22.163
Total Adjustments	0.000	-1.850	22.163	-	22.163
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-1.850			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	22.163	-	22.163

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>				Project (Number/Name) BX8 / <i>Cold Weather All-Terrain Vehicle (CATV)</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
BX8: <i>Cold Weather All-Terrain Vehicle (CATV)</i>	-	6.665	1.825	-	-	-	-	-	-	-	0.000	8.490
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Cold-weather All-Terrain Vehicle (CATV) is a tracked vehicle that will provide transportation for up to a 10-Soldier element, emergency medical evacuation, command and control capability, and general cargo transportation on- and off-road in an Arctic environment under a wide range of otherwise impassable terrain, to include frozen ice, and extreme cold weather conditions to support year-round training as well as to conduct Homeland Defense (HD), Homeland Security (HS), and Defense support of Civil Authorities (DSCA) mission. The CATV will employ two carrier variants: General-purpose carrier variant capable of providing transport for not less than 9 Soldiers, plus the driver within a cab/enclosure (10 Soldiers) with equipment and supplies to sustain three days of combat operations. The General Purpose variant will be reconfigurable to a casualty evacuation (CASEVAC) variant capable of transporting medical equipment, two caregivers, and not less than two litter patients or four ambulatory patients in addition to the driver within a cab/enclosure. The General Purpose variant will also be reconfigurable to a Command and Control (C2) variant providing the space weight and power to hosting standard Joint communications and common operating picture (COP) platforms. The C2 and COP equipment should be able to be used enroute or with minimal setup upon halt by six Soldiers in addition to the driver within a cab/enclosure. Cargo/flatbed capable of carrying outsized equipment and cargo. The cargo variant should allow for loading cargo with a forklift from either side (i.e. dropside or flatbed configuration) and have a cab/enclosure for two Soldiers (driver and vehicle commander).

Testing in ECW is necessary to prove the adequacy to the requirements with timing necessary to support planned Field Unit Equipped (FUE) in FY23. FUE is needed as soon as possible to replace the current capability that is reaching the end of life due to obsolescence

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

	FY 2021	FY 2022	FY 2023
Title: CATV Prototype	5.785	-	-
Description: Funding provided for the procurement of the CATV Prototypes.			
Title: CATV Systems Engineering/Management Support	0.064	-	-
Description: Funding provided for Matrix personnel and Program Management (PM) support of the CATV program.			
Title: CATV Test and Evaluation	0.816	1.759	-
Description: Funding provided for endurance, performance, transportability testing and production verification testing for CATV.			
FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) BX8 / <i>Cold Weather All-Terrain Vehicle (CATV)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding provided for endurance, performance, and sling load testing on down selected prototype variants for CATV.			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funds decreased because there are no Cold Weather All-Terrain Vehicle (CATV) Test and Evaluation actions in this project in FY2023.			
<i>Title:</i> SBIR/STTR Transfer	-	0.066	-
<i>FY 2022 Plans:</i> Funding transferred in accordance with Title 15 USC ?638			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC ?638			
Accomplishments/Planned Programs Subtotals	6.665	1.825	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• D15620: <i>Family of Cold Weather All-Terrain Vehicle (CATV)</i>	9.249	16.450	23.772	-	23.772	29.335	40.580	40.619	40.555	0.000	200.560

Remarks

D. Acquisition Strategy

The Acquisition Strategy supports a two-step acquisition approach with an OTA based Prototype contract in 2QFY21 to two vendors for the prototype phase and a down select to one vendor on a Production contract in 3QFY22 that will support the production phase. The Army Procurement Objective (APO) is 110 Cold-weather All-Terrain Vehicles (CATV).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604604A / Medium Tactical Vehicles				BX8 / Cold Weather All-Terrain Vehicle (CATV)								
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
SBIR/STTR Transfer	TBD	various : various	-	-		0.066		-		-		-	Continuing	Continuing	Continuing	
Subtotal			-	-		0.066		-		-		-	Continuing	Continuing	N/A	
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
CATV Prototypes	C/CS	Oshkosh Defense and BAE : Oshkosh, WI & York, PA	-	5.785	Mar 2021	-		-		-		-	0.000	5.785	-	
Subtotal			-	5.785		-		-		-		-	0.000	5.785	N/A	
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
CATV Engineering and Management Support	Various	Various : Various	-	0.064	Dec 2020	-		-		-		-	0.000	0.064	-	
Subtotal			-	0.064		-		-		-		-	0.000	0.064	N/A	
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
CATV Test and Evaluation	MIPR	Various : Various	-	0.816	Jun 2021	1.759	Mar 2022	-		-		-	0.000	2.575	-	
Subtotal			-	0.816		1.759		-		-		-	0.000	2.575	N/A	
Project Cost Totals			-	6.665		1.825		-		-		-	Continuing	Continuing	N/A	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army							Date: April 2022			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>			Project (Number/Name) BX8 / <i>Cold Weather All-Terrain Vehicle (CATV)</i>				
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) BX8 / <i>Cold Weather All-Terrain Vehicle (CATV)</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CATV OTA Prototype Contract Award	1																											
CATV Endurance/Performance/Production Verification Testing																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) BX8 / <i>Cold Weather All-Terrain Vehicle (CATV)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CATV OTA Prototype Contract Award	2	2021	2	2021
CATV Endurance/Performance/Production Verification Testing	3	2021	2	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>				Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
H07: <i>Family Of Med Tac Veh</i>	-	1.548	7.699	22.163	-	22.163	18.566	3.563	3.564	3.598	0.000	60.701
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The FMTVA2 production and ECP modernization effort restores vehicle performance that was lost due to the addition of armor protection kits as the threat to tactical vehicles and the FMTV has increased. The FMTVA2 also addresses Space, Weight, Power, and Cooling (SWaP-C) constraints from having to host an increasing amount of C4ISR and Counter-IED equipment. PD MTV is executing the FMTVA2 effort documented in a signed Acquisition Decision Memorandum by the AAE on 16 November 2015.

This Project also supports development of Climate Change initiatives such as Vehicle Electrification and other climate change related technologies for the tactical vehicle fleet.

The FMTVA1P2 ended production in 2021 and represents the highest density FMTV model with over 40,000 vehicles fielded to date. The FMTVA1P2 will remain in the tactical vehicle fleet until 2040 and beyond. To ensure supportability of the FMTVA1P2 through FY 2040 and beyond, the PD MTV, as lifecycle managers for the system, shall address potential obsolescence issues with the powertrain and Material Handling Equipment used on the FMTV.

Increasing survivability and crew protection of the FMTVA1P2 comes at the expense of decreased vehicle mobility and performance in soft soil and winter environments. The A1P2 is being asked to carry more weight than what it was originally designed for. Low risk, highly commercial improvements to the A1P2 driveline, suspension, and tires can be made to minimize the loss in mobility performance.

FY 2023 Project H07 Base funds in the amount of \$2.800 million will be used for development and integration of Improved Vehicle Safety Technologies, including active safety technologies such as front collision warning, collision mitigation, lane keeping assist, adaptive cruise control, and 360 deg situational awareness.

FY2023 Project H07 Base funds in the amount of \$15.000 million will be used to support the development and testing of the vehicle electrification and of other climate change related technologies for the Tactical Wheeled Vehicle Fleet.

FY2023 Project H07 Base funds in the amount of \$0.700 million will be used to develop Predictive Logistics capability that analyzes vehicle condition data and uses it to predict impending component failure and reduce unnecessary services resulting in increased readiness and reduced maintenance cost.

FY 2023 Project H07 Base funds in the amount of \$3.663 million will be used for the FMTV Low-velocity Air Drop (LVAD) Next Generation STS Work Directive, prototype LVAD conversion kits and procurement of test assets to support Live Fire and airdrop certification.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Title: FMTVA2 Production and ECP Modernization Effort</p> <p>Description: Funding used to support the continued evolution of the future FMTV fleet as well as tech insertion opportunities to keep the current FMTV fleet relevant on today's battlefield. The FMTVA2 production and ECP modernization effort restores vehicle performance that was lost due to the addition of armor protection kits as the threat to tactical vehicles and the FMTV has increased. Live Fire test assets are needed to support Live Fire Testing required per Chapter 139, Title 10 USC. Operational Testing required per Chapter 141, Title 10 USC.</p> <p>FY 2022 Plans: FY 2022 planned projects are Improved Vehicle Safety Technologies and FMTVA2 Operational Testing and Adversarial Assessment.</p> <p>FY 2023 Plans: FY 2023 will continue to fund the development of Improved Vehicle Safety Technologies and implementation of Predictive Logistics</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 increase due to ramping up development of the Vehicle Safety Technology efforts and the start of the implementation of the Predictive Logistics</p>		1.548	2.300	3.500
<p>Title: FMTV LVAD Next Generation Model</p> <p>Description: Updates to the FMTV Low Velocity Air Drop (LVAD) are needed to address obsolescence issues and to modernize the fleet.</p> <p>FY 2022 Plans: FY 2022 budget activities include the LVAD STS Work Directive, conversion of nine prototype test assets (M1081 and M1093), production of four Live Fire trucks along with Live Fire testing.</p> <p>FY 2023 Plans: FY 2023 budget activities include the LVAD STS Work Directive, conversion of nine prototype test assets (M1081 and M1093), production of four Live Fire trucks along with Live Fire testing.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 decrease reflects completion of prototype build and transition to test.</p>		-	5.118	3.663
<p>Title: Climate Change Initiatives</p> <p>FY 2023 Plans:</p>		-	-	15.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
FY2023 Project H07 Base funds in the amount of \$15.000 million will be used to support climate change initiatives by funding the development, test and integration of climate change technologies such as Tactical Vehicle Electrification kit, On Board Vehicle Power, and other technologies for the Tactical Wheeled Vehicle fleet associated with combatting climate change			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> FY 2023 funding increase is the result of the development, test, and integration of vehicle electrification and related technologies in support of the new climate change initiatives			
<i>Title:</i> SBIR/STTR Transfer	-	0.281	-
<i>FY 2022 Plans:</i> Funding transferred in accordance with Title 15 USC ?638			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC ?638			
Accomplishments/Planned Programs Subtotals	1.548	7.699	22.163

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• D15500: <i>Family Of Medium Tactical Veh (FMTV)</i>	184.508	61.885	74.086	-	74.086	90.244	91.842	90.256	90.113	0.000	682.934
• D04016: <i>MEDIUM TACTICAL VEHICLE PROTECTION KITS</i>	34.293	11.709	0.000	-	0.000	-	-	-	-	0.000	46.002

Remarks

D. Acquisition Strategy

The strategy for the FMTVA2 Production and ECP Modernization Effort led to award of a Firm-Fixed Price Requirements contract that will have a base award of five years (two years for vehicle testing and three production years) with two, one-year option production periods and to conduct FMTVA2 Live Fire and Operational Testing. These efforts will utilize Government test facilities.

The strategy for the Next Generation FMTV LVAD Model Configuration is to address obsolescence issues and bring the configuration up to today's standards. This effort will utilize a System Technical Support (STS) contract with the current FMTV Original Equipment Manufacturer (OEM).

The strategy to develop, integrate, and test Improved Vehicle Safety Technologies is to leverage active safety capabilities developed commercially and adapt for military use on the FMTV. The development and integration will be conducted either via STS Task Order with the vehicle OEM or an Other Transaction Authority (OTA) with

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

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

The FMTV program will continually monitor emerging technologies and capabilities and leverage existing partnerships within the science and technology centers as well as through industry market research and partnerships in order to support the Army's climate change strategy . The anticipated outcomes of these efforts are fully validated Engineering Change Proposals that can be applied to the current and future FMTV fleet

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SBIR/STTR	TBD	VARIOUS : VARIOUS	-	-		0.281		-		-		-	Continuing	Continuing	Continuing
Subtotal			-	-		0.281		-		-		-	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FMTV LVAD Next Generation Development / Prototypes	SS/CPFF	Oshkosh Defense : Oshkosh, WI	0.750	-		3.991	Jun 2022	-		-		-	0.000	4.741	-
Improved Vehicle Safety Technologies	MIPR	ATEC : ABERDEEN PROVING GROUNDS, MD	2.700	-		-		2.800	Mar 2023	-		2.800	0.000	5.500	-
Climate Change initiatives	TBD	tbd : tbd	-	-		-		15.000	Mar 2023	-		15.000	0.000	15.000	-
Implementation of Predictive logistics	TBD	tbd : tbd	-	-		0.300	Jun 2022	0.700	Mar 2023	-		0.700	0.000	1.000	-
Subtotal			3.450	-		4.291		18.500		-		18.500	0.000	26.241	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FMTVA2 Operational Testing	MIPR	OTC : TBD	-	-		2.000	Nov 2022	-		-		-	0.000	2.000	-
FMTV LVAD Prototypes	SS/CPFF	Oshkosh Defense : Oshkosh, WI	-	1.548	Mar 2021	-		-		-		-	0.000	1.548	-
FMTV LVAD Test Assets	SS/FFP	Oshkosh Defense : Oshkosh, WI	-	-		0.365	Jun 2022	-		-		-	0.000	0.365	-
FMTV LVAD Live Fire Testing	MIPR	Army Test Center (ATC) : Aberdeen Proving Grounds, MD	-	-		0.477	Jun 2022	0.400	Nov 2022	-		0.400	0.000	0.877	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604604A / <i>Medium Tactical Vehicles</i>	Project (Number/Name) H07 / <i>Family Of Med Tac Veh</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
FMTVA2																																				
FMTVA2 Delivery Order 2 (DO2)																																				
FMTVA2 Production Validation Testing (PVT)	PVT																																			
FMTVA2 Delivery Order 3 (DO3)																																				
FMTVA2 Operational Testing (OT)													OT																							
FMTVA2 Type Classification and Material Release (TC/MR)																																				
FMTVA2 First Unit Equipped (FUE)																																				
FMTV LVAD NEXT GENERATION MODEL																																				
FMTV LVAD Next Generation Model Analysis					LVAD Feasibility Study																															
FMTV LVAD Live Fire Test									LVAD LF																											
FMTV LVAD Air Drop Performance Testing									LVAD PVT																											
Improved Vehicle Safety Development Integration Testing																	Vehicle Safety Test																			
Climate Change Initiatives																	Development of Vehicle Electrification and related technologies																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
FMTVA2	1	2019	4	2024
FMTVA2 Contract Award/Delivery Order 1	2	2018	2	2018
FMTVA2 Allocated Baseline Review (ABR)	3	2018	3	2018
FMTVA2 Product Baseline Review (PBR)	4	2018	4	2018
FMTVA2 Delivery Order 2 (DO2)	4	2021	4	2021
FMTVA2 Production Validation Testing (PVT)	3	2019	4	2021
FMTVA2 Live Fire Test & Evaluation (LFT&E)	3	2019	4	2019
FMTVA2 Delivery Order 3 (DO3)	4	2021	4	2021
FMTVA2 Operational Testing (OT)	4	2022	2	2023
FMTVA2 Type Classification and Material Release (TC/MR)	4	2023	4	2023
FMTVA2 First Unit Equipped (FUE)	4	2023	4	2023
FMTVA1P2	1	2019	4	2019
FMTVA1P2 FY 2018 Vehicle Delivery	4	2018	4	2019
FMTV LVAD NEXT GENERATION MODEL	3	2020	2	2025
FMTV LVAD Next Generation Model Analysis	4	2021	4	2024
FMTV LVAD Live Fire Test	3	2022	1	2023
FMTV LVAD Air Drop Performance Testing	3	2022	2	2024
Improved Vehicle Safety Development Integration Testing	3	2023	4	2025
Climate Change Initiatives	2	2023	4	2025

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	5.983	7.094	7.870	-	7.870	7.993	10.591	10.256	10.356	0.000	60.143
499: <i>Javelin (AAWS-M)</i>	-	5.983	7.094	7.870	-	7.870	7.993	10.591	10.256	10.356	0.000	60.143

A. Mission Description and Budget Item Justification

Javelin is a man-portable, fire-and-forget, medium-range missile with enhanced situational awareness and precision direct-fire effects to defeat armored vehicles, fortifications, and soft targets in a range of military operations. The Javelin Weapon System consists of a re-usable Command Launch Unit (CLU) and a modular missile encased in a disposable launch tube assembly. Javelin has a high kill rate against a variety of targets at extended ranges under day/night, battlefield obscurants, adverse weather and multiple counter-measure conditions. Research, Development, Test & Evaluation (RDT&E) funding provides for system improvements in accordance with the Javelin Capabilities Production Document Objectives and User priorities for future development.

Fiscal Year (FY) 2023 dollars in the amount of \$7.870 million will continue software (SW) improvements (Auto-Gate/Fast-Launch) for the CLU and LWCLU to improve the Javelin Weapons System engagement time and increase lethality against emerging threats and potential adversary countermeasures.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	5.983	7.094	0.000	-	0.000
Current President's Budget	5.983	7.094	7.870	-	7.870
Total Adjustments	0.000	0.000	7.870	-	7.870
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	7.870	-	7.870

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604611A / JAVELIN				Project (Number/Name) 499 / Javelin (AAWS-M)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
499: Javelin (AAWS-M)	-	5.983	7.094	7.870	-	7.870	7.993	10.591	10.256	10.356	0.000	60.143
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Javelin is a man-portable, fire-and-forget, medium-range missile with enhanced situational awareness and precision direct-fire effects to defeat armored vehicles, fortifications, and soft targets in a range of military operations. The Javelin Weapon System consists of a re-usable Command Launch Unit (CLU) and a modular missile encased in a disposable launch tube assembly. Javelin has a high kill rate against a variety of targets at extended ranges under day/night, battlefield obscurants, adverse weather and multiple counter-measure conditions. Research, Development, Test & Evaluation (RDT&E) funding provides for system improvements in accordance with the Javelin Capabilities Production Document Objectives and User priorities for future development.

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

	FY 2021	FY 2022	FY 2023
Title: Javelin System Improvements	5.983	6.725	7.870
<p>Description: Javelin Weapon System Research and Development funding line completes development of a new Light Weight Command Launch Unit (CLU), conducts countermeasure and threat mitigation as well as develops critical software/hardware upgrades for the Javelin Missile System. It provides improved capability to the warfighter by doubling the target identification range and increasing system engagement range up to 4km, while reducing soldier burden. Lightweight CLU and Missile Software improvements will address emerging threats, improve engagement timeline, and increase lethality. Integration and Counter Measure/Threat management allows for technical assessments, concept studies, documentation, prototypes, demonstrations and risk mitigation efforts to address emerging threats and to maintain modernized overmatch capability for U.S. and Allied Nations ground forces.</p> <p>FY 2022 Plans: Continue Lightweight CLU Qualification Testing. Begin Lightweight CLU Operational Testing.</p> <p>FY 2023 Plans: Continue SW improvements (Auto-Gate/Fast-Launch) for the CLU and LWCLU to improve the Javelin Weapons System engagement time and increase lethality against emerging threats and potential adversary countermeasures.</p> <p>Complete Lightweight CLU Operational Testing. Perform and complete Lightweight CLU Airborne Compatibility Qualification Test.</p> <p>Continue development of Lightweight CLU and Javelin Missile software and hardware capability drops.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN	Project (Number/Name) 499 / Javelin (AAWS-M)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Continue to perform technical assessments, concept studies, prepare documentation, develop prototypes and perform risk reduction efforts to address emerging threats as well as peer and near peer adversary Javelin countermeasures. FY 2022 to FY 2023 Increase/Decrease Statement: Funding increased from FY22 to FY23 is due to Lightweight CLU and Missile software and hardware capability improvements to maintain overmatch of threats and to modernize the dismounted anti-tank ground missile system (ATGM).			
Title: Integration and Counter Measure/Threat management Description: The Javelin Product Office and OGA's will prepare technical assessments, concept studies, documentation, perform demonstrations, and risk mitigation efforts to address emerging threats. FY 2022 Plans: The Javelin Product Office and OGAs will perform technical assessments, concept studies, prepare documentation, and perform risk reduction efforts. Continued in overarching Javelin Weapons Improvement in FY23. FY 2022 to FY 2023 Increase/Decrease Statement: Funding decrease from FY22 to FY23 is due to the integration into the overarching Javelin Weapons System improvement activity.	-	0.110	-
Title: FY22 SBIR/STTR Transfer Description: Funding transferred in accordance with Title 15 USC 638 FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638 FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638	-	0.259	-
Accomplishments/Planned Programs Subtotals	5.983	7.094	7.870

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• H06102: JAVELIN (AAWS-M)	165.354	84.618	99.846	-	99.846	113.675	119.766	124.165	124.191	0.000	831.615
• H06103: Javelin Lightweight Command Launch Unit (CLU)	15.970	44.194	63.122	-	63.122	68.127	78.691	78.434	78.453	0.000	426.991

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army Date: April 2022

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

The Javelin Weapon System is an Army-led, Acquisition Category (ACAT) IC Major Defense Acquisition Program (MDAP) that has joint interest with the U.S. Marine Corps, U.S. Navy, and U.S. Air Force. Javelin initiated Full Rate Production (FRP) in 1997 and achieved Full Operational Capability (FOC) in 2014. Javelin is currently in the Production and Deployment phase.

Current Acquisition Strategy addresses software and hardware technology upgrades to the Javelin system. The Javelin Lightweight Command Launch Unit (CLU) addresses the Close Combat Missile System-Medium (CCMS-M) Capability Production Document requirement to maintain a low soldier burden dismounted anti-tank missile system. Software upgrades to reduce target engagement time, improving soldier lethality and survivability, previously described, as Auto-Gate /Fast-Launch will initiate FY22 and released in FY25. Missile Hardware upgrades to prevent adversary overmatch will initiate development in FY23 and be incorporated into the Javelin Weapons System in FY27. Development effort utilizes prime contractor, Javelin Joint Venture (Raytheon, Tucson, AZ, and Lockheed Martin, Orlando, FL) via an existing sole source, Cost-Plus-Fixed-Fee contract. The Javelin Joint Venture has invested Independent Research and Development in the Lightweight CLU. Development and testing will occur through FY27 to stay ahead of peer and near-peer adversaries. Future Lightweight CLU and Missile software upgrades will continue to address emerging threats and ensure modernized overmatch capability for U.S and ally ground forces.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN	Project (Number/Name) 499 / Javelin (AAWS-M)
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Engineering/ Program Management, Govt	Various	Multiple : Redstone Arsenal, AL	5.002	0.228	Apr 2021	0.216	Jun 2022	0.220	Nov 2022	-		0.220	0.000	5.666	-
FY22 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.259		-		-		-	0.000	0.259	-
Subtotal			5.002	0.228		0.475		0.220		-		0.220	0.000	5.925	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Javelin System Improvements	Various	Multiple : Various Locations	55.889	0.871	Mar 2021	5.586	Apr 2022	5.168	Jan 2023	-		5.168	0.000	67.514	-
Integration and Counter Measure/Threat management	MIPR	Multiple : Various Locations	-	-		0.110	Aug 2022	0.112	Dec 2022	-		0.112	0.000	0.222	-
Subtotal			55.889	0.871		5.696		5.280		-		5.280	0.000	67.736	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Lightweight CLU Qualification	SS/CPFF	JJV/Raytheon/ Lockheed Martin : Orlando, FL/Tucson, AZ	-	3.836	Mar 2021	-		-		-		-	0.000	3.836	-
Lightweight CLU Qualification	MIPR	Redstone Test Center : Redstone Arsenal, AL	-	1.048	Apr 2021	-		-		-		-	0.000	1.048	-
Lightweight CLU Airborne Compatibility Qualification Test	MIPR	Yuma Proving Grounds : Yuma, AZ	-	-		-		0.385	Mar 2023	-		0.385	0.000	0.385	-
Lightweight CLU Operational Testing	MIPR	Multiple : Various Locations	-	-		0.923	Nov 2021	1.985	Nov 2022	-		1.985	0.000	2.908	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN	Project (Number/Name) 499 / Javelin (AAWS-M)
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Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	4.884		0.923		2.370		-		2.370	0.000	8.177	N/A
Project Cost Totals			60.891	5.983		7.094		7.870		-		7.870	0.000	81.838	N/A

Remarks
Low-Rate Initial Procurement decision will be made upon completion of critical qualification test events but prior to completion of Operational Test.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604611A / JAVELIN	Project (Number/Name) 499 / Javelin (AAWS-M)
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Lightweight Command Launch Unit (LW CLU)																																				
LW CLU Design / Build Qualification Units																																				
LW CLU Qualification Testing																																				
LW CLU Airborne Compatibility Qualification Test													▲ 1																							
LW CLU Operational Testing																																				
Javelin System Improvements																																				
CLU/LW CLU/Missile Software Upgrades																									▲ 2											
LW CLU/Missile Hardware Upgrades																													▲ 3							
Integration and Counter Measure/Threat management																																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
Lightweight Command Launch Unit (LW CLU)	1	2022	4	2027
LW CLU Design / Build Qualification Units	1	2020	4	2021
LW CLU Qualification Testing	3	2021	4	2022
LW CLU Airborne Compatibility Qualification Test	3	2023	3	2023
LW CLU Operational Testing	3	2022	1	2023
Javelin System Improvements	1	2020	4	2027
CLU/LW CLU/Missile Software Upgrades	3	2025	3	2025
LW CLU/Missile Hardware Upgrades	4	2027	4	2027
Integration and Counter Measure/Threat management	4	2022	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	22.254	28.445	50.924	-	50.924	27.866	20.655	5.133	5.182	0.000	160.459
659: <i>Family Of Hvy Tac Veh</i>	-	2.239	5.082	19.089	-	19.089	-	-	-	-	0.000	26.410
E50: <i>TRAILER DEVELOPMENT</i>	-	8.225	2.970	0.737	-	0.737	-	-	-	-	0.000	11.932
EZ8: <i>Leader/Follower</i>	-	10.249	20.393	31.098	-	31.098	27.866	20.655	5.133	5.182	0.000	120.576
VR5: <i>TWV Protection Kits</i>	-	1.541	-	-	-	-	-	-	-	-	0.000	1.541

A. Mission Description and Budget Item Justification

This Program Element (PE) aligns system development and demonstration of Heavy Tactical Vehicles (HTV) with Multi-Domain Operations (MDO) requirements to support combat and combat support missions to include line haul, local haul, and unit resupply. HTV trucks transport water, ammunition, and general cargo over all terrains and throughout the battle-space. Systems include the Heavy Expanded Mobility Tactical Truck (HEMTT), Palletized Load System (PLS), Heavy Equipment Transporter System (HETS), Enhanced Heavy Equipment Transporter System (EHETS), Line Haul, Heavy Dump Truck (HDT), medium tactical trailers including the Medium Equipment Trailer (MET), the family of flatbed semitrailers to include but not limited to the 40-Ton M870, 34-Ton M872 and the 25-Ton M172 that support multiple Army missions and the development and demonstration of enablers. Recovery systems such as the Modular Catastrophic Recovery System (MCRS) that rescue large wheeled vehicle platforms in severe off-road conditions are also included. The Common Tactical Truck (CTT) is the next generation of tactical trucks to meet the Army's Tactical Wheeled Vehicle (TWV) Modernization Strategy to take full advantage of economies of scale and commonality with the objective to procure a commercial based Family of Vehicles to replace HEMTT, PLS and Line Haul tractors and leverage best commercial practices at lower procurement costs that are autonomy ready. Periodic evolutionary upgrade of survivability and crew protection as described in the Long Term Protection Strategy (LTPS) is supported by this PE for both the HTV family of vehicles and the Family of Medium Tactical Vehicles (FMTV).

The Leader Follower (LF) capability provides a Tactical Wheeled Vehicle (TVW) kit (applique) that enables a convoy of up to 9 (initially 4) unmanned TWVs to follow a lead manned TWV. This capability will be made available on Palletized Loading System (PLS) TWVs equipped with by-wire drive capability as an initial increment. PLS convoys equipped with LF will provide increased Soldier Force Protection and increased convoy logistics throughput. These increases are achieved by allowing Soldiers to be removed from threat zones and inserted into security supply convoys resulting in increased transportation utilization rates. The PLSA1 is the initial tactical vehicle used to support By-Wire Active Safety which provides the foundation for autonomous capabilities such as Leader/Follower, taking Soldiers out of harm's way.

Funding also supports modernization of the current Tactical Wheeled Vehicle fleets by investigating technology insertions including, but not limited to: Predictive Logistics, vetronics, Victory Architecture, vehicle electrification, fully autonomous operations, and other emerging technologies. Funding also supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement operating concepts.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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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 0604622A / <i>Family of Heavy Tactical Vehicles</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	22.254	31.602	0.000	-	0.000
Current President's Budget	22.254	28.445	50.924	-	50.924
Total Adjustments	0.000	-3.157	50.924	-	50.924
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.157			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	50.924	-	50.924

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
659: Family Of Hvy Tac Veh	-	2.239	5.082	19.089	-	19.089	-	-	-	-	0.000	26.410
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enhanced Heavy Equipment Transporter System (EHETS) replaces the Heavy Equipment Transporter System (HETS) and consists of an M1300 tractor and an eight-axle commercially based trailer capable of a minimum payload of 82 tons and worldwide transport. The M1302 trailer is part of the EHETS trailer fleet. The EHETS primary mission is to transport an M1 Abrams series Main Battle Tank (MBT) and other tracked vehicles. It is able to self-load/unload disabled vehicular cargo for evacuation purposes. The system will provide line haul, local haul, and maintenance evacuation of heavy tracked vehicles during tactical operations on primary and secondary roads worldwide.

The Common Tactical Truck (CTT) is a Family of Vehicles (FoV) modernization effort to replace the HEMTT, PLS, and Line Haul vehicles by leveraging best commercial practices, lower procurement cost (commercial economies of scale) and technology to include Predictive Logistics, Advanced Driver Assistance Systems (ADAS), and autonomy ready without significantly degrading the performance from current platforms.

FY 2023 Project 659 Base funds in the amount of \$19.089 million supports Developmental/Operational Testing (DT/OT) of the Enhanced Heavy Equipment Transporter System (EHETS) trailer. Funds also support the prototype manufacturing of the Common Tactical Truck (CTT). EHETS DT/OT will determine the performance and operational effectiveness of the trailer, while CTT prototype manufacturing will provide up to 15 prototypes for the replacement of the M915 Tractor, Palletized Loading System (PLS) and Heavy Expanded Mobility Tactical Truck (HEMTT). The EHETS supports the National Defense Strategy for modernization with an increased payload that provides the ability for transport, recovery and evacuation of heavy, oversized combat equipment such as the M1A2 Abrams main battle tank (MBT) and M88 recovery vehicle to support flexible theater postures and enhance the ability to compete and provide the transport for freedom of maneuver of the largest track combat weapon systems. The CTT supports the National Defense Strategy for modernization by providing the warfighter the updated transportation technologies that are aligned with what is available in the marketplace.

Matrix Functional Support is required to address/augment Engineering and Logistic functions, capabilities and gaps to supplement core employee competencies. System Engineering oversight and multiple functions of Logistics support such as management, fielding, tracking and documentation is required during the acquisition process

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), these items are necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

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

	FY 2021	FY 2022	FY 2023
Title: Enhanced Heavy Equipment Transporter System (EHETS) Developmental/Operational Test	-	-	1.192

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Description: Replacement system for the legacy Heavy Equipment Transporter System (HETS) to transport, deploy, and evacuate payloads up to 85 tons.</p> <p>FY 2023 Plans: FY 2023 continues the Operational testing of the EHETS Trailers to ensure that the design process is complete and meets specs with minimal risks.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: EHETS Developmental/Operational Test will be completed with FY 2023 funding</p>				
<p>Title: Common Tactical Truck (CTT) Non-Recurring Engineering</p> <p>Description: Middle Tier Acquisition is being considered for rapid prototyping, including designs by multiple vendors for replacement of the M915 Tractor, Palletized Loading System (PLS) and Heavy Expanded Mobility Tactical Truck (HEMTT).</p> <p>FY 2022 Plans: Funds will be used for non-recurring engineering for the development of Common Tactical Truck prototypes.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2022 funding completes CTT Non-Recurring Engineering</p>		-	4.156	-
<p>Title: Common Tactical Truck (CTT) Acquisition Planning and Documentation Development</p> <p>Description: Acquisition planning and documentation development includes matrix personnel program support for the development of contracting/acquisition milestone documentation and systems engineering plans for the Common Tactical Truck.</p> <p>FY 2022 Plans: Preparation of documentation to release Request Project Proposal (RPP) to obtain prototypes.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: CTT Acquisition Planning and Documentation Development will be completed with FY 2022 funding.</p>		1.007	0.740	-
<p>Title: Common Tactical Truck (CTT) Prototype Manufacturing</p> <p>Description: Middle Tier Acquisition is being considered for rapid prototyping, including designs by multiple vendors for replacement of the M915 Tractor, Palletized Loading System (PLS) and Heavy Expanded Mobility Tactical Truck (HEMTT).</p> <p>FY 2023 Plans:</p>		-	-	16.377

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funds will be used for the competitive acquisition of Common Tactical Truck prototypes in preparation for test and down-select. FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 begins the CTT Prototype Manufacturing process.			
Title: Common Tactical Truck (CTT) Matrix Functional Support Description: Matrix Functional Support is required to address/augment Engineering and Logistic functions, capabilities and gaps to supplement core employee competencies. FY 2023 Plans: Funds will be used for CTT Matrix Functional Support to provide engineering and logistics functions through the prototyping process. FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 is the first year that CTT Matrix Functional Support is listed as a separate planned program. In FY 2022, it was funded via CTT Acquisition Planning and Document Development.	-	-	1.520
Title: EHETS Developmental Engineering Description: Engineering efforts in preparation for the EHETS Trailer Source Selection and Evaluation Board (SSEB).	1.232	-	-
Title: SBIR/STTR Transfer Description: Funding transferred in accordance with Title 15 USC ?638 FY 2022 Plans: Funding transferred in accordance with Title 15 USC ?638 FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC ?638	-	0.186	-
Accomplishments/Planned Programs Subtotals	2.239	5.082	19.089

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• DA0924: Modification Of In Svc Equip	62.712	212.349	31.819	-	31.819	43.620	141.407	208.505	274.860	0.000	975.272

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022	
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles				Project (Number/Name) 659 / Family Of Hvy Tac Veh			

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

Line Item	FY 2021	FY 2022	FY 2023	FY 2023	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cost To	Total Cost
			Base	OCO	Total					Complete	
• DA0500: Family Of Heavy Tactical Vehicles (FHTV)	6.500	173.282	96.112	-	96.112	55.839	63.735	63.760	63.658	0.000	522.886
• D01650: SEMITRAILER LOW BED 25 TON, M172	5.348	1.864	4.968	-	4.968	4.951	4.947	6.479	6.469	0.000	35.026

Remarks

DA0924 - Modification Of In Svc Equip is a shared funding line with other product offices.

D. Acquisition Strategy

The Enhanced Heavy Equipment Transporter System (EHETS) is the replacement system for the Heavy Equipment Transporter System (HETS). The strategy is to determine the best value through a Source Selection for Low Rate Initial Production award for trailers in preparation for Developmental/Operational test.

The Common Tactical Truck Family of Vehicles (CTT FoVs) is a modernization effort to replace the HEMTT, PLS, and Line Haul vehicles. The CTT has an approved Abbreviated Capability Development Document (A-CDD), and is being considered for a Middle Tier Acquisition, and if approved, will proceed with rapid prototyping. The rapid prototyping effort will be executed as a competitive OTA awarded to up to four OEMs to procure up to three prototypes per vendor in in order to inform the Capability Development Document (CDD).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.186		-		-		-	0.000	0.186	-
Subtotal			-	-		0.186		-		-		-	0.000	0.186	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CTT Non-Recurring Engineering	C/IDIQ	TBD : TBD	-	-		4.156	Nov 2022	-		-		-	0.000	4.156	-
CTT Prototypes	C/IDIQ	TBD : TBD	-	-		-		16.377	Dec 2022	-		16.377	0.000	16.377	-
EHETS Developmental Engineering	MIPR	Ground Vehicle Systems Center : Warren, MI	-	1.232	Jun 2021	-		-		-		-	0.000	1.232	-
Subtotal			-	1.232		4.156		16.377		-		16.377	0.000	21.765	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CTT Acquisition Planning and Document Development	MIPR	TACOM LCMC : Warren, MI	-	1.007	Nov 2021	0.740	Dec 2021	-		-		-	0.000	1.747	-
CTT Matrix Functional Support	MIPR	TACOM LCMC : Warren, MI	-	-		-		1.520	Dec 2022	-		1.520	0.000	1.520	-
Subtotal			-	1.007		0.740		1.520		-		1.520	0.000	3.267	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																				
USAREUR HETS ONS																																																
USAREUR HETS ONS Testing	Testing																																															
Enhanced Heavy Equipment Transporter System (EHETS)																																																
EHETS Milestone C					3 MS C																																											
EHETS Developmental/Operational Testing									DT/OT Test																																							
Common Tactical Truck (CTT)																																																
CTT Acquisition Planning and Documentation Development	Planning and Documentation																																															
CTT Abbreviated Capability Development Document (A-CDD) Approval	1 A-CDD																																															
CTT Request Prototype Proposal (RPP)					2 RPP																																											
CTT Requirements Framing Analysis (RFA)					RFA																																											
CTT Other Transaction Agreement (OTA) Award									4 OTA Award																																							
CTT Prototypes Production													Prototype Production																																			
CTT OTA Test																	OTA Test																															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4												
CTT AoA													[Redacted]																											
CTT Capability Development Document (CDD)																									5 CDD															
CTT Request for Proposal (RFP)																													6 RFP											
CTT Source Selection and Evaluation Board (SSEB)																													[Redacted]											
CTT Competitive Runoff Test																													[Redacted]											
CTT Milestone C																																	7 MS C							

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
USAREUR HETS ONS	1	2018	4	2022
USAREUR HETS ONS Testing	1	2019	4	2021
Enhanced Heavy Equipment Transporter System (EHETS)	1	2017	1	2024
EHETS Milestone C	4	2022	4	2022
EHETS Developmental/Operational Testing	4	2022	1	2024
Common Tactical Truck (CTT)	1	2021	4	2027
CTT Acquisition Planning and Documentation Development	1	2021	4	2022
CTT Abbreviated Capability Development Document (A-CDD) Approval	4	2021	4	2021
CTT Request Prototype Proposal (RPP)	3	2022	3	2022
CTT Requirements Framing Analysis (RFA)	3	2022	3	2023
CTT Other Transaction Agreement (OTA) Award	1	2023	1	2023
CTT Prototypes Production	2	2023	1	2024
CTT OTA Test	1	2024	4	2024
CTT AoA	3	2024	1	2025
CTT Capability Development Document (CDD)	1	2025	1	2025
CTT Request for Proposal (RFP)	2	2025	2	2025
CTT Source Selection and Evaluation Board (SSEB)	4	2025	3	2026
CTT Competitive Runoff Test	1	2026	3	2026
CTT Milestone C	3	2026	3	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) E50 / TRAILER DEVELOPMENT
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
E50: TRAILER DEVELOPMENT	-	8.225	2.970	0.737	-	0.737	-	-	-	-	0.000	11.932
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Medium Equipment Trailer (MET) provides critical layered, agile and responsive sustainment capability required for Large Scale Combat Operations (LSCO). The MET supports Multi-Domain Operations (MDO) with the ability to maneuver across strategic distances by providing intermediate weight combat vehicles transportation for a competitive advantage. The MET will be assigned to Heavy Equipment Transporter Systems (HETS) Companies and Composite Truck Companies- Heavy (CTC-H) to expeditiously move Combat Tracked Vehicles such as the Bradley Fighting Vehicle, Armored Multi-Purpose Vehicles (AMPV), Paladin and Field Artillery Ammunition Support Vehicles (FAASV) with a threshold of up to 60 tons and an objective to meet up to 70 tons while also obtaining North Atlantic Treaty Organization (NATO) road permits with a 45 ton payload. The MET will also be capable of transporting vehicles at the OCONUS standard minimum bridge and underpass clearance of 157.5 inches (4 meters).

FY 2023 Project E50 Base funds in the amount of \$0.737 million supports the completion of the MET Prototype Testing and Soldier Assessment and delivery of the final test report to determine the best value to the Government and down-select to one vendor for a follow-on production award. The MET supports the National Defense Strategy for modernization with a 60 ton payload that provides the capability for transport of two thirds of the tracked combat platforms to include over height combat platforms to support flexible theater postures and enhance the ability to compete and provide freedom of maneuver.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

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

	FY 2021	FY 2022	FY 2023
Title: Medium Equipment Trailer (MET) Prototype Manufacturing	7.311	-	-
Description: MET is a trailer capable of transporting track combat platforms weighing 60 tons or less in an Armored Brigade Combat Team (ABCT). MET will provide flexible capability that reduces duplicative systems.			
Title: Medium Equipment Trailer (MET) Prototype Testing and Soldier Assessment	-	2.862	0.737
Description: MET prototypes will be tested to determine which trailer provides the best value to the Government while meeting the MET requirement. To assist in determining the best value to the Government, a Soldier touch point will also be a part of the evaluation. The best value determination will be used to support a follow on production contract.			
FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) E50 / TRAILER DEVELOPMENT
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
MET Prototype Competitive Run-off Testing and Soldier Assessment <i>FY 2023 Plans:</i> Completion of the MET Prototype Competitive Run-off Testing and Soldier Assessment. <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> FY 2023 funds decreased because the effort ends during FY 2023.			
<i>Title:</i> Common Tactical Truck (CTT) Acquisition Planning and Document Development <i>Description:</i> Acquisition planning and documentation development includes matrix personnel program support for the development of contracting/acquisition milestone documentation and systems engineering plans for the Common Tactical Truck.	0.914	-	-
<i>Title:</i> SBIR/STTR Transfer <i>Description:</i> Funding transferred in accordance with Title 15 USC ?638 <i>FY 2022 Plans:</i> Funding transferred in accordance with Title 15 USC ?638 <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC ?638	-	0.108	-
Accomplishments/Planned Programs Subtotals	8.225	2.970	0.737

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• DA0926: MODIFICATION APPLICATION	27.827	11.710	13.070	-	13.070	27.266	100.461	146.826	193.056	0.000	520.216
• D08921: MEDIUM EQUIPMENT TRAILER (MET)	-	-	20.265	-	20.265	42.493	63.735	63.760	63.658	0.000	253.911

Remarks

D. Acquisition Strategy

The Acquisition Strategy is to execute the MET as a competitive Other Transaction Agreement (OTA) awarded to two Original Equipment Manufacturers (OEMs). The OEMs will provide three prototypes per vendor in preparation to test and down-select to one vendor for follow-on production.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
2040 / 5				PE 0604622A / Family of Heavy Tactical Vehicles					E50 / TRAILER DEVELOPMENT						
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.108		-		-		-	0.000	0.108	-
Subtotal			-	-		0.108		-		-		-	0.000	0.108	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MET Prototype Manufacturing	C/TBD	TBD : TBD	-	7.311	Nov 2021	-		-		-		-	0.000	7.311	-
Subtotal			-	7.311		-		-		-		-	0.000	7.311	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CTT Acquisition Planning and Document Development	MIPR	TACOM LCMC : Warren, MI	-	0.914		-		-		-		-	0.000	0.914	-
Subtotal			-	0.914		-		-		-		-	0.000	0.914	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MET Prototype Testing	MIPR	Aberdeen Test Center (ATC) : Abderdeen, MD	-	-		2.862	Jun 2022	0.737	Oct 2022	-		0.737	0.000	3.599	-
Subtotal			-	-		2.862		0.737		-		0.737	0.000	3.599	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army								Date: April 2022			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles				Project (Number/Name) E50 / TRAILER DEVELOPMENT			
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	8.225	2.970	0.737	-	0.737	0.000	11.932	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) E50 / TRAILER DEVELOPMENT

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Medium Equipment Trailer (MET)																												
MET Materiel Development Decision	1 MDD																											
MET Request Prototype Proposal (RPP)		2 RPP																										
MET Other Transaction Agreement (OTA) Award			3 Prototype Contract Award																									
MET Prototype Manufacturing					Prototype Build																							
MET Competitive Run-off Test									Runoff Test																			
MET OTA Down Select													OTA Down Select															
MET Milestone C													MS C															
Common Tactical Truck (CTT)																												
CTT Acquisition Planning and Document Development					CTT Acquisition Planning and Document Development																							

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) E50 / <i>TRAILER DEVELOPMENT</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Medium Equipment Trailer (MET)	1	2022	4	2023
MET Materiel Development Decision	2	2021	2	2021
MET Request Prototype Proposal (RPP)	3	2021	3	2021
MET Other Transaction Agreement (OTA) Award	1	2022	1	2022
MET Prototype Manufacturing	1	2022	4	2022
MET Competitive Run-off Test	1	2023	3	2023
MET OTA Down Select	3	2023	3	2023
MET Milestone C	4	2023	4	2023
Common Tactical Truck (CTT)	1	2021	4	2022
CTT Acquisition Planning and Document Development	1	2021	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles				Project (Number/Name) EZ8 / Leader/Follower			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
EZ8: Leader/Follower	-	10.249	20.393	31.098	-	31.098	27.866	20.655	5.133	5.182	0.000	120.576
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Leader Follower (LF) automated capability, through Manned Unmanned Teaming, provides convoy commanders the option to run either manned or unmanned vehicles. Unmanned LF operation allows Tactical Wheeled Vehicle (TWV) convoys to be led by a manned lead vehicle and followed autonomously by four LF equipped TWVs as the first increment, with continued development towards a fully-autonomous capability. This LF capability reduces Soldier exposure to hostile effects by four drivers when the commander chooses the unmanned option. Additionally, LF enables delivery to be more Soldier efficient, allowing at least as many ton-miles or more to be delivered per transportation unit as current capabilities, with less Soldier exposure to hostile effects.

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

	FY 2021	FY 2022	FY 2023
Title: Tactical Wheeled Vehicle Leader Follower	10.249	19.648	31.098
Description: Leader Follower program enables a single operator to control 5 vehicles in a convoy reducing the number of Soldier at risk while increasing convoy throughput.			
FY 2022 Plans: FY22 funds support extension of FY21 existing Operational Technology Demonstration (OTD) [Note: Previously described in PB21 as follow-on testing of the Leader Follower configuration fielded assets] to mature the Leader Follower design solution under Middle Tier of Acquisition (MTA) [Note: revised from PB22 planned ?down-select? strategy]. Funding supports maturation of OTD design, By-Wire Active Safety development and test, development of MTA ADM documentation, contract development and award of production representative test assets.			
FY 2023 Plans: FY 2023 funds support continuation of Operational Technology Demonstration (OTD) and evaluations at the Army Joint Readiness Training Center (JRTC) and National Training Center (NTC). Funding will support development of logistics documentation, and completion of 19 production representative assets for use in performance testing and logistics development. The Operational Technology Demonstration (OTD) supports the development of new Doctrine, Tactics, Techniques, Procedures (TTPs), and identifies sustainment requirements for Leader Follower capability. Logistics documentation supports development of Maintenance Manuals and Training for Optionally Manned Leader Follower solution. Production representative assets will support test and evaluation in FY 2024.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) EZ8 / Leader/Follower
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding increase due to increased Operational Technology Demonstration (OTD) activities to include Leader Follower technical support, and completion of 19 production representative assets.			
Title: SBIR / STTR Transfer	-	0.745	-
Description: Funding transferred in accordance with Title 15 USC ?638			
FY 2022 Plans: Funding transferred in accordance with Title 15 USC ?638			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC ?638			
Accomplishments/Planned Programs Subtotals	10.249	20.393	31.098

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• R06806: Leader/ Follower Applique (L/F)	-	-	0.000	-	0.000	15.949	20.607	40.141	40.113	0.000	116.810

Remarks

D. Acquisition Strategy
The Leader Follower program adopted the Operational Technology Demonstration (OTD) vehicle configuration from Science and Technology Projects conducted by the Army Development Command. Leader Follower is maturing this project to achieve Army materiel release requirements, in support of production and fielding. Software development and maturation is planned to continue throughout production.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) EZ8 / Leader/Follower
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LF Program Management	Allot	PM FP : Warren, MI; Harrison Twp, MI	0.874	1.761	Oct 2020	1.450	Oct 2021	1.750	Oct 2022	-		1.750	0.000	5.835	-
SBIR / STTR Transfer	TBD	Various : Various	-	-		0.745		-		-		-	0.000	0.745	-
Subtotal			0.874	1.761		2.195		1.750		-		1.750	0.000	6.580	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LF Operational Technology Demonstration	C/CPFF	Multiple : Various	-	6.312	Dec 2020	-		-		-		-	0.000	6.312	-
LF Software Development	C/CPFF	Multiple : Various	-	0.309	Dec 2020	-		-		-		-	0.000	0.309	-
LF Operational Technology Demonstration and Maturation	C/CPFF	Multiple : Various	-	-		15.883	Feb 2022	23.028	Oct 2022	-		23.028	0.000	38.911	-
Subtotal			-	6.621		15.883		23.028		-		23.028	0.000	45.532	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LF Tech Support	MIPR	GVSC, TACOM : Warren, MI	1.334	0.300	Oct 2020	0.791	Oct 2021	5.570	Oct 2022	-		5.570	0.000	7.995	-
Subtotal			1.334	0.300		0.791		5.570		-		5.570	0.000	7.995	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LF Test Support	MIPR	ATEC : Aberdeen, MD	2.086	1.567	Oct 2020	1.524	Apr 2022	0.250		-		0.250	0.000	5.427	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army	Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles
Project (Number/Name) EZ8 / Leader/Follower	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LEADER FOLLOWER (LF)																												
LF Sustain Operational Technology Demonstration																												
LF Mature OTD / MTA Configuration																												
LF Mature OTD Award																												
LF ADM - MTA Rapid Prototype / Extend OTD OTAs																												
LF Build Production Representative Test Assets																												
LF Logistics Development																												
LF Test and Evaluation																												
LF Software Acquisition Pathway																												
LF Production Qualification Testing																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) EZ8 / <i>Leader/Follower</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
LEADER FOLLOWER (LF)	1	2020	4	2027
LF Safety Release Testing	4	2019	4	2020
LF Operational Technology Demonstration	1	2020	4	2020
LF Sustain Operational Technology Demonstration	1	2021	4	2021
LF Mature OTD / MTA Configuration	1	2022	4	2027
LF Mature OTD Award	2	2022	2	2022
LF ADM - MTA Rapid Prototype / Extend OTD OTAs	3	2022	3	2022
LF Build Production Representative Test Assets	4	2022	4	2023
LF Logistics Development	1	2023	2	2025
LF Test and Evaluation	1	2022	1	2025
LF Software Acquisition Pathway	4	2024	4	2027
LF Production Qualification Testing	1	2025	4	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
VR5: TWV Protection Kits	-	1.541	-	-	-	-	-	-	-	-	0.000	1.541
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project VR5 Tactical Wheeled Vehicle (TWV) Protection Kits completes test efforts in Fiscal Year (FY) 2021.

A. Mission Description and Budget Item Justification

The Heavy Dump Truck (HDT) supports construction projects by loading, transporting and dumping payloads of sand and gravel aggregates, crushed rock, hot asphalt mixes, earth, clay, rubble, large boulders and other materials up to gross vehicle weight rating to job sites under world-wide climatic conditions. The HDT also serves as a quarry truck for the quick transport of bulk raw earth materials to and from the crushing, screening and washing plant and the asphalt mixing plant. The HDT also serves as a transportation asset for organization equipment. The HDT is Long Term Armor Strategy (LTAS) compliant with MRAP 1.1 underbody protection. The armor solution is developed concurrently with the production of armor capable HDTs. This line also supports modernization of the current Tactical Wheeled Vehicle fleets through Predictive Logistics Development.

There are no FY 2023 Project VR5 Base or OCO funding requirements.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

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

	FY 2021	FY 2022	FY 2023
Title: Heavy Dump Truck (HDT) Testing	0.261	-	-
Description: Reliability, Availability, and Maintainability (RAM) testing and system performance testing / evaluation of the armored HDTs. Developmental Test, Operational Test and Live Fire Test of armored vehicle.			
Title: Predictive Logistics Development	1.000	-	-
Description: Development of a maintenance process that includes self-diagnosis and alerts regarding operational status and maintenance needs of tactical vehicles.			
Title: DS Viper Development	0.280	-	-
Description: DS Viper is a diagnostic framework that will maintain accurate synchronization between Technical Manuals and diagnostic equipment.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Accomplishments/Planned Programs Subtotals	1.541	-	-

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• D16001: TRUCK, DUMP, 20T (CCE)	29.368	29.382	0.000	-	0.000	-	-	-	-	0.000	58.750

Remarks

D. Acquisition Strategy

The Heavy Dump Truck (HDT) entered the acquisition cycle pre-Milestone C, based on a competitive source selection process that resulted in the award of a five year plus two option years firm-fixed price (FFP) indefinite delivery indefinite quantity (IDIQ) contract. The contract award was for one Original Equipment Manufacturer (OEM) to develop an armor solution for a commercially-based dump truck. The commercially-based dump truck will be armor-capable and will be produced concurrently with the development of the armor solution, which will ensure that the armor solution correctly interfaces with the commercially-based dump truck.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Predictive Logistics Development	MIPR	Washington Headquarters Services : Washington, DC	0.200	1.000	Feb 2021	-		-		-		-	0.000	1.200	-
DS Viper Development	MIPR	Data and Analysis Center : Redstone Arsenal, AL	-	0.280	Feb 2021	-		-		-		-	0.000	0.280	-
Subtotal			0.200	1.280		-		-		-		-	0.000	1.480	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HDT - Live Fire Testing	MIPR	Aberdeen Test Center (ATC) : Aberdeen, MD	1.305	0.070	Feb 2021	-		-		-		-	0.000	1.375	-
HDT - Familiarization Training	C/IDIQ	Mack Defense : Allentown, PA	0.007	-		-		-		-		-	0.000	0.007	-
HDT - DT/OT	MIPR	Aberdeen Test Center (ATC) : Aberdeen, MD	0.503	0.191	Mar 2021	-		-		-		-	0.000	0.694	-
HEMTT Characterization Testing	SS/FFP	Michigan Tech, Keweenaw Research Center : Calumet, MI	0.115	-		-		-		-		-	0.000	0.115	-
USAREUR HETS ONS - Test Support	SS/FFP	Oshkosh Defense : Oshkosh, WI	0.358	-		-		-		-		-	0.000	0.358	-
USAREUR HETS ONS - Testing	MIPR	Ground Vehicle Systems Center : Warren, MI	0.359	-		-		-		-		-	0.000	0.359	-
Subtotal			2.647	0.261		-		-		-		-	0.000	2.908	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army								Date: April 2022			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles			Project (Number/Name) VR5 / TWV Protection Kits					
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	2.847	1.541	-	-	-	-	0.000	4.388	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
HEAVY DUMP TRUCK (HDT)																												
HDT Armored PVT																												
					<i>Production Verification Testing</i>																							
HDT Armored Live Fire Testing																												
					<i>Live Fire Testing</i>																							
HDT Armored Developmental/Operational Test					DT/OT																							
HDT Type Classification/Materiel Release					▲ 1 TC/MR																							
HDT Initial Operating Capability					▲ 2 IOC																							
HEMTT Characterization Testing																												
HETS M1070A1 Tractor Modifications & System-Level Testing																												
Predictive Logistics Development																												
DS Viper Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
HEAVY DUMP TRUCK (HDT)	1	2017	4	2021
HDT Armor Development	3	2019	4	2019
HDT Armored Prototypes	4	2019	3	2020
HDT Armored Cab Live Fire Exploitation Test	1	2020	1	2020
HDT Armored PVT	4	2019	3	2021
HDT Armored Live Fire Testing	4	2020	2	2021
HDT Armored Developmental/Operational Test	3	2021	3	2021
HDT Type Classification/Materiel Release	1	2022	1	2022
HDT Initial Operating Capability	2	2022	2	2022
HEMTT Characterization Testing	4	2020	4	2021
HETS M1070A1 Tractor Modifications & System-Level Testing	4	2020	4	2021
Predictive Logistics Development	2	2021	4	2022
DS Viper Development	2	2021	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	3.383	4.405	2.623	-	2.623	1.158	1.025	0.562	0.567	0.000	13.723
586: <i>Air Traffic Control</i>	-	3.383	4.405	2.623	-	2.623	1.158	1.025	0.562	0.567	0.000	13.723

A. Mission Description and Budget Item Justification

Program Element (PE) 0604633A Air Traffic Control funds continuous efforts in the development of modernized tactical Air Traffic Control (ATC) systems that enable safety of aircraft operations. ATC systems are required to achieve or maintain compliance with civil, military, domestic and international ATC mandates and combat identification requirements.

The Tactical Airspace Integration System (TAIS) is the Army's program of record for Airspace Control (AC) and enroute Air Traffic Services (ATS). TAIS provides Airspace Management, planning, and dynamic execution capabilities at all echelons above Brigade, and enroute flight following air traffic services. TAIS is the only Army system with direct interface to the U.S. Air Force Air Operations Center (AOC) Weapon System for submission of the Army's requests for airspace from the Battlefield Coordination Detachment (BCD). Airspace Coordinating Measure Requests (ACMREQs) received from other mission command systems are passed to TAIS for approval or higher coordination. TAIS software supports U.S. Army commanders, airspace users, airspace managers, Army air traffic controllers, Joint organizations, and Unified Action Partners (UAP) by providing digitized, multi-echelon planning and execution of airspace management and Air Traffic Services. TAIS provides AC planning and enhanced AC execution; improved theater, intra-, and inter-Corps/Division Air Traffic Services (ATS) support; effective battlespace synchronization; and direct links to the Theater Air Ground System (TAGS) through interface with the automated airspace planning and communications systems of the Joint Force Air Component Commander (JFACC).

TAIS Common Operating Environment (COE) convergence to Integrated Mission Planning and Airspace Control Tools (IMPACT) will provide interoperability with Army Mission Command, Joint, and UAP systems. This will facilitate AC capabilities, enhance situational understanding, reduce risks, and provide more effective Air-Ground Integration to enable Multi-Domain Operations (MDO), Joint All Domain Operations (JADO), and Joint All Domain Command and Control (JADC2). IMPACT will be instantiated across Command Post Computing Environment (CE), Mounted CE, and Mobile/Handheld CE and will extend AC services to the tactical edge.

TAIS/IMPACT will leverage Air Space Total Awareness for Rapid Tactical Execution (ASTARTE) technology. ASTARTE provides artificial intelligence and machine learning algorithms which will allow IMPACT to achieve more rapid synchronization of airspace planning and dynamic execution. This will enable commanders to maximize airspace usage, increase freedom of maneuver in the 3rd dimension, enhance safety and fratricide prevention, and enable seamless integration / deconfliction of fires and aviation operations in highly congested and complex environments during Large Scale Combat Operations (LSCO).

The Air Traffic Navigation Integration and Coordination System (ATNAVICS) is a highly mobile Airport Surveillance Radar and Precision Approach Radar system that provides Air Traffic Services at Army airfields and landing sites at Division, Corps, and Echelons above Corps to include services for Joint and Allied aircraft. ATNAVICS integrates capabilities to control aircraft both Outside of the Continental United States and in the Continental United States. ATNAVICS is upgrading the Interrogation Identification Friend-or-Foe (IFF) system to maintain international airspace compatibility, capture flight information through the reception of aircraft self-reporting data broadcasts, and process into an interconnected air picture.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	3.383	4.405	0.000	-	0.000
Current President's Budget	3.383	4.405	2.623	-	2.623
Total Adjustments	0.000	0.000	2.623	-	2.623
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	2.623	-	2.623

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604633A / Air Traffic Control				Project (Number/Name) 586 / Air Traffic Control			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
586: Air Traffic Control	-	3.383	4.405	2.623	-	2.623	1.158	1.025	0.562	0.567	0.000	13.723
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tactical Airspace Integration System (TAIS) is the Army's program of record for Airspace Control (AC) and enroute Air Traffic Services (ATS). TAIS provides Airspace Management, planning, and dynamic execution capabilities at all echelons above Brigade, and enroute flight following air traffic services. TAIS is the only Army system with direct interface to the U.S. Air Force Air Operations Center (AOC) Weapon System for submission of the Army's requests for airspace from the Battlefield Coordination Detachment (BCD). Airspace Coordinating Measure Requests (ACMREQs) received from other mission command systems are passed to TAIS for approval or higher coordination. TAIS software supports U.S. Army commanders, airspace users, airspace managers, Army air traffic controllers, Joint organizations, and Unified Action Partners (UAP) by providing digitized, multi-echelon planning and execution of airspace management and Air Traffic Services. TAIS provides AC planning and enhanced AC execution; improved theater, intra-, and inter-Corps/Division Air Traffic Services (ATS) support; effective battlespace synchronization; and direct links to the Theater Air Ground System (TAGS) through interface with the automated airspace planning and communications systems of the Joint Force Air Component Commander (JFACC).

TAIS Common Operating Environment (COE) convergence to Integrated Mission Planning and Airspace Control Tools (IMPACT) will provide interoperability with Army Mission Command, Joint, and UAP systems. This will facilitate AC capabilities, enhance situational understanding, reduce risks, and provide more effective Air-Ground Integration to enable Multi-Domain Operations (MDO), Joint All Domain Operations (JADO), and Joint All Domain Command and Control (JADC2). IMPACT will be instantiated across Command Post Computing Environment (CE), Mounted CE, and Mobile/Handheld CE and will extend AC services to the tactical edge.

TAIS/IMPACT will leverage Air Space Total Awareness for Rapid Tactical Execution (ASTARTE) technology. ASTARTE provides artificial intelligence and machine learning algorithms which will allow IMPACT to achieve more rapid synchronization of airspace planning and dynamic execution. This will enable commanders to maximize airspace usage, increase freedom of maneuver in the 3rd dimension, enhance safety and fratricide prevention, and enable seamless integration / deconfliction of fires and aviation operations in highly congested and complex environments during Large Scale Combat Operations (LSCO).

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

	FY 2021	FY 2022	FY 2023
Title: Tactical Airspace Integration System (TAIS)	2.418	4.244	2.623
Description: The Tactical Airspace Integration System (TAIS) is the Army's program of record for Airspace Control (AC) and enroute Air Traffic Services (ATS). TAIS provides Airspace Management, planning, and dynamic execution capabilities at all echelons above Brigade, and enroute flight following air traffic services. TAIS is the only Army system with direct interface to the U.S. Air Force Air Operations Center (AOC) Weapon System for submission of the Army's requests for airspace from the Battlefield Coordination Detachment (BCD). Airspace Coordinating Measure Requests (ACMREQs) received from other mission command systems are passed to TAIS for approval or higher coordination. TAIS software supports U.S. Army commanders, airspace users, airspace managers, Army air traffic controllers, Joint organizations, and Unified Action Partners (UAP) by			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>	Project (Number/Name) 586 / <i>Air Traffic Control</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>providing digitized, multi-echelon planning and execution of airspace management and Air Traffic Services. TAIS provides AC planning and enhanced AC execution; improved theater, intra-, and inter-Corps/Division Air Traffic Services (ATS) support; effective battlespace synchronization; and direct links to the Theater Air Ground System (TAGS) through interface with the automated airspace planning and communications systems of the Joint Force Air Component Commander (JFACC).</p> <p>TAIS Common Operating Environment (COE) convergence to Integrated Mission Planning and Airspace Control Tools (IMPACT) will provide interoperability with Army Mission Command, Joint, and UAP systems. This will facilitate AC capabilities, enhance situational understanding, reduce risks, and provide more effective Air-Ground Integration to enable Multi-Domain Operations (MDO), Joint All Domain Operations (JADO), and Joint All Domain Command and Control (JADC2). IMPACT will be instantiated across Command Post Computing Environment (CE), Mounted CE, and Mobile/Handheld CE and will extend AC services to the tactical edge.</p> <p>TAIS/IMPACT will transition Air Space Total Awareness for Rapid Tactical Execution (ASTARTE) technology. ASTARTE provides artificial intelligence and machine learning algorithms which will allow IMPACT to achieve more rapid synchronization of airspace planning and dynamic execution. This will enable commanders to maximize airspace usage, increase freedom of maneuver in the 3rd dimension, enhance safety and fratricide prevention, and enable seamless integration / deconfliction of fires and aviation operations in highly congested and complex environments during Large Scale Combat Operations (LSCO).</p> <p>FY 2022 Plans: Develop Airspace Control embedded operator training capability. Continue development of Joint All Domain Command and Control AC capabilities and AC service extension using Mission Command Information System and Tactical Assault Kit frameworks and plugins services. Continue development of a solution to utilize common and enterprise services in all Computing Environments. Continue development for integration and direct machine interfaces to emerging Artificial Intelligence assisted decision making aids.</p> <p>FY 2023 Plans: Continue with system development testing to validate capabilities enabling Air-Ground Integration. Develop Integrated Mission Planning and Airspace Control Tools (IMPACT) to meet CD5 Operational Needs, Joint All Domain Command and Control (JADC2) Airspace Control (AC) capabilities and AC service extension using MCIS and Tactical Assault Kit frameworks, plugins and services. Develop a solution to utilize common and enterprise services in all Computing Environments. Begin development for integration and direct machine interfaces to emerging Artificial Intelligence assisted decision making aids.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding decreased due to a reduction in system development testing to validate capability enabling Air-Ground Integration.</p> <p>Title: Air Traffic Navigation Integration and Coordination System (ATNAVICS) Modernization</p>	0.965	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>	Project (Number/Name) 586 / <i>Air Traffic Control</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Description: The ATNAVICS is a highly mobile Airport Surveillance Radar and Precision Approach Radar system that provides Air Traffic Services at Army airfields and landing sites at Division, Corps, and Echelons above Corps to include services for Joint and Allied aircraft. ATNAVICS integrates capabilities to control aircraft both Outside of the Continental United States and in the Continental United States. ATNAVICS is upgrading the IFF system to maintain international airspace compatibility, capture flight information through the reception of aircraft self-reporting data broadcasts, and process into an interconnected air picture.</p> <p>Title: FY22 SBIR/STTR Transfer</p> <p>Description: FY22 \$161K SBIR/STTR transfer in accordance with Title 15 USC 638.</p> <p>FY 2022 Plans: FY22 \$161K SBIR/STTR transfer in accordance with Title 15 USC 638.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: SBIR/STTR amount in accordance with Title 15 USC 638.</p>	-	0.161	-
Accomplishments/Planned Programs Subtotals	3.383	4.405	2.623

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• AA0050: <i>Air Traffic Control</i>	26.408	21.759	27.492	-	27.492	21.633	11.619	11.696	11.649	0.000	132.256

Remarks

D. Acquisition Strategy

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / Air Traffic Control	Project (Number/Name) 586 / Air Traffic Control
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FY22 SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.161	Apr 2022	-		-		-	0.000	0.161	-
Subtotal			-	-		0.161		-		-		-	0.000	0.161	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TAIS Software Development (TTS/ASTARTE/JADC2)	SS/T&M	General Dynamics C4S : Huntsville, AL	40.642	2.418	May 2021	2.749	Jan 2022	1.797	Jan 2022	-		1.797	Continuing	Continuing	Continuing
TAIS EASI Software Development	MIPR	S3I : Redstone Arsenal, AL	-	-		1.334	Feb 2022	0.749	Feb 2022	-		0.749	Continuing	Continuing	Continuing
TAIS Cyber/JITC Testing	MIPR	Redstone Test Center/CCDC : Redstone Arsenal, AL	-	-		0.161	Jan 2022	0.077	Jan 2022	-		0.077	Continuing	Continuing	Continuing
ATNAVICS Modernization, TPX-59	Various	Various : Various	27.333	0.965	Jan 2021	-		-		-		-	0.000	28.298	-
Subtotal			67.975	3.383		4.244		2.623		-		2.623	Continuing	Continuing	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals		67.975	3.383	4.405	2.623	-	-	2.623	Continuing	Continuing	N/A

Remarks
 PM: Program Management
 TAIS: Tactical Airspace Integration System
 ATNAVICS: Air Traffic Navigation Integration and Coordination System

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / <i>Air Traffic Control</i>	Project (Number/Name) 586 / <i>Air Traffic Control</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TAIS Software Development																												
TAIS																												
ATNAVICS Modernization TPX-59																												
TPX-59																												

Note
 TAIS: Tactical Airspace Integration System
 ATNAVICS: Air Traffic Navigation Integration and Coordination System

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
TAIS Software Development	1	2015	4	2036
ATNAVICS Modernization TPX-59	3	2017	4	2021

Note
 TAIS: Tactical Airspace Integration System
 ATNAVICS: Air Traffic Navigation Integration and Coordination System

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	-	-	115.986	-	115.986	145.128	145.188	145.228	146.641	0.000	698.171
CF5: <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>	-	-	-	115.986	-	115.986	145.128	145.188	145.228	146.641	0.000	698.171

A. Mission Description and Budget Item Justification

The Robotic Combat Vehicle (RCV) development program will produce unmanned ground combat vehicle prototypes to aid Concepts of Operations (CONOPS) and Tactics, Techniques, and Procedures (TTP) development, integrate and secure advanced autonomy and artificial intelligence algorithms, and inform follow-on production and fielding decisions. RCV development will include a RCV Light (L) Middle-Tier Acquisition (MTA) Rapid Prototyping program as well as a Software Acquisition Pathway (SWP) program.

To solicit early Soldier feedback, the RCV(L) MTA Rapid Prototyping program will be accomplished through two complimentary lines of effort (LOE) - Surrogate Prototypes (SP) and Full System Prototypes (FSP).

The RCV(L) Surrogate Prototypes (SP) LOE utilizes updated RCV experimental prototypes and new build SPs in an iterative design-upgrade-test approach that includes integration of a Minimum Viable Capability Release (MVCR) and follow-on Capability Releases (CR) from the RCV Software Acquisition Pathway (SWP). The SP LOE includes three design-upgrade-test cycles that include FORSCOM operational pilots to collect Soldier feedback and demonstrate improved capabilities related to autonomous software, system safety, and cyber and spectrum resiliency. Each design-upgrade-test cycle will culminate in a Knowledge Point (KP) to review program process and determine SP capabilities ready for incorporation into the FSP LOE. The SP LOE will also serve to validate user requirements and assist in finalization of the RCV(L) Capabilities Development Document (CDD).

The RCV(L) Full System Prototypes (FSP) LOE will leverage mature capabilities from previous RCV experimentation and SP development efforts and integrate additional embedded software, perception sensors, user control interfaces, and communication links that will permit autonomous movement, tele-op movement, and increased battlefield situational awareness. The FSP acquisition strategy includes a full and open competition that will select up to five vendors to deliver bid samples to inform down select to a single vendor for prototype build. Developmental testing of prototypes will include safety, Reliability, Availability and Maintainability (RAM), lethality, survivability, and Electromagnetic Environmental Effects (E3) testing. Additionally, Operational Testing (OT) in the form of Limited User Tests (LUT) will be executed to evaluate system suitability and effectiveness.

The Robotic Combat Vehicle (RCV) Software Acquisition Pathway (SWP) focuses on embedded software development and sustainment activities including RCV autonomy software, control station software, and payload control software. A system integration laboratory (SIL) will be used in conjunction with RCV systems to verify and validate software capabilities in both virtual and live test environments. The RCV SWP will provide software capabilities to the Surrogate Prototypes (SP) and Full System Prototype (FSP) LOEs for integration. The RCV SWP will incorporate Soldier and integrator feedback into product roadmaps to guide the development and maturation of critical software capabilities.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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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 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>
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This program directly aligns with the Next Generation Combat Vehicle (NGCV) Army Modernization Priority.

The total cost of the RCV(L) MTA Rapid Prototyping program is \$452.77 million (then-year dollars) RDT&E from FY 2022 to FY 2026. The RCV(L) MTA Rapid Prototyping program is fully funded across the Future Years Defense Program.

B. Program Change Summary (\$ in Millions)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	115.986	-	115.986
Total Adjustments	0.000	0.000	115.986	-	115.986
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	115.986	-	115.986

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>				Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CF5: <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>	-	-	-	115.986	-	115.986	145.128	145.188	145.228	146.641	0.000	698.171
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2023.

A. Mission Description and Budget Item Justification

The Robotic Combat Vehicle (RCV) development program will produce unmanned ground combat vehicle prototypes to aid Concepts of Operations (CONOPS) and Tactics, Techniques, and Procedures (TTP) development, integrate and secure advanced autonomy and artificial intelligence algorithms, and inform follow-on production and fielding decisions. RCV development will include a RCV Light (L) Middle-Tier Acquisition (MTA) Rapid Prototyping program as well as a Software Acquisition Pathway (SWP) program.

To solicit early Soldier feedback, the RCV(L) MTA Rapid Prototyping program will be accomplished through two complimentary lines of effort (LOE) - Surrogate Prototypes (SP) and Full System Prototypes (FSP).

The RCV(L) Surrogate Prototypes (SP) LOE utilizes updated RCV experimental prototypes and new build SPs in an iterative design-upgrade-test approach that includes integration of a Minimum Viable Capability Release (MVCR) and follow-on Capability Releases (CR) from the RCV Software Acquisition Pathway (SWP). The SP LOE includes three design-upgrade-test cycles that include FORSCOM operational pilots to collect Soldier feedback and demonstrate improved capabilities related to autonomous software, system safety, and cyber and spectrum resiliency. Each design-upgrade-test cycle will culminate in a Knowledge Point (KP) to review program process and determine SP capabilities ready for incorporation into the FSP LOE. The SP LOE will also serve to validate user requirements and assist in finalization of the RCV(L) Capabilities Development Document (CDD).

The RCV(L) Full System Prototypes (FSP) LOE will leverage mature capabilities from previous RCV experimentation and SP development efforts and integrate additional embedded software, perception sensors, user control interfaces, and communication links that will permit autonomous movement, tele-op movement, and increased battlefield situational awareness. The FSP acquisition strategy includes a full and open competition that will select up to five vendors to deliver bid samples to inform down select to a single vendor for prototype build. Developmental testing of prototypes will include safety, Reliability, Availability and Maintainability (RAM), lethality, survivability, and Electromagnetic Environmental Effects (E3) testing. Additionally, Operational Testing (OT) in the form of Limited User Tests (LUT) will be executed to evaluate system suitability and effectiveness.

The Robotic Combat Vehicle (RCV) Software Acquisition Pathway (SWP) focuses on embedded software development and sustainment activities including RCV autonomy software, control station software, and payload control software. A system integration laboratory (SIL) will be used in conjunction with RCV systems to verify and validate software capabilities in both virtual and live test environments. The RCV SWP will provide software capabilities to the Surrogate Prototypes (SP) and Full

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>
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System Prototype (FSP) LOEs for integration. The RCV SWP will incorporate Soldier and integrator feedback into product roadmaps to guide the development and maturation of critical software capabilities.

This program directly aligns with the Next Generation Combat Vehicle (NGCV) Army Modernization Priority.

The total cost of the RCV(L) MTA Rapid Prototyping program is \$452.77 million (then-year dollars) RDT&E from FY 2022 to FY 2026. The RCV(L) MTA Rapid Prototyping program is fully funded across the Future Years Defense Program.

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

	FY 2021	FY 2022	FY 2023
<p>Title: RCV (L) Surrogate Prototypes (SP) - Prototype Build</p> <p>Description: Build of Surrogate Prototype (SP) platforms, to include integrated camera and radar perception sensors and payloads such as the Common Remotely Operated Weapon Station-Javelin (CROWS-J) and Tethered Unmanned Aerial System (TeUAS). SPs will accept Software Acquisition Pathway (SWP) Capability Releases (CR) and be inducted into FORSCOM operational pilots and Government testing aimed at furthering Robotic Combat Vehicle (RCV) development, determining SP capabilities to transition to the Full System Prototype (FSP) line of effort (LOE), and assisting the development of the RCV(L) Capabilities Development Document (CDD).</p> <p>FY 2023 Plans: Contractor build of up to eight (8) Surrogate Prototype platforms, to include Tethered Unmanned Aerial System (TeUAS), Common Remote Operated Weapons Station-Javelin (CROWS-J), and safety and perception upgrades.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY 2023 is due to the effort continuing from PE 0604017A / Robotics Development, project CF4: Robotic Combat Vehicle (RCV).</p>	-	-	19.110
<p>Title: RCV (L) Surrogate Prototypes (SP) - Government Test & Evaluation (T&E)</p> <p>Description: Government Test and Evaluation (T&E) includes Surrogate Prototype (SP) safety testing, and execution of FORSCOM operational pilots to solicit Soldier feedback, inform new doctrine for manned/unmanned teaming based operations, validate user requirements, and aid in determination of SP capabilities ready for incorporation into the FSP LOE. Additionally, Government T&E includes Modeling and Simulation (M&S) efforts to enhance test design, predict results for comparison with field results, and provide simulation or stimulation of systems and organizations that cannot be fully tested.</p> <p>FY 2023 Plans: FY 2023 Government T&E executes an initial six-month FORSCOM operational pilot utilizing Surrogate Prototypes. Includes support from the Combat Capabilities Development Command - Armaments Center (CCDC-AC) and the Command, Control,</p>	-	-	20.548

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Communication, Computers, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) Center, safety testing and instrumentation at Army Test and Evaluation Command (ATEC) test sites, and procurement of test spares. FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY 2023 is due to the effort continuing from PE 0604017A / Robotics Development, project CF4: Robotic Combat Vehicle (RCV).				
Title: RCV (L) Full System Prototypes (FSP) - Product Development Description: Engineering design and development of Full System Prototypes (FSPs), to include integration of safety, cyber security, autonomy, and Aided Target Detection and Recognition (AiTDR) software updates from the Software Acquisition Pathway (SWP), incorporation of capabilities transitioned from the Surrogate Prototype (SP) Line of Effort (LOE), and integration of assured Position, Navigation, and Timing (PNT), Counter-Intelligence, Surveillance, and Reconnaissance (ISR) radio, and emergency radio capabilities. Additionally, FSP Product Development includes the integration of Government Furnished Equipment (GFE) and Government Furnished Software (GFS), architecture development to support integration of vehicle software payloads, early assessments to guide product development, and technical support to Government Test and Evaluation (T&E) activities. FY 2023 Plans: FY 2023 product development includes contractor development engineering for the Mounted Mission Command-Transport (MMC-T). FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY 2023 is due to the effort continuing from PE 0604017A / Robotics Development, project CF4: Robotic Combat Vehicle (RCV).		-	-	0.150
Title: RCV (L) Full System Prototypes (FSP) - Bid Samples Description: A full and open competition will select up to five vendors, delivering two bid samples each, which will be used to inform down select to a single vendor for Full System Prototype (FSP) builds. FY 2023 Plans: FY 2023 activities include the contract awards to up to five (5) vendors to build FSP bid samples. FSP bid samples will be utilized to inform down select to a single vendor for FSP builds. FY 2022 to FY 2023 Increase/Decrease Statement:		-	-	11.821

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Increase in FY 2023 is due to the effort transitioning from PE 0604017A / Robotics Development, project CF4: Robotic Combat Vehicle (RCV).				
<p>Title: RCV (L) Full System Prototypes (FSP) - Government Test & Evaluation (T&E)</p> <p>Description: Full System Prototype (FSP) Government Test and Evaluation (T&E) includes all test activities performed at Army Test and Evaluation Center (ATEC) test sites to evaluate FSP system safety, performance, effectiveness, and suitability. Initial T&E will be executed on vendor bid samples, while further T&E, to include safety, Reliability, Availability and Maintainability (RAM), lethality, survivability, cybersecurity, and Electromagnetic Environmental Effects (E3) testing, will be conducted on FSPs. Additionally, Operational Testing (OT) in the form of Limited User Tests (LUT) will be completed to evaluate system suitability and effectiveness.</p> <p>FY 2023 Plans: In FY 2023, T&E of bid samples from up to five (5) vendors will be executed to inform down select to a single vendor for FSP builds. The scope of bid sample T&E includes safety testing, automotive performance testing, lethality testing, vibration testing, and a soldier evaluation.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY 2023 is due to the FSP bid sample testing initiation in FY 2023.</p>		-	-	2.376
<p>Title: RCV (L) Full System Prototypes (FSP) - Source Selection Evaluation Board (SSEB)</p> <p>Description: Engineering, logistics, product assurance and test, financial management, acquisition, legal, and operations support Source Selection Evaluation Board (SSEB) activities to both select up to five (5) vendors for bid sample build, and down select to a single vendor for FSP builds. SSEB expenditures include salaries, training, travel, supplies, facilities, and equipment.</p> <p>FY 2023 Plans: In FY 2023, a Source Selection Evaluation Board (SSEB) will be convened to both select up to five (5) vendors for bid sample build, and down select to a single vendor for FSP builds. SSEB membership will include Government experts in engineering, logistics, product assurance and test, financial management, acquisition, contracting, operations, and law. SSEB expenses include salaries, training, travel, supplies, facilities, and equipment.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY 2023 is due to SSEB initiation in FY 2023.</p>		-	-	1.866
Title: Software Acquisition Pathway (SWP) - Software Engineering Development		-	-	38.861

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Description: Software Acquisition Pathway (SWP) Software Engineering Development focuses on embedded software development and sustainment activities including Robotic Combat Vehicle (RCV) autonomy software, control station software, payload control software, and cybersecurity hardening. SWP Software Engineering Development will deliver annual software capability releases (CR) to both the Surrogate Prototype (SP) and Full System Prototype (FSP) lines of effort. Developed software will also be delivered to the SWP systems integration laboratory (SIL) for live and virtual software testing.</p> <p>FY 2023 Plans: FY 2023 activities include Government and contractor development of autonomy software, user interfaces, crew augmentation, software fixes based on Soldier feedback, Aided Threat Detection and Recognition (AiTDR), and refactoring and rearchitecting of prototype software to support safety, cybersecurity, and material release requirements. SWP Product Development will focus on providing a Minimally Viable Capability Release (MVCR) to the RCV (L) Middle Tier of Acquisition (MTA) Rapid Prototyping effort. Initial release of the MVCR is planned for FY 2024.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY 2023 is due to the effort continuing from PE 0604017A / Robotics Development, project CF4: Robotic Combat Vehicle (RCV).</p>			
<p>Title: Software Acquisition Pathway (SWP) - Systems Integration Lab</p> <p>Description: The System Integration Lab (SIL) provides live and virtual environments for the testing of Software Pathway (SWP) software releases. The SIL will use identical hardware implemented on the Surrogate Prototypes (SP) and Full System Prototypes (FSP). The SIL also allows for the capability to perform software and cybersecurity testing to supplement Government Test and Evaluation (T&E) efforts.</p> <p>FY 2023 Plans: FY 2023 activities include the construction and operation of the System Integration Lab (SIL), associated SIL software licenses, and testing of system software. The SIL can accommodate RCV(L) assets for in-vehicle testing of system software. The SIL will perform bench testing of the Minimally Viable Capability Release (MVCR), embedded software, autonomy software, control station software, and payload control software. Additionally, the SIL will also perform cyber security testing on all developed software.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: In FY 2023 this is a New Start</p>	-	-	9.957
<p>Title: RCV Development - Government Program Management</p> <p>Description: Government project management to RCV development programs. Includes salaries, travel, training, supplies, facilities, and equipment.</p>	-	-	11.297

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p><i>FY 2023 Plans:</i> Activities include Government engineering, financial management, acquisition planning, risk assessment and mitigation, contract preparation, and operations support necessary for the RCV development effort, to include management of build-test and FORSCOM operational pilots for the Surrogate Prototype (SP) Line Of Effort (LOE), oversight of Full System Prototype (FSP) bid sample testing, and oversight of Software Acquisition Pathway (SWP) activities. Includes salaries, training, travel, supplies, facilities, and equipment.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> In FY23 this is a New Start</p>			
Accomplishments/Planned Programs Subtotals	-	-	115.986

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0604017A: <i>Robotics Development</i>	92.401	80.525	26.594	-	26.594	3.088	3.093	3.094	3.124	0.000	211.919

Remarks
RCV(L) development and Software Acquisition Pathway (SWP) efforts are continuations of efforts from program element 0604017A/Robotics Development, Project CF4: Robotic Combat Vehicle (RCV). FY 2024-2027 funding in program element 0604017A/Robotics Development is not associated with the RCV program.

D. Acquisition Strategy
RCV development includes an RCV(L) Middle-Tier Acquisition (MTA) Rapid Prototyping program as well as a Software Acquisition Pathway (SWP) program.

RCV(L) Acquisition Strategy:
On 10 February 2022, the Army Acquisition Executive (AAE) approved the execution of RCV(L) Rapid Prototyping program under authorities granted by under authorities granted under Section 804 of the 2016 NDAA (PL 114-92). The RCV(L) MTA Rapid Prototyping program will be accomplished in two complementary lines of effort (LOE), Surrogate Prototypes (SP) and Full System Prototypes (FSP).

The SP LOE will utilize an existing Other Transaction Authority (OTA) contact with QinetiQ North America to both update existing RCV experimental prototypes to Surrogate Prototype configuration as well as procure new build Surrogate Prototypes. The Surrogate Prototypes will support three design-upgrade-test cycles that include FORSCOM operational pilots to collect Soldier feedback and demonstrate improved capabilities related to autonomous software, system safety, and cyber and spectrum resiliency. Each design-upgrade-test cycle will culminate in a Knowledge Point (KP) to review program process and determine SP capabilities ready for incorporation into the FSP LOE.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>

The FSP acquisition strategy includes a full and open competition that will select up to five vendors, delivering two bid samples each to inform down select to a single vendor for prototype build.

Developmental testing of FSPs will include safety, Reliability, Availability and Maintainability (RAM), lethality, survivability, and Electromagnetic Environmental Effects (E3) testing. Additionally, Operational Testing (OT) in the form of Limited User Tests (LUT) will be executed to evaluate system suitability and effectiveness.

Upon successful completion of the RCV(L) Rapid Prototyping program, an MTA Outcome Determination (OD) will determine if the program will transition to a MTA Rapid Fielding effort aimed at fielding RCV(L) FSPs to selected unit(s) for Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policies (DOTMLPF-P) analysis and integration of Manned-Unmanned Teaming (MUM-T) operations.

Software Acquisition Pathway (SWP) Acquisition Strategy:
 The SWP Acquisition Decision Memorandum (ADM), signed 3 August 2021, directs the use of the draft Cross Functional Team (CFT) Next Generation Combat Vehicle (NGCV) Robotic and Optionally Manned Autonomous (ROMA) Capabilities Needs Statement (CNS) as the base user capabilities document from which to derive capabilities for the RCV SWP. The RCV SWP will provide government furnished software to RCV SP and FSP LOEs. The RCV SWP will implement a Government - Contractor hybrid development approach to mature, integrate, and secure software capabilities from the science and technology base. The RCV SWP will incorporate software contracting best practices to support the transition of software capabilities into secure code base required for the resilient operation of RCVs in contested environments.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RCV Program Management	Various	Various : Warren, MI; Various	-	-		-		11.297	Nov 2022	-		11.297	0.000	11.297	-
Subtotal			-	-		-		11.297		-		11.297	0.000	11.297	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RCV (L) Surrogate Prototypes (SP) - Prototype Build	SS/TIA	QinetiQ North America : Waltham, MA	-	-		-		19.110	Dec 2022	-		19.110	Continuing	Continuing	-
RCV (L) Full System Prototypes (FSP) - Product Development	MIPR	GVSC; Various : Warren, MI; Various	-	-		-		0.150	Dec 2022	-		0.150	Continuing	Continuing	-
RCV (L) Full System Prototypes (FSP) - Bid Samples	C/TBD	TBD : TBD	-	-		-		10.821	Aug 2023	-		10.821	Continuing	Continuing	-
Software Acquisition Pathway (SWP) - Software Engineering Development	Various	GVSC; Various : Warren, MI; Various	-	-		-		38.861	Oct 2022	-		38.861	Continuing	Continuing	-
Subtotal			-	-		-		68.942		-		68.942	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RCV (L) Full System Prototypes (FSP) - Source Selection Evaluation Board (SSEB)	MIPR	Various : Warren, MI	-	-		-		3.366	Aug 2023	-		3.366	Continuing	Continuing	-
Subtotal			-	-		-		3.366		-		3.366	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604641A / Tactical Unmanned Ground Vehicle (TUGV)				CF5 / Robotic Combat Vehicle (BA5) NGCV-CFT							
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
RCV (L) Surrogate Prototypes (SP) - Government Test & Evaluation (T&E)	MIPR	Various : Various	-	-		-		20.548	Jun 2022	-		20.548	Continuing	Continuing	-
RCV (L) Full System Prototypes (FSP) - Government Test & Evaluation (T&E)	MIPR	ATEC : Aberdeen, MD	-	-		-		3.876	Aug 2023	-		3.876	Continuing	Continuing	-
Software Acquisition Pathway (SWP) - Systems Integration Lab	Various	GVSC;QinetiQ : Warren, MI; New Hudson, MI	-	-		-		7.957	Dec 2022	-		7.957	Continuing	Continuing	-
Subtotal			-	-		-		32.381		-		32.381	Continuing	Continuing	N/A
Project Cost Totals			-	-		-		115.986		-		115.986	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DEVCOM Experimental Prototype Build	[Redacted]				DEVCOM Experimental Prototype Build																							
DEVCOM Experimental Prototype Testing					DEVCOM Experimental Prototype Testing																							
Soldier Operational Experiment (SOE) II					SOE II																							
Surrogate Prototype (SP) OTA Contract Development/Modification	SP OTA Contract Development/Modification																											
Surrogate Prototype (SP) Contract Build #1	1				SP Contract Build #1																							
Surrogate Prototype (SP) Contract Build #2									3				SP Contract Build #2															
Surrogate Prototype (SP) Design/Build					SP Design/Build																							
Middle-Tier Acquisition Rapid Prototyping (MTA-RP) Start					2				MTA-RP Start																			
Surrogate Prototype (SP) Testing									SP Testing																			
Surrogate Prototype (SP) Design/Upgrade/Test													SP Design/Upgrade/Test															
Surrogate Prototype (SP) FORSCOM Pilots													SP FORSCOM Pilots															
Robotic Combat Vehicle Light (RCV(L)) Knowledge Point (KP) #1									5				RCV(L) KP #1															
Robotic Combat Vehicle Light (RCV(L)) Knowledge Point (KP) #2													8				RCV(L) KP #2											


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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Robotic Combat Vehicle Light (RCV(L)) Knowledge Point (KP) #3																												
Full System Prototype (FSP) Solicitation Development									[Bar]																			
Full System Prototype (FSP) Request for Proposal (RFP) Release											4																	
Full System Prototype (FSP) Bid Sample Contract Award (CA)											6																	
Full System Prototype (FSP) Source Selection (SSEB)/Bid Sample Testing									[Bar]																			
Full System Prototype (FSP) Contract Award															9													
Full System Prototype (FSP) Design/Build													[Bar]															
Full System Prototype (FSP) Test																					[Bar]							
RCV (L) Outcome Determination (OD)																												14
Software Acquisition Pathway (SWP) Software (SW) Design/Build/Test									[Bar]																			
Software Acquisition Pathway (SWP) Minimum Viability Capability Release (MVCR)															7													
Software Acquisition Pathway (SWP) Capability Release (CR) #2																				10								
Software Acquisition Pathway (SWP) Capability Release (CR) #3																												12

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>		Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Software Acquisition Pathway (SWP) Capability Release (CR) #4																									 SWP CR #4			

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DEVCOM Experimental Prototype Build	1	2021	2	2021
DEVCOM Experimental Prototype Testing	3	2021	3	2022
Soldier Operational Experiment (SOE) II	3	2022	4	2022
Surrogate Prototype (SP) OTA Contract Development/Modification	2	2021	4	2021
Surrogate Prototype (SP) Contract Build #1	4	2021	4	2021
Surrogate Prototype (SP) Contract Build #2	1	2023	1	2023
Surrogate Prototype (SP) Design/Build	4	2021	4	2023
Middle-Tier Acquisition Rapid Prototyping (MTA-RP) Start	2	2022	2	2022
Surrogate Prototype (SP) Testing	3	2022	4	2022
Surrogate Prototype (SP) Design/Upgrade/Test	1	2023	3	2025
Surrogate Prototype (SP) FORSCOM Pilots	1	2023	3	2025
Robotic Combat Vehicle Light (RCV(L)) Knowledge Point (KP) #1	4	2023	4	2023
Robotic Combat Vehicle Light (RCV(L)) Knowledge Point (KP) #2	4	2024	4	2024
Robotic Combat Vehicle Light (RCV(L)) Knowledge Point (KP) #3	4	2025	4	2025
Full System Prototype (FSP) Solicitation Development	1	2023	2	2023
Full System Prototype (FSP) Request for Proposal (RFP) Release	3	2023	3	2023
Full System Prototype (FSP) Bid Sample Contract Award (CA)	4	2023	4	2023
Full System Prototype (FSP) Source Selection (SSEB)/Bid Sample Testing	4	2023	3	2024
Full System Prototype (FSP) Contract Award	4	2024	4	2024
Full System Prototype (FSP) Design/Build	4	2024	1	2026
Full System Prototype (FSP) Test	1	2026	4	2026
RCV (L) Outcome Determination (OD)	2	2027	2	2027

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / <i>Tactical Unmanned Ground Vehicle (TUGV)</i>	Project (Number/Name) CF5 / <i>Robotic Combat Vehicle (BA5) NGCV-CFT</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Software Acquisition Pathway (SWP) Software (SW) Design/Build/Test	4	2022	4	2027
Software Acquisition Pathway (SWP) Minimum Viability Capability Release (MVCR)	1	2024	1	2024
Software Acquisition Pathway (SWP) Capability Release (CR) #2	1	2025	1	2025
Software Acquisition Pathway (SWP) Capability Release (CR) #3	1	2026	1	2026
Software Acquisition Pathway (SWP) Capability Release (CR) #4	1	2027	1	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	4.371	2.055	-	-	-	0.000	0.000	0.000	0.000	0.000	6.426
E40: <i>LTV Prototype</i>	-	4.371	2.055	-	-	-	-	-	-	-	0.000	6.426

A. Mission Description and Budget Item Justification

The Army Ground Mobility Vehicles (GMV) through enhanced tactical mobility will motorize the Infantry Brigade Combat Teams (IBCT) via 9-Soldier infantry squads with their associated equipment to move quickly around the battlefield. This capability is required across the range of military operations facing Infantry Brigade Combat Team (IBCT) units conducting crises response, initial entry, and selected decisive action missions. GMV deploys worldwide by sea, air, and land modes to support strategic deployment and operational maneuver in accordance with Army and Joint doctrine. This capability provides flexibility for entry operations (permissive and non-permissive) to counter threat anti-access strategies by using multiple austere entry points to bring in combined arms configured units.

The electric Light Reconnaissance Vehicle (eLRV) platform through electrification will provide commanders a substantial competitive advantage in the Multi-Domain Operational (MDO) Environment against threat capabilities through reduction in acoustic and thermal signature, silent mobility, increased dash speed, extended range, increased reliability and reduction in CL III requirements. These attributes will enhance lethality and survivability of the mounted reconnaissance squad, platoon and troop.

Funding supports modernization of the current Tactical Wheeled Vehicle fleets by investigating technology insertions including, but not limited to: predictive logistics, vetronics, Victory Architecture, autonomous operations and other emerging technologies. Funding also supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement operating concepts.

PE 0604642A has no FY 2023 funding request.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	4.193	2.055	0.000	-	0.000
Current President's Budget	4.371	2.055	0.000	-	0.000
Total Adjustments	0.178	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.178	-			
• SBIR/STTR Transfer	-	-			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>
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Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: E40: *LTV Prototype*

Congressional Add: *Infantry Squad Vehicle - Army requested transfer from OPA line 5*

Congressional Add Subtotals for Project: E40

Congressional Add Totals for all Projects

	FY 2021	FY 2022
	2.289	-
	2.289	-
	2.289	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
E40: <i>LTV Prototype</i>	-	4.371	2.055	-	-	-	-	-	-	-	0.000	6.426
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This project includes GMV (AGMV1.1), Infantry Squad Vehicle (ISV), SOCOM GMV1.1), & electric Light Reconnaissance Vehicle (eLRV) .

A. Mission Description and Budget Item Justification

The Army Ground Mobility Vehicles (GMV) through enhanced tactical mobility will motorize the Infantry Brigade Combat Teams (IBCT) via 9-Soldier infantry squads with their associated equipment to move quickly around the battlefield. This capability is required across the range of military operations facing Infantry Brigade Combat Team (IBCT) units conducting crises response, initial entry, and selected decisive action missions. GMV deploys worldwide by sea, air, and land modes to support strategic deployment and operational maneuver in accordance with Army and Joint doctrine. This capability provides flexibility for entry operations (permissive and non-permissive) to counter threat anti-access strategies by using multiple austere entry points to bring in combined arms configured units.

The electric Light Reconnaissance Vehicle (eLRV) platform through electrification will provide commanders a substantial competitive advantage in the Multi-Domain Operational (MDO) Environment against threat capabilities through reduction in acoustic and thermal signature, silent mobility, increased dash speed, extended range, increased reliability and reduction in CL III requirements. These attributes will enhance lethality and survivability of the mounted reconnaissance squad, platoon and troop.

Funding supports modernization of the current Tactical Wheeled Vehicle fleets by investigating technology insertions including, but not limited to: predictive logistics, vetronics, Victory Architecture, autonomous operations and other emerging technologies. Funding also supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement operating concepts.

PE 0604642A has no FY 2023 funding request.

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

	FY 2021	FY 2022	FY 2023
Title: GMV Contract Test Support	0.553	0.280	-
Description: Funding is provided for Ground Mobility Vehicles (GMV) contractor test support.			
FY 2022 Plans: Completion of ISV GMV contractor test support.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
No funding in FY2023.				
<p>Title: GMV Test and Evaluation</p> <p>Description: Funding is provided for Ground Mobility Vehicles (GMV) testing events in the support of Full Rate Production (FRP) decision.</p> <p>FY 2022 Plans: Completion of ISV GMV testing which include Low Velocity Air Drop (LVAD), maintenance evaluation, and operational testing.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: No funding in FY2023.</p>		1.529	1.002	-
<p>Title: eLRV Prototypes</p> <p>Description: Funding is provided for the support of electric Light Reconnaissance Vehicle (eLRV) Prototypes.</p> <p>FY 2022 Plans: Funding is provided for the support of electric Light Reconnaissance Vehicle (eLRV) Prototypes.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: No funding in FY2023.</p>		-	0.545	-
<p>Title: eLRV Test and Evaluation</p> <p>Description: Funding is provided for electric Light Reconnaissance Vehicle (eLRV) testing events.</p> <p>FY 2022 Plans: Funding is provided for electric Light Reconnaissance Vehicle (eLRV) safety testing, developmental testing, and Soldier touch point events.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: No funding in FY2023.</p>		-	0.153	-
<p>Title: FY 2022 SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC ?638</p> <p>FY 2022 Plans: Funding transferred in accordance with Title 15 USC ?638</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		-	0.075	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
FY 2022 SBIR/STTR Transfer			
Accomplishments/Planned Programs Subtotals	2.082	2.055	-

	FY 2021	FY 2022
Congressional Add: Infantry Squad Vehicle - Army requested transfer from OP.A line 5	2.289	-
FY 2021 Accomplishments: Funding was a recolor of FY21 GMV OPA D15501 for ISV GMV Operational Testing.		
Congressional Adds Subtotals	2.289	-

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• D15505: <i>Ground Mobility Vehicles (Light) GMV (L)</i>	29.247	44.807	34.316	-	34.316	36.967	-	-	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

Ground Mobility Vehicles (GMV) Phase I: Per AROC on 10 August 2018 following the Army's funding reprioritization, the Army's direction was to procure 127 vehicles for USASOC, and 170 for Army GMV 1.1 for 3 Airborne IBCTs.

GMV Phase II: A firm fixed priced production contract was awarded to General Motors (GMV) Defense on 26 June 2020 following successful prototype determination and findings from the ISV OTA. Per AROC on 08 February 2019, the Vice Chief Secretary of Army (VCSA) approved the procurement objective of 11 IBCT sets at 59 vehicles per IBCT (649 vehicles) to be completed by FY 2024. During a follow on AROC on 22 February 2019, the VCSA approved the ISV annex to the approved SOCOM GMV1.1 Capabilities Production Document which approved the total requirement for the ISV program.

electric Light Reconnaissance Vehicle (eLRV) :

PL GMV conducted market research and Industry coordination to assess industry capabilities and verify maturity of integration in support of an Army Requirements Oversight Council in April 2021.eLRV Abbreviated-Capability Development Document (A-CDD) was validated July 2021. PL GMV will utilize a two-phased acquisition strategy for eLRV.

Proposal Development and Phase I Prototyping: Initial development will include industry engagements with draft reviews of proposal language and feedback from stakeholders. Prototyping will be broken down into two sub phases. Sub phase 1a Initial Prototypes: award will use novel acquisition approaches to up to four vendors

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>
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to procure two prototypes each for limited safety/performance testing and a Soldier Touch Point (STP) focusing on electric drive, off road mobility and range/duration. Sub phase 1b Operational Prototypes: down select to up to four vendors to procure three prototypes each for additional safety/performance testing and STP focusing on operational effectiveness of militarized prototypes.

Phase II Production : Utilize Soldier Feedback and test data obtained in Phase I presented in a Knowledge Point to inform updates to Capability Development Document (CDD) and proposed path forward. Courses of Action (COA) for path forward: COA1 approved CDD entry at Milestone C, COA2 execute MTA-RF, COA3 approved CDD entry at Milestone B, and COA 4 Off Ramp.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FY 2022 SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.075		-		-		-	0.000	0.075	-
Subtotal			-	-		0.075		-		-		-	0.000	0.075	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GMV Contractor Test Support	Various	General Motor Defense (GM-D) : Various	0.456	0.553	Feb 2021	0.280	Aug 2022	-		-		-	0.000	1.289	-
GMV Test Assets	Various	General Motor Defense (GM-D) : Various	0.366	-		-		-		-		-	0.000	0.366	-
GMV Prototypes	Various	Various : Various	3.143	-		-		-		-		-	0.000	3.143	-
eLRV Prototypes	TBD	TBD : TBD	-	-		0.545	May 2022	-		-		-	0.000	0.545	-
Subtotal			3.965	0.553		0.825		-		-		-	0.000	5.343	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GMV Program Management Support	Various	PM Office : Selfridge ANG	0.337	-		-		-		-		-	0.000	0.337	-
Subtotal			0.337	-		-		-		-		-	0.000	0.337	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GMV ISV Production Qualification Testing (PQT)																												
GMV ISV Operational Testing																												
GMV ISV First Unit Equipped (FUE)																												
GMV ISV Phase II Operational Testing																												
GMV ISV Full Rate Production (FRP)																												
GMV ISV Maintenance Evaluation																												
eLRV Army Requirements Oversight Council (AROC)																												
eLRV Industry Day #1																												
eLRV Request for Project Proposal (RPP) Development																												
eLRV Industry Day #2																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GMV ISV Production Qualification Testing (PQT)	1	2021	3	2022
GMV ISV Operational Testing	4	2021	4	2021
GMV ISV First Unit Equipped (FUE)	3	2022	3	2022
GMV ISV Phase II Operational Testing	4	2022	4	2022
GMV ISV Full Rate Production (FRP)	1	2023	1	2023
GMV ISV Maintenance Evaluation	4	2023	4	2023
eLRV Army Requirements Oversight Council (AROC)	3	2021	3	2021
eLRV Industry Day #1	3	2021	3	2021
eLRV Request for Project Proposal (RPP) Development	1	2022	1	2024
eLRV Industry Day #2	3	2023	3	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	123.992	122.778	71.287	-	71.287	85.591	57.214	0.000	0.000	0.000	460.862
EV8: Mobile Protected Firepower	-	123.992	122.778	71.287	-	71.287	85.591	57.214	-	-	0.000	460.862

A. Mission Description and Budget Item Justification

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

The Armored Systems Modernization - Engineering Development program element is directly aligned with the Next Generation Combat Vehicle (NGCV) Army Modernization Priority.

B. Program Change Summary (\$ in Millions)

	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	123.992	137.256	0.000	-	0.000
Current President's Budget	123.992	122.778	71.287	-	71.287
Total Adjustments	0.000	-14.478	71.287	-	71.287
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-14.478			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	71.287	-	71.287

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604645A / <i>Armored Systems Modernization (ASM) - Eng Dev</i>				Project (Number/Name) EV8 / <i>Mobile Protected Firepower</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
EV8: <i>Mobile Protected Firepower</i>	-	123.992	122.778	71.287	-	71.287	85.591	57.214	-	-	0.000	460.862
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

This program is directly aligned with the Next Generation Combat Vehicle (NGCV) Army Modernization Priority.

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

	FY 2021	FY 2022	FY 2023
<p>Title: Product Development</p> <p>Description: MPF Middle Tier Acquisition (MTA) Rapid Prototyping, to include integration engineering, prototype builds, technical support to government test, and logistics products development efforts contracted to BAE Systems and General Dynamics Land Systems (GDLS).</p> <p>FY 2022 Plans: Completion of MTA Rapid Prototyping efforts, to include TM and TSP validation and updates, spare parts provisioning, RPSTL updates, and execution of the MPF Supportability Assessment. FY 2022 product development actions will also include vehicle design updates and logistics product revisions to address failures that emerge from PPT.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in FY 2023 due to completion of MTA Rapid Prototyping efforts in FY 2022.</p>	84.670	20.320	-
<p>Title: Product Development - LRIP Phase</p> <p>Description: MPF Low Rate Initial Production (LRIP) phase development efforts, to include logistics product development, Technical Manual (TM) and Training Support Package (TSP) updates, LRIP test planning, purchase of the System Support Package (SSP) for LRIP phase testing, and contractor technical support to test.</p> <p>FY 2022 Plans: FY 2022 activities include the continued development of logistics products such as the Operator, Field Maintenance, and Battle Damage and Repair (BDAR) Manuals, continued supportability analysis such as Level of Repair Analysis (LORA), Reliability and Maintainability (R&M) Analysis, development of National/Depot Maintenance Work Requirements (NMWR/DMWR), and continued</p>	-	22.176	40.722

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / <i>Armored Systems Modernization (ASM) - Eng Dev</i>	Project (Number/Name) EV8 / <i>Mobile Protected Firepower</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>development of products to support operator, field level maintenance, and instructor training. FY 2022 will also fund LRIP test planning, long lead spare parts procurement to enable start of product quality testing (PQT) in FY 2024, and concept development to inform the integration of future ammunition.</p> <p>FY 2023 Plans: FY 2023 efforts will continue logistics products development, to include Operator, Field Maintenance, and BDAR Manuals, initiation of Logistics Demonstration (Log Demo) planning, additive manufacturing concept exploration, predictive logistics integration, development of an interactive technical manual capability, continued LORA, Source of Repair (SORA), and R&M analyses, spare parts provisioning, development of NMWRs/DMWRs, and continued creation of training products for operators, field level maintainers, and instructors. FY 2023 activities also include contractor technical support to Government Corrosion testing, System Level (SL) Live Fire testing, and Automatic Fire Extinguisher System (AFES) testing, in addition to the procurement of long lead-time spare parts (engines, transmissions, gunner's sights) to support FY 2024 Production Qualification Testing (PQT) and the FY 2024 Initial Operational Test & Evaluation (IOT&E).</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY 2023 due to a longer LRIP product development contract period of performance in FY 2023 (12 months) versus FY 2022 (6 months) and increased logistics development efforts.</p>				
<p>Title: Prototype Upgrade to LRIP Configuration</p> <p>Description: After a successful Milestone C, eight (8) prototype vehicles will be updated to the initial LRIP configuration to support LRIP phase survivability testing, logistics products development, and implementation of design changes driven by Production Qualification Testing (PQT) and Initial Operational Test and Evaluation (IOT&E). Upgrading MPF prototypes to LRIP configuration will result in substantial cost avoidance compared with producing additional LRIP vehicles to support test requirements.</p> <p>FY 2022 Plans: Eight (8) vehicles will be retrofitted to LRIP configuration to support performance and survivability testing.</p> <p>FY 2023 Plans: Material procurement and assembly labor to continue updating eight (8) MPF Prototypes to the initial LRIP configuration for use in survivability testing, logistics products development, and to aid implementation of design changes driven by Production Qualification Testing (PQT) and Initial Operational Test and Evaluation (IOT&E).</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in FY 2023 due to declining level of material procurement for prototype updates to LRIP configuration.</p>		-	13.982	9.520
<p>Title: LRIP Vehicles for Full-Up System-Level (FUSL) Live Fire</p>		-	35.708	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / <i>Armored Systems Modernization (ASM) - Eng Dev</i>	Project (Number/Name) EV8 / <i>Mobile Protected Firepower</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Description: New production of MPF LRIP vehicles for use in FUSL Live Fire Testing (LFT).</p> <p>FY 2022 Plans: Three (3) vehicles produced in the LRIP configuration will be used in MPF destructive FUSL live fire testing.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in FY 2023 due to completion of resourcing LRIP vehicles for FUSL LFT in FY 2022.</p>			
<p>Title: Government Test and Evaluation (Performance Testing)</p> <p>Description: During the Rapid Prototyping phase, the Government executed performance testing on 16 prototypes (eight per contractor) and four BH&T assets (two per contractor). Performance testing during the Rapid Prototyping phase included Ballistic Hull & Turret (BH&T) survivability testing and Pre-Production Testing (PPT), which consisted of vehicle-level lethality, Reliability, Availability, and Maintainability (RAM), and electromagnetic compatibility and interference testing. PPT also contained an initial cybersecurity evaluation.</p> <p>BH&T testing provided Force Protection and vehicle-level survivability data while PPT provided vehicle-level automotive, lethality, and RAM performance data. The results of Rapid Prototyping performance testing will inform the LRIP down select and the 3Q FY 2022 Milestone C decision.</p> <p>During the LRIP phase, the Government will execute performance testing on 12 vehicles. Performance testing during the LRIP phase will include survivability testing and Production Quality Testing (PQT), which consists of vehicle-level lethality, RAM, electromagnetic compatibility and interference testing, and cybersecurity testing.</p> <p>FY 2022 Plans: Activities include completion of MTA Rapid Prototyping phase testing, to include PPT and draft test reports to inform the down-select Source Selection Evaluation Board (SSEB) and the Milestone C decision. Additionally, finite element analysis, failure modes effects analysis, ballistic modeling and simulation, crew casualty and prototype damage assessments, and controlled damage experiments will be completed to inform detail planning for LRIP phase performance and survivability testing.</p> <p>FY 2023 Plans: In FY 2023, Prototypes, as well as Prototypes updated to LRIP configuration, will be utilized to conduct system performance testing, to include System Level (SL) Live Fire Testing (LFT), Automatic Fire Extinguisher System (AFES) testing, Controlled</p>	13.549	4.304	9.432

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Damage Experiments (CDE), Special Armor testing, and Corrosion testing. Additionally, Modeling and System (M&S) will be conducted to demonstrate the ballistic resiliency and crew survivability of a production-representative vehicle. FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY 2023 due to initiation of SL Live Fire Testing and the execution of non-destructive survivability testing.				
Title: Government Test and Evaluation (Operational Testing) Description: During the Rapid Prototyping phase, the Government executed operational testing on eight prototypes (four per contractor) through a Limited User Test (LUT). The LUT provided early data regarding the operational effectiveness and suitability of the MPF. During LRIP phase, the Government will execute a thirteen (13) vehicle Company-Level Initial Operational Test and Evaluation (IOT&E). The IOT&E is planned for FY 2024.		7.256	-	-
Title: Soldier Vehicle Assessment (SVA) Description: The SVA placed eight prototype vehicles (four per contractor) into the hands of soldiers to develop MPF Tactics, Techniques, and Procedures (TTPs), assess Doctrine, Organization, Training materiel Leadership and educational Personal Facilities and Policy (DOTmLPPF-P) domains, collect data to support preparations for the LUT, and inform future MPF Product Improvements. SVA force-on-force and maneuver exercises were conducted at Ft. Bragg, NC while SVA gunnery events were at Ft. Stewart, GA.		1.229	-	-
Title: Training Aids and Devices Development Description: Development of aids and devices to facilitate institutional training for MPF operators and maintainers. MPF training aids and devices will include Hands on Trainers (HOT), Diagnostic/Troubleshooting Trainers (DTT), Part Task Trainers (PTT), an Advanced Gunnery Training System (AGTS), and an MPF Combat Vehicle Tactical Engagement Simulation System (CVTESS). MPF aids and devices will be interoperable/compatible with the Army's current live Tactical Engagement Simulation (TES) systems; instrumentation systems; Common Training Instrumentation Architecture (CTIA); Live, Virtual Constructive-Integrated Architecture (LVC-IA) training enablers; and the future Synthetic Training Environment (STE). FY 2022 Plans: In FY 2022 MPF gunnery and maintenance training device development performance specifications will be completed, requests for proposal will be released, and contracts will be awarded. FY 2023 Plans:		0.072	2.259	5.720

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / <i>Armored Systems Modernization (ASM) - Eng Dev</i>	Project (Number/Name) EV8 / <i>Mobile Protected Firepower</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Continued development of MPF gunnery, maintenance, and collective training devices, to include build of prototype assets and start of training device testing. FY 2022 to FY 2023 Increase/Decrease Statement: Increase in FY 2023 due to additional developmental activity to assemble prototype gunnery, maintenance, and collective training devices.				
Title: Government Engineering and Project Management Description: Government program management and system engineering support, to include salaries, travel, training, supplies, facilities, equipment, and support contractors necessary to manage development efforts during the MPF MTA Rapid Prototyping and LRIP phases. FY 2022 Plans: Continue the engineering, logistics, product assurance and test, financial management, and operations support for the MPF MTA Rapid Prototyping and LRIP development activities from November 2021 through October 2022. Will include salaries, training, travel, supplies, facilities, and equipment to manage MPF test and evaluation, logistics products development, system vulnerability and environmental impact assessments, and future capability enhancement acquisition strategy development. FY 2023 Plans: Continued engineering, logistics, product assurance and test, financial management, and operations support for MPF LRIP development activities from November 2022 through October 2023. Includes salaries, training, travel, supplies, facilities, and equipment to manage MPF test and evaluation and logistics products development efforts. FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in FY 2023 due to reduced engineering and product assurance support after completion of MTA Rapid Prototyping phase in FY 2022.		13.797	13.673	5.893
Title: Government Support to Product Development Description: Government support to MPF MTA Rapid Prototyping efforts, to include Source Selection activities, and Large Caliber Weapon System development. FY 2022 Plans: Engineering, logistics, product assurance and test, financial management, acquisition, legal, and operations support for a November 2021 through June 2022 MPF Source Selection Evaluation Board (SSEB) to down-select to a single vendor for Low Rate Initial Production (LRIP). SSEB expenditures will include salaries, training, travel, supplies, facilities, and equipment. FY 2022 to FY 2023 Increase/Decrease Statement:		3.419	5.874	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / <i>Armored Systems Modernization (ASM) - Eng Dev</i>	Project (Number/Name) EV8 / <i>Mobile Protected Firepower</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Decrease in FY 2023 due to completion of SSEB in FY 2022.			
Title: SIBR/STTR Transfer	-	4.482	-
FY 2022 Plans: SIBR/STTR Transfer			
FY 2022 to FY 2023 Increase/Decrease Statement: SIBR/STTR Transfer			
Accomplishments/Planned Programs Subtotals	123.992	122.778	71.287

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• G80820: <i>Mobile Protected Firepower</i>	-	286.977	356.708	-	356.708	523.636	578.418	579.163	579.214	Continuing	Continuing

Remarks
Standard Serial Number (SSN) G80820 resources production of MPF. FY 2022 - FY 2024 resourcing supports MPF Low Rate Initial Production (LRIP). Resourcing in FY 2025 and beyond supports MPF Full Rate Production (FRP).

D. Acquisition Strategy
The MPF RFP was issued on 21 November 2017 as a full and open, best value competitive action. On 25 September 2018, the Army Acquisition Executive (AAE) approved the execution of MPF Rapid Prototyping activities under Section 804 of the 2016 National Defense Authorization Act (NDAA) (Public Law 114-92), Middle Tier Acquisition (Rapid Prototyping). The competitive selection process for MPF Rapid Prototyping contracts included the evaluation of written proposals and optional bid samples to provide additional substantiating data for Source Selection Evaluation. On 17 December 2018, two MPF Rapid Prototyping contracts were awarded, one to BAE Systems and the other to General Dynamics Land Systems (GDLS). A Source Selection Evaluation will be finalized to down-select to a single contractor for a Fixed Price Incentive (FPI) Low Rate Initial Production (LRIP) effort upon AAE Milestone C approval in 3rd Quarter, FY 2022. An MPF Full Rate Production (FRP) decision is targeted for 3rd Quarter, FY 2025.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering and Project Management	MIPR	Various : Warren, MI; Picatinny, NJ	38.151	13.797	Oct 2020	13.673	Nov 2021	5.893	Nov 2022	-		5.893	12.666	84.180	-
SIBR/STTR Transfer	Various	Various : Various	-	-		4.482		-		-		-	0.000	4.482	-
Subtotal			38.151	13.797		18.155		5.893		-		5.893	12.666	88.662	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - Middle Tier Acquisition (MTA) Rapid Prototyping Contracts	C/FFP	BAE Systems; General Dynamics Land Systems (GDLS) : Sterling Heights, MI; Sterling Heights, MI	610.150	84.670	Oct 2020	20.320	Oct 2021	-		-		-	0.000	715.140	722.538
Product Development - Government Furnished Material (GFM) Procurement	Various	Various : Various	2.130	-		-		-		-		-	0.000	2.130	-
Product Development - LRIP Phase - LRIP Log Development and Contractor Support to Test	C/FFP	TBD : TBD	-	-		22.176	Jun 2022	40.722	Dec 2022	-		40.722	103.052	165.950	183.224
Prototype Upgrade to LRIP Configuration	C/FFP	TBD : TBD	-	-		13.982	Jun 2022	9.520	Dec 2022	-		9.520	0.000	23.502	-
LRIP Vehicles for Full-Up System-Level (FUSL) Live Fire	C/FPIF	TBD : TBD	-	-		35.708	Jun 2022	-		-		-	0.000	35.708	-
Subtotal			612.280	84.670		92.186		50.242		-		50.242	103.052	942.430	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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
 Product Development - Middle Tier Acquisition (MTA) Rapid Prototyping Contracts Remark: MTA Rapid Prototyping contract costs are inclusive of both competitors during the Mobile Protected Firepower (MPF) MTA Rapid Prototyping Phase (1st Quarter FY 2019 to 3rd Quarter FY 2022). The MPF program will down-select to a single vendor for LRIP at Milestone C (3rd Quarter, FY 2022). Therefore, LRIP phase Product Development efforts reflect contract costs of a single vendor.

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Support to Product Development - Large Caliber Weapon System Development	PO	Armament Research, Development and Engineering Center (ARDEC); Watervliet Arsenal (WVA); Rock Island Arsenal (RIA) : Picatinny, NJ; Watervliet, NY; Rock Island, IL	10.524	3.419	Dec 2020	1.503	Nov 2021	-		-		-	0.000	15.446	-
Government Support to Product Development - Source Selection Evaluation Board (SSEB)	Various	Various : Various	5.002	-		4.371	Jan 2022	-		-		-	0.000	9.373	-
Training Aids and Devices Development	Various	Program Executive Office Simulation, Training and Instrumentation (PEO STRI) : Orlando, FL	0.152	0.072	Apr 2021	2.259	Mar 2022	5.720	Nov 2022	-		5.720	4.850	13.053	-
Subtotal			15.678	3.491		8.133		5.720		-		5.720	4.850	37.872	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower
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Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Test and Evaluation (Performance Test, Operational Test, Soldier Vehicle Assessment)	PO	Aberdeen Test Center (ATC); Yuma Test Center (YTC) : Aberdeen, MD; Yuma, AZ	17.774	22.034	Nov 2020	4.304	Nov 2021	9.432	Nov 2022	-		9.432	41.388	94.932	-
Subtotal			17.774	22.034		4.304		9.432		-		9.432	41.388	94.932	N/A
Project Cost Totals			683.883	123.992		122.778		71.287		-		71.287	161.956	1,163.896	N/A

Remarks
 Prior Years funding supported award of Rapid Prototyping contracts to design and build 24 total Mobile Protected Firepower (MPF) prototypes (12 per vendor) and four Ballistic Hull & Turrets (two per vendor) and initiation of Pre-production Prove-out Testing (PPT). FY 2021 funding supported the continuation of PPT, completion of Limited User Testing (LUT), and further development of MPF Logistics Products (Technical Manuals, Training Support Package, Repair Parts and Special Tools List). FY 2022 funding completed MPF Rapid Prototyping, executed the Low Rate Initial Production (LRIP) source selection, and awarded LRIP phase contracts to continue logistics products development and procure long lead spares for Performance Qualification Test (PQT) and Initial Operational Test & Evaluation (IOT&E). FY 2023 funding will continue MPF logistics products development, initiate PQT, perform Modeling and Simulation (M&S) to aid in demonstrating system ballistic resiliency and survivability, and initiate build of prototype MPF training devices.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestone C (MS C)					▲ 3 MS C																							
Full Rate Production (FRP) Decision																	▲ 7 FRP Decision											
Full Material Release (FMR)																	▲ 9 FMR											
First Unit Equipped (FUE)																	▲ 10 FUE											
Risk Reduction of Large Caliber Weapon System																												
Mobile Protected Firepower (MPF) Rapid Prototyping Phase																												
Ballistic Hull & Turret (BH&T) Deliveries (4 BH&Ts)																												
BH&T Test Readiness Review (TRR)																												
BH&T Test																												
Prototype Deliveries (24 Prototypes)																												
Pre-Production Test (PPT)																												
Soldier Vehicle Assessment (SVA) Readiness Review (RR)																												
SVA																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Limited User Training (LUT)				■ LUT																									
Training Support Package (TSP) Development	TSP Development																												
Maintenance Task Analysis (MTA) and Level Of Repair Analysis	MTA and LORA																												
Technical Manual (TM) Development	TM Development																												
TM Validation				■ TM Validation																									
TM Development Update									TM Development Update																				
TM Verification																	■ TM Verification												
Level of Repair Analysis (LORA)									LORA																				
Source of Repair Analysis (SORA)									SORA																				
Training Support Package (TSP) Update									TSP Update																				
National/Depot Maintenance Work Instruction (NMWR/DMWR) Development									NMWR/DMWR Development																				
Spares Provisioning									Spares Provisioning																				
Logistics Demonstration (Log Demo)													■ Log Demo																

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Prototype Vehicle Updates to LRIP Configurations (Qty 8)																																				
Corrosion Testing																																				
CDE/SL/AFES Testing																																				
Supportability Assessment (SA)																																				
Training Devices Requirements Refinement Performance Spec																																				
Training Devices Product Development and Prototype Build																																				
Low Rate Initial Production (LRIP) Option #1 Award																																				
LRIP Option #1 Deliveries																																				
Product Quality Test (PQT)																																				
Full Up System Level (FUSL) Live Fire Testing																																				
Initial Operational Test and Evaluation (IOT&E)																																				
LRIP Option #2 Award																																				
LRIP Option #2 Deliveries																																				

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LRIP Option #3 Award													6 LRIP Option #3 Award															
LRIP Option #3 Deliveries													8 LRIP Option #3 Deliveries															
FRP Lot #1 Award													11 FRP Lot #1 Award															
FRP Lot #1 Deliveries													12 FRP Lot #1 Deliveries															
FRP Lot #2 Award													13 FRP Lot #2 Award															
FRP Lot #2 Deliveries													14 FRP Lot #2 Deliveries															
FRP Lot #3 Award													15 FRP Lot #3 Award															

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Section 804 MTA Rapid Prototyping Designation	4	2018	4	2018
Milestone C (MS C)	3	2022	3	2022
Full Rate Production (FRP) Decision	2	2025	2	2025
Full Material Release (FMR)	4	2025	4	2025
First Unit Equipped (FUE)	4	2025	4	2025
Request for Proposal (RFP) Release	1	2018	1	2018
Risk Reduction of Large Caliber Weapon System	3	2017	3	2022
Middle Tier Acquisition (MTA) Source Selection Evaluation Board (SSEB)	2	2018	1	2019
Rapid Prototyping Contract Awards	1	2019	1	2019
Mobile Protected Firepower (MPF) Rapid Prototyping Phase	1	2019	3	2022
Design Maturity Review (DMR)	3	2019	3	2019
Ballistic Hull & Turret (BH&T) Deliveries (4 BH&Ts)	1	2021	2	2021
BH&T Test Readiness Review (TRR)	1	2021	1	2021
BH&T Test	2	2021	4	2021
Prototype Deliveries (24 Prototypes)	3	2020	2	2022
Pre-Production Test (PPT)	4	2020	2	2022
Soldier Vehicle Assessment (SVA) Readiness Review (RR)	1	2021	1	2021
SVA	2	2021	4	2021
Limited User Training (LUT)	4	2021	1	2022
Training Support Package (TSP) Development	2	2019	3	2022
Maintenance Task Analysis (MTA) and Level Of Repair Analysis (LORA)	2	2019	3	2022
Technical Manual (TM) Development	2	2019	3	2022

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / Armored Systems Modernization (ASM) - Eng Dev	Project (Number/Name) EV8 / Mobile Protected Firepower
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Events	Start		End	
	Quarter	Year	Quarter	Year
TM Validation	3	2021	3	2022
TM Development Update	1	2023	4	2024
TM Verification	2	2024	4	2024
Level of Repair Analysis (LORA)	3	2022	3	2025
Source of Repair Analysis (SORA)	3	2022	3	2025
Training Support Package (TSP) Update	3	2022	3	2025
Nationa/Depot Maintenance Work Instruction (NMWR/DMWR) Development	3	2022	3	2025
Spares Provisioning	3	2022	3	2025
Logistics Demonstration (Log Demo)	1	2024	2	2024
Prototype Vehicle Updates to LRIP Configurations (Qty 8)	3	2022	2	2024
Corrosion Testing	4	2022	4	2023
CDE/SL/AFES Testing	4	2022	3	2023
Supportability Assessment (SA)	1	2022	1	2022
Training Devices Requirements Refinement Performance Spec Development	2	2019	3	2022
Training Devices Product Development and Prototype Build	3	2022	3	2024
Low Rate Initial Production (LRIP) Option #1 Award	3	2022	3	2022
LRIP Option #1 Deliveries	1	2024	1	2025
Product Quality Test (PQT)	1	2024	1	2025
Full Up System Level (FUSL) Live Fire Testing	1	2024	1	2025
Initial Operational Test and Evaluation (IOT&E)	4	2024	1	2025
LRIP Option #2 Award	3	2023	3	2023
LRIP Option #2 Deliveries	1	2025	1	2026
LRIP Option #3 Award	3	2024	3	2024
LRIP Option #3 Deliveries	1	2026	1	2027
FRP Lot #1 Award	3	2025	3	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604645A / <i>Armored Systems Modernization (ASM) - Eng Dev</i>	Project (Number/Name) EV8 / <i>Mobile Protected Firepower</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
FRP Lot #1 Deliveries	1	2027	1	2028
FRP Lot #2 Award	3	2026	3	2026
FRP Lot #2 Deliveries	1	2028	1	2029
FRP Lot #3 Award	3	2027	3	2027
FRP Lot #3 Deliveries	1	2029	1	2030

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	52.959	43.417	62.679	-	62.679	38.594	92.455	94.138	94.384	Continuing	Continuing
BQ6: <i>Visual Augmentation System Eng Dev</i>	-	7.495	4.934	34.543	-	34.543	8.142	72.395	73.868	74.586	Continuing	Continuing
L67: <i>Soldier Night Vision Devices</i>	-	11.043	13.474	7.663	-	7.663	6.189	5.942	5.825	5.880	Continuing	Continuing
L70: <i>Night Vision Dev Ed</i>	-	29.058	19.893	9.039	-	9.039	10.744	7.800	7.836	7.912	Continuing	Continuing
L79: <i>Joint Effects Targeting Systems (JETS)</i>	-	5.363	5.116	11.434	-	11.434	13.519	6.318	6.609	6.006	Continuing	Continuing

A. Mission Description and Budget Item Justification

A portion of this funding line is directly aligned to the Army Soldier Lethality Modernization Priority in support of situational awareness for the Close Combat Soldier. This program element provides night vision/reconnaissance, surveillance and target acquisition technologies required for United States defense forces to engage enemy forces twenty-four hours a day under conditions of degraded visibility due to darkness, adverse weather, battlefield obscurants, foliage and man-made structures. These developments and improvements to high performance night vision electro-optics, radar, laser, and thermal systems and integration of related multi-sensor suites will enable near to long range target acquisition, identification and engagement to include significant fratricide reduction, which will improve battlefield command and control in "around-the-clock" combat operations.

Project BQ6 This project focuses on transitioning demonstrated technologies that bring improvements to the dismounted Soldier's augmented vision and situational awareness system and provide Soldiers with the ability to fight, rehearse, train and win during multi-domain operations. Funded efforts will accelerate the implementation of components, terrain shared coordinate data and processing, algorithms including machine learning/artificial intelligence and demonstrations in support of the next generation augmented vision and situational awareness. Efforts will provide rapid decision making and targeting capabilities with the integration of external video and data sources such as weapon sights, unmanned air and ground vehicles and other data sources enabled by tactical cloud package and advanced network services. This project will provide data driven analytics to optimize unit performance and enhance lethality and to enable Synthetic Training Environment (STE) squad capability to perform live mixed reality training and rehearsing. This project includes costs for efforts associated with movement of information and high level processing, integration, and interface of products with the Soldiers' head, body, weapon, and transportation. Funding for this project aligns with the Army's priorities in support of the National Defense Strategy. This project supports the Soldier Lethality Cross Functional Team. The total cost of the Integrated Visual Augmentation System Rapid Prototyping Middle Tier of Acquisition effort is \$863.9 million RDT&E from FY18 to FY23. The totality of the RDT&E is from the combined APEs of 603774A BQ5 and 604710A BQ6.

Project L67 project develops, improves and miniaturizes high performance electro-optics, thermal and laser systems. It also provides for systems integration of related multi-sensor suites to enable near to long-range target acquisition and engagement as well as improved battlefield command and control in around-the-clock combat operations. It focuses on adapting demonstrated technologies that bring improvements to the dismounted Soldiers' equipment. This project develops or enhances

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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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 0604710A / <i>Night Vision Systems - Eng Dev</i>
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equipment that provides the individual Soldier's day/night situational awareness and individual targeting capability. This project includes cost associated with efforts for the development, integration and interface of products on Soldiers head, body and weapons. Funding in this project supports the Army's Soldier Lethality Cross Functional Teams (SL CFT) initiatives. Funding in this project aligns with the Army's priorities in support of the National Defense Strategy.

Project L70 focuses on night vision, reconnaissance, surveillance and target acquisition (RSTA) sensor and suites of sensors to provide well-defined surveillance and targeting capabilities for a variety of Current, Modular, and Future Force platforms. This project includes: 3rd Generation Forward Looking Infra-Red (3GEN FLIR) B-Kit development activities, the 3GEN Long Range Advanced Scout Surveillance System (LRAS3) Modification Work Order (MWO) to integrate 3GEN FLIR B-Kit, and the Assistant Secretary of the Army for Acquisition, Logistics, and Technology ASA(ALT) Common Operating Environment (COE) effort to meet sensor interoperability requirements and improve the soldier-machine interface of the Program of Record (POR).

Project L79 is an Army program with joint information (Air Force and Marine Corps). JETS addresses the one-man, hand-held precision targeting gap identified by the Fires Center of Excellence (FCoE). JETS is a light-weight, handheld system that will provide the single dismounted observer with a common, enhanced day and night thermal capability to rapidly acquire, accurately locate, positively identify, and precisely designate targets. JETS Target Location and Designation System (TLDS) will be able to interface with existing and future Forward Entry Systems (FESS) and operate in environments where global positioning system (GPS) capabilities are degraded or denied including the integration of military GPS user equipment (M-Code) GPS receivers, when they become available. This project will address continued development and integration of improved precision targeting components to reduce size, weight, power, and cost of systems for dismounted precisions Fires mission. Funding in this project aligns with the Army's priorities in support of the National Defense Strategy.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	54.234	62.690	0.000	-	0.000
Current President's Budget	52.959	43.417	62.679	-	62.679
Total Adjustments	-1.275	-19.273	62.679	-	62.679
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-19.273			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.275	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	62.679	-	62.679

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>				Project (Number/Name) BQ6 / <i>Visual Augmentation System Eng Dev</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
BQ6: <i>Visual Augmentation System Eng Dev</i>	-	7.495	4.934	34.543	-	34.543	8.142	72.395	73.868	74.586	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project focuses on transitioning demonstrated technologies that bring improvements to the dismounted Soldier's augmented vision and situational awareness system and provide Soldiers with the ability to fight, rehearse, train and win during multi-domain operations. Funded efforts will accelerate the implementation of components, terrain shared coordinate data and processing, algorithms including machine learning/artificial intelligence and demonstrations in support of the next generation augmented vision and situational awareness system. Efforts will provide rapid decision making and targeting capabilities with the integration of external video and data sources such as weapon sights, unmanned air and ground vehicles and other data sources enabled by tactical cloud package, "See Through" armor, and advanced network services. This project will provide data driven analytics to optimize unit performance and enhance lethality and to enable Synthetic Training Environment (STE) squad capability to perform live mixed reality training and rehearsing. This project includes costs for efforts associated with movement of information and high level processing, integration, and interface of products with the Soldiers' head, body, weapon, and transportation. Funding for this project aligns with the Army's priorities in support of the National Defense Strategy. This project supports the Soldier Lethality Cross Functional Team. The total cost of the Integrated Visual Augmentation System Rapid Prototyping Middle Tier of Acquisition effort is \$863.9 million RDT&E from FY18 to FY23. The totality of the RDT&E is from the combined APEs of 603774A BQ5 and 604710A BQ6.

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

	FY 2021	FY 2022	FY 2023
Title: Heads Up Display (HUD)	7.495	4.754	33.348
Description: Integrated Visual Augmentation System (IVAS) HUD provides a first generation single platform for Soldier/Marines to fight, rehearse, and train in day and night that provides increased lethality, mobility, and situational awareness necessary to achieve overmatch against our current and future adversaries.			
FY 2022 Plans: Perform Systems Engineering/Program Management and integration to implement engineering changes to higher resolution thermal sensors, and app development to enhance mission planning and mission execution based on Soldier centered design input. These tools will extend IVAS capabilities and be driven by Soldier Centered Design activities. Conduct testing to verify operational performance of all production changes.			
FY 2023 Plans: Begin test and evaluation of IVAS 1.2			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) BQ6 / <i>Visual Augmentation System Eng Dev</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
FY23 increase is due to initiation of test and evaluation of IVAS version 1.2			
Title: SBIR/STTR Transfer	-	0.180	1.195
Description: Funding transferred in accordance with Title 15 USC 638			
FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2023 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	7.495	4.934	34.543

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• K36402: <i>IVAS/Heads Up Display</i>	670.476	405.140	400.024	-	400.024	91.282	-	-	-	Continuing	Continuing
• BQ5: <i>Visual Augmentation System Advanced Development</i>	5.475	56.519	12.094	-	12.094	69.370	29.663	30.268	30.563	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project utilizes competitively awarded contracts using best value source selection procedures.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / Night Vision Systems - Eng Dev	Project (Number/Name) BQ6 / Visual Augmentation System Eng Dev
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	MIPR	Various : Various	16.561	1.315	Nov 2020	0.005		1.195		-		1.195	Continuing	Continuing	-
SBIR/STTR Trasnfer	TBD	To Be Determined : To Be Determined	-	-		0.180		-		-		-	0.000	0.180	-
Subtotal			16.561	1.315		0.185		1.195		-		1.195	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Heads Up Display (HUD)	Various	Various : Various	27.710	0.209	Dec 2020	-		30.348	Nov 2022	-		30.348	Continuing	Continuing	-
Subtotal			27.710	0.209		-		30.348		-		30.348	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Matrix Support	MIPR	Various : Various	11.823	-		-		-		-		-	Continuing	Continuing	-
Subtotal			11.823	-		-		-		-		-	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IVAS HUD Testing	MIPR	Various : Various	4.505	5.971	Jan 2021	4.749	Mar 2022	3.000	Mar 2023	-		3.000	Continuing	Continuing	-
Subtotal			4.505	5.971		4.749		3.000		-		3.000	Continuing	Continuing	N/A

Remarks
For FY 2022, Test & Evaluation conducts testing to verify operational performance of all production changes.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>		Project (Number/Name) BQ6 / <i>Visual Augmentation System Eng Dev</i>	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Improved Technology Production Transition																												
Operational Test																												
Follow-on Testing (Production Improvements)																												
HUD and System Improvements																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) BQ6 / <i>Visual Augmentation System Eng Dev</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Heads Up Display (HUD)	4	2018	4	2020
Improved Technology Production Transition	4	2021	2	2025
Operational Test	3	2022	4	2022
Follow-on Testing (Production Improvements)	1	2023	4	2024
HUD and System Improvements	1	2025	4	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>				Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
L67: <i>Soldier Night Vision Devices</i>	-	11.043	13.474	7.663	-	7.663	6.189	5.942	5.825	5.880	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops, improves and miniaturizes high performance electro-optics, thermal and laser systems. It also provides for systems integration of related multi-sensor suites to enable near to long-range target acquisition and engagement as well as improved battlefield command and control in around-the-clock combat operations. It focuses on adapting demonstrated technologies that bring improvements to the dismounted Soldiers' equipment. This project develops or enhances equipment that provides the individual Soldier's day/night situational awareness and individual targeting capability and supports the Night Vision Goggles Modernization Strategy. This project includes cost associated with efforts for the development, integration and interface of products on Soldiers head, body and weapons. Funding in this project supports the Army's Soldier Lethality Cross Functional Teams (SL CFT) initiatives. Funding in this project aligns with the Army's priorities in support of the National Defense Strategy.

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

	FY 2021	FY 2022	FY 2023
Title: Family of Weapon Sights (FWS)	3.508	6.360	1.000
<p>Description: There are three variants in the Family of Weapon Sights: FWS-Individual (FWS-I), FWS-Crew Served (FWS-CS) and FWS-Sniper (FWS-S). These sights enable combat forces to acquire and engage targets with small arms and conduct surveillance and fire control under day/night obscurants, no-light, and adverse weather conditions. The FWS utilizes advancements in thermal and low light level sensors to produce sights operable in-line with a day optic or in stand-alone mode. This RDT&E project integrates smaller pixel thermal detectors/imagers in high definition formats with improved sensitivity, clarity, and range, while simultaneously reducing the size, weight and power consumption for all FWS variants and provides a minimum of a 20% overmatch for each of the weapon platforms they are intended.</p> <p>The FWS-I variant is a weapon-mounted thermal sensor that enables Soldiers to fire quickly and accurately from any carry position and with significantly reduced exposure to enemy fire by providing a wireless, zeroed weapon aimpoint in the Soldier's Enhanced Night Vision Goggle - Binocular (ENVG-B) or Integrated Visual Augmentation System (IVAS). FWS-I requires RDT&E in FY2022 and FY2023 to design and qualify a second vendor in production, because additional capacity is required to meet the increase AAO of 112K.</p> <p>The FWS-CS variant leverages the success of the FWS-I development effort, and will be the primary sight for the MK19, M240B and M2. The FWS-CS system integrates High Definition (HD) Thermal and Day Color imagers, an Integrated Laser Range Finder (ILRF) and ballistic calculator to provide Soldiers with an accurate aimpoint that adjusts automatically for range, ammunition</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>

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

	FY 2021	FY 2022	FY 2023
<p>characteristics, vertical angle, and weapon cant. The FWS-CS includes a wireless HD Helmet Mounted Display (HMD) that receives weapon sight imagery allowing the Soldier to utilize the weapon sight without requiring them to look through the weapon sights eyepiece. This wireless HMD provides the opportunity for the Soldier to stay in a protected, unexposed posture while still accurately detecting and engaging targets. Additionally, the FWS-CS will integrate into Adaptive Squad Architecture and wirelessly share video and data with the Night Vision Systems (NVS) and the Nett Warrior End User Device (EUD). All wireless communication will be through the Intra Soldier Wireless (ISW) Network.</p> <p>The FWS-S variant utilizes a HD thermal sensor and mounts in-line with the Sniper's direct view optic providing a thermal capability without the need to remove or re-boresight the current direct view optic. The FWS-S provides Snipers a large format display with increased pixel density that enables accurate long range engagements in all battlefield conditions while utilizing the direct view optic's aiming features, extending lethality and providing exceptional observation.</p> <p>FY 2022 Plans: In FY 2022, FWS-I requires RDT&E funding to complete design work and execute Government qualification testing for a second vendor.</p> <p>In FY 2022, FWS-CS will continue operational testing during LRIP including PQT-G, RGT-2, and Airborne testing.</p> <p>FY 2023 Plans: FWS-CS will complete LRIP operational testing (RGT-2 and Airborne testing).</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2022 to FY 2023 decrease is necessary to cover the remaining LRIP qualification test events (RGT-2 and ABN LUT).</p>			
<p>Title: Enhanced Night Vision Goggle - Binocular (ENVG-B)</p> <p>Description: The ENVG-B system is a modular helmet-mounted, passive electro-optical fused sensor imaging device in a binocular configuration. The system integrates dual Image Intensification (I2) sensors with the thermal sensor imagery into a single viewing display. The thermal sensor provides the Soldier with the capability to rapidly detect and recognize human-sized targets in adverse weather, obscurants and in varying light conditions. The dual I2 sensors provide the Soldier with depth perception for ease of low-light level maneuvers and the ability to detect rifle-mounted aiming lights to engage targets. The ENVG-B can also be operated in a monocular configuration by moving one of the two individually rotating monoculars. The ENVG-B has a near infrared (NIR) emitting light source that provides illumination for close-up viewing. The ENVG-B mounts on current Soldier equipment, including the Advanced Combat Helmet (ACH), the Enhanced Combat Helmet (ECH) and Integrated Head Protection System (IHPS). The ENVG-B has a multi-point wireless interface to the FWS-I and Nett Warrior in order to support augmented reality requirements. The ENVG-B wirelessly operates with the FWS-I to provide Rapid Target Acquisition (RTA) capability. RTA</p>	3.136	3.688	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>is the capability to view the boresighted/zeroed weapon sight reticle in the ENVG- B display, enabling the Soldier to accurately engage targets without having to bring the weapon to eye level and without the use of active lasers, all while remaining in defilade.</p> <p>FY 2022 Plans: Complete LRIP and accomplish Full Materiel Release and First Unit Equipped.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2022 to FY 2023 decrease in funding is due to ENVG-B is planned to be in Full Rate Production in FY23.</p>				
<p>Title: Night Vison Goggle - Next (NVG-N)</p> <p>Description: NVG-N provides the capability to engage threat personnel at night or in low light conditions with greater clarity, depth perception, and increased recognition range for engagements. NVG-N systems will replace Soldiers? legacy monocular AN/PVS-14s and bi-ocular AN/PVS-7s increasing the Soldiers? situational awareness, mobility, speed, and effectiveness to support an increased operational tempo.</p> <p>FY 2023 Plans: Initiate the development and testing of the NVG-N (renamed Night Vision Device-Next (NVD-N)) product in support of the Night Vision Goggle Modernization Strategy.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY22 to FY23 increase in RDT&E funding is due to FY2022 -\$19.273M Congressional Mark reduction.</p>		-	-	5.163
<p>Title: Small Tactical Optical Rifle Mounted (STORM)</p> <p>Description: The STORM Micro-Laser Range Finder (MLRF) is a weapon-mounted multi-function laser system. It provides an eye safe laser range finder, digital compass, Infrared (IR) and visible aiming lights, and an IR illuminator for far target location with continuous range, accuracy, weight and power performance enhanced capabilities. Funding supports qualifying smaller, lighter, and a less expensive STORM variant for Soldiers. Funding also supports integrating ballistics calculator and in-line display capabilities into the STORM as well as a power/data rail interface to support the sharing of laser range finder (LRF) data to other enablers on the weapon.</p> <p>FY 2022 Plans: Funding will continue the integration of the STORM into the Adaptive Squad Architecture to support wireless transmission of STORM data to other systems. Continue the integration and qualification efforts of a power/data rail interface to support the sharing of LRF data to other enablers on the weapon.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		0.602	1.029	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
FY 2023 decrease in funding due to the completion of STORM's integration efforts.			
<p>Title: Laser Target Locator Module (LTLM)</p> <p>Description: LTLM is a Lightweight, Handheld Laser Target Locator with a direct view optic, un-cooled thermal camera, eye-safe laser range finder, digital magnetic compass, and an internal SAASM GPS receiver, which provides the dismounted observer or Scout a fully digital, handheld system to accurately determine target location and the ability to call for fire during all weather and light conditions.</p> <p>FY 2022 Plans: FY22 funding supports the integration and qualification of the Congressionally mandated M-Code GPS into the LTLM system. Continue the integration and evaluation of technology to support sharing of LTLM data to other systems to support inclusion of LTLM with the Adaptive Squad Architecture.</p> <p>FY 2023 Plans: FY 2023 funding will support the qualification and Government testing for the upgraded LTLM variant beginning in the 2Q FY23.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 funding decrease reflects a shift from the M-Code GPS integration work to supporting the qualification and Government testing of the upgraded LTLM.</p>	3.797	1.905	1.500
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC 638</p> <p>FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638</p>	-	0.492	-
Accomplishments/Planned Programs Subtotals	11.043	13.474	7.663

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• VT7: <i>Soldier Maneuver Sensors - Adv Dev</i>	7.039	3.777	3.909	-	3.909	3.808	3.661	3.777	3.813	Continuing	Continuing
• K22002: <i>FWS-INDIVIDUAL</i>	83.820	147.271	150.273	-	150.273	135.562	153.900	109.025	108.973	0.000	888.824

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2021	FY 2022	FY 2023	FY 2023	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cost To	
			Base	OCO	Total					Complete	Total Cost
• K35110: <i>Small Tactical Optical Rifle Mounted MLRF</i>	7.715	21.103	11.357	-	11.357	26.057	11.332	11.528	11.523	Continuing	Continuing
• B53800: <i>Laser Target Locator Systems</i>	14.347	27.331	24.229	-	24.229	21.995	22.409	22.307	22.326	Continuing	Continuing
• K22003: <i>FWS-CREW SERVED</i>	-	25.673	40.985	-	40.985	43.522	52.203	43.145	43.126	Continuing	Continuing
• K22004: <i>FWS-SNIPER</i>	2.569	11.201	11.000	-	11.000	10.350	10.237	5.236	5.233	Continuing	Continuing
• BQ5: <i>Visual Augmentation System Advanced Development</i>	5.475	56.519	12.094	-	12.094	69.370	29.663	30.268	30.563	Continuing	Continuing
• BQ6: <i>Visual Augmentation System Eng Dev</i>	7.495	4.934	34.543	-	34.543	8.142	72.395	73.868	74.586	Continuing	Continuing
• K36400: <i>Helmet Mounted Enhanced Vision Devices</i>	183.000	234.906	0.000	-	0.000	-	-	-	-	0.000	417.906

Remarks

D. Acquisition Strategy

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PROGRAM MGMT	MIPR	Various : Various	23.134	0.875	Sep 2021	0.804	Nov 2021	0.867	Nov 2022	-		0.867	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.492		-		-		-	0.000	0.492	-
Subtotal			23.134	0.875		1.296		0.867		-		0.867	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost				
Family of Weapon Sights-Individual (FWS-I)	C/FFP	TBD : TBD	-	-		3.046	Apr 2022	-		-		-	0.000	3.046	-	
Family of Weapon Sights-Crew Served (FWS-CS)	C/FFP	DRS RSTA, Inc : Dallas, TX/Nashua, NH	53.533	0.550	Apr 2021	-		-		-		-	0.000	54.083	-	
Enhanced Night Vision Goggle - Binocular (ENVG-B)	C/FFP	Applied Research Associates, Inc. (ARA) : Albuquerque, NM	0.300	0.375	Feb 2021	-		-		-		-	0.000	0.675	-	
Enhanced Night Vision Goggle - Binocular (ENVG-B)	C/FFP	L3Harris Corporation : Londonderry, NH	15.517	0.612	Mar 2021	1.549	May 2022	-		-		-	0.000	17.678	-	
Enhanced Night Vision Goggle - Binocular (ENVG-B)	C/FFP	Elbit Systems of America : Roanoke, VA	11.967	0.612	Mar 2021	1.549	May 2022	-		-		-	0.000	14.128	-	
Night Vision Device - Next	C/TBD	TBD : TBD	-	-		-		3.228	Apr 2023	-		-	3.228	Continuing	Continuing	-
STORM II - Wireless Integration & SWAP C (L3)	C/CPFF	L3H : Londonderry, NH	1.843	0.167	Mar 2021	0.280	Jan 2022	-		-		-	0.000	2.290	-	
Laser Target Location Module (Optics 1)	C/CPFF	Optics 1 : Bedford, NH	1.986	2.365	Feb 2021	1.678	Jan 2022	-		-		-	0.000	6.029	-	
Laser Target Location Module - Intra Soldier Wireless (ISW)	C/FFP	Various : Various	-	1.322	Apr 2021	-		-		-		-	0.000	1.322	-	
Subtotal			85.146	6.003		8.102		3.228		-		3.228	Continuing	Continuing	N/A	



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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FWS-I Contract 2nd Source / Design Qualification																												
FWS-CS Engineering and Manufacturing Development (EMD)																												
FWS-CS Qualification Testing																												
FWS-CS MS C																												
FWS-S (GOTS Systems) Limited User Testing (LUT)																												
FWS-S Directed Requirement (DR)																												
ENVG-B EMD																												
ENVG-B LRIP Qualification																												
STORM II Qualification Testing																												
STORM II Wireless Technology Integration																												
Target Acquisition Laser Capabilities																												
LTLM Wireless & Technology Improvements Integration																												
LTLM M-Code GPS Integration																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
LTLM II+M Qualification & Government Testing																													
Advanced Sensor Development MS B																	 MS B												
Advanced Sensor Development EMD																													
Night Vision Device-Next EMD																													
Night Vision Device-Next MS C																									 MS C				

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L67 / <i>Soldier Night Vision Devices</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FWS-I Contract 2nd Source / Design Qualification	3	2022	2	2023
FWS-CS Engineering and Manufacturing Development (EMD)	3	2016	1	2022
FWS-CS Qualification Testing	2	2021	4	2022
FWS-CS MS C	2	2021	2	2021
FWS-S (GOTS Systems) Limited User Testing (LUT)	3	2021	1	2022
FWS-S Directed Requirement (DR)	1	2022	1	2022
ENVG-B EMD	3	2019	2	2021
ENVG-B MS C	4	2020	4	2020
ENVG-B LRIP Qualification	4	2020	2	2022
STORM II Qualification Testing	2	2019	2	2022
STORM II Wireless Technology Integration	2	2019	4	2022
Target Acquisition Laser Capabilities	2	2019	4	2025
LTLM Technology Improvements Development	2	2019	2	2020
LTLM Wireless & Technology Improvements Integration	2	2021	3	2023
LTLM M-Code GPS Integration	2	2021	3	2023
LTLM II+M Qualification & Government Testing	2	2023	4	2024
Advanced Sensor Development MS B	2	2023	2	2023
Advanced Sensor Development EMD	3	2023	4	2027
Night Vision Device-Next EMD	1	2024	1	2026
Night Vision Device-Next MS C	1	2026	1	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>				Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
L70: <i>Night Vision Dev Ed</i>	-	29.058	19.893	9.039	-	9.039	10.744	7.800	7.836	7.912	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

FY 2023 Base funding in the amount of \$9.039 million supports the 3GEN FLIR B-Kit program activities.

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

	FY 2021	FY 2022	FY 2023
Title: 3GEN FLIR B-Kit EMD	29.058	19.166	9.039
Description: 3GEN FLIR EMD requirements and contract awards.			
FY 2022 Plans: FY 2022 Base funding supports 3GEN FLIR B-Kit hardware integration with the Abrams M1A2 SEPv4 Modernization (Lethality ECP) effort for developmental testing, execution of critical component warm lines, continues integration of automation and artificial intelligence/machine learning, and supports Detect, Recognize, and Identify (DRI) operational testing in support of the 3GEN FLIR B-Kit Milestone C (MS C) in FY22, and promote competition for full rate production.			
FY 2023 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
FY 2023 Base Funding supports continued integration of sensor automation and artificial intelligence/machine learning to support Aided Target Detection and Recognition and promote competition for full rate production. FY 2022 to FY 2023 Increase/Decrease Statement: Decrease is due the completion of 3GEN FLIR EMD hardware manufacturing and the transition to performance enhancement activities through technical insertions.			
Title: SBIR/STTR Transfer Description: Funding transferred in accordance with Title 15 USC 638 FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638 FY 2022 to FY 2023 Increase/Decrease Statement: Decrease is due to no planned SBIR/STTR costs in PB 2023.	-	0.727	-
Accomplishments/Planned Programs Subtotals	29.058	19.893	9.039

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 330: <i>Abrams Tank Improve Prog</i>	61.039	120.308	61.229	-	61.229	98.274	85.285	85.279	86.109	Continuing	Continuing
• <i>CF6: Next Generation Combat Vehicle (OMFV)</i>	162.390	202.320	589.762	-	589.762	1,238.951	553.275	376.107	379.760	0.000	3,502.565
• <i>KA4511: Improved Forward Looking Infrared (IFLIR) B-Kit</i>	-	11.929	37.914	-	37.914	20.856	71.461	69.801	127.372	Continuing	Continuing

Remarks

D. Acquisition Strategy
3GEN FLIR: Materiel Development Decision (MDD) was received from the Army Acquisition Executive (AAE) and the Acquisition Decision Memorandum (ADM) was signed on 22-Dec-2014. Per the ADM, 3GEN FLIR entered the acquisition lifecycle at Milestone B (MS B) in 2Q FY 2016. After a successful MS B decision, competitive EMD contracts were awarded to design, develop, integrate and test the 3GEN FLIR B-Kit prior to production and mitigate the industrial base risk. The host platforms are responsible for integration of the 3GEN FLIR B-Kit. 3GEN FLIR product improvement efforts will continue to focus on the integration and refinement of the artificial intelligence/machine learning capabilities.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Project Management	MIPR	PM TS : Ft. Belvoir, VA	16.867	-		0.518	Jan 2022	0.362	Jan 2023	-		0.362	Continuing	Continuing	-
FY 2019 NDAA SEC 825 MDAP Cost Overruns	Various	HQDA : HQDA	0.051	-		-		-		-		-	0.000	0.051	-
FY 2022 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.727	Mar 2022	-		-		-	0.000	0.727	-
Subtotal			16.918	-		1.245		0.362		-		0.362	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FY 2012-FY 2013: Develop, Fab, and Qual of a common Ground Platform Engine with Block II EOCCM	C/Various	Various : Various	0.049	-		-		-		-		-	0.000	0.049	-
3GEN FLIR B-Kit Engineering/Document Prep	C/Various	Various : Various	21.685	-		-		-		-		-	0.000	21.685	-
3GEN FLIR B-Kit EMD	C/CPIF	Various : Various	186.189	27.306	Nov 2020	14.764	Nov 2021	-		-		-	0.000	228.259	-
3GEN FLIR Product Improvements	TBD	Various : Various	-	-		-		8.267	Jan 2023	-		8.267	Continuing	Continuing	-
3GEN LRAS3: Tech Trade Studies	C/TBD	Various : Various	1.611	-		-		-		-		-	0.000	1.611	-
3GEN LRAS3: ECP Integration	C/TBD	Various : Various	0.313	-		-		-		-		-	0.000	0.313	-
PSS P3I: CE COE	C/FP	Various : Various	19.162	-		-		-		-		-	0.000	19.162	-
Subtotal			229.009	27.306		14.764		8.267		-		8.267	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
3GEN FLIR B-Kit Development, Test, and Integration																												
3GEN FLIR Incremental Product Improvements																												
3GEN FLIR B-Kit MS C									▲ 1																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L70 / <i>Night Vision Dev Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
3GEN FLIR Materiel Development Decision (MDD)	1	2015	1	2015
3GEN FLIR Development Request For Proposal Release Review (DRFP RR)	3	2015	3	2015
3GEN FLIR B-Kit MS B	2	2016	2	2016
3GEN FLIR B-Kit Development, Test, and Integration	2	2016	4	2022
3GEN FLIR Incremental Product Improvements	4	2022	4	2027
3GEN FLIR B-Kit MS C	1	2023	1	2023
3GEN LRAS3 ECP to Integrate 3GEN FLIR B-Kit: Spec Development & Documentation	1	2018	4	2019
Common Operating Environment, Development	2	2012	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604710A / Night Vision Systems - Eng Dev				Project (Number/Name) L79 / Joint Effects Targeting Systems (JETS)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
L79: Joint Effects Targeting Systems (JETS)	-	5.363	5.116	11.434	-	11.434	13.519	6.318	6.609	6.006	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Effects Targeting System (JETS) is an Army Joint Information Program. JETS addresses the one-man, hand-held precision targeting gap identified by the Fires Center of Excellence (FCoE). JETS is a light-weight, handheld system that will provide the single dismounted observer with a common, enhanced day and night thermal capability to rapidly acquire, accurately locate, positively identify, and precisely designate targets. JETS Target Location and Designation System (TLDS) is able to interface with existing and future Forward Entry Systems (FESs) and will be able to operate in environments where global positioning system (GPS) capabilities are degraded or denied, and integrating military GPS user equipment (M-Code) GPS receivers, when they become available. This project will develop and integrate improved precision targeting components to reduce size, weight, power, and cost of systems for dismounted precision Fires mission. Funding in this project aligns with the Army's priorities in support of the National Defense Strategy.

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

	FY 2021	FY 2022	FY 2023
Title: Joint Effects Targeting System (JETS) Low-Rate Initial Production (LRIP) Qualification Testing Description: This projects supports the LRIP Qualification Testing.	0.493	-	-
Title: Precision Azimuth and Vertical Angle Module (PAVAM) Development Description: Focuses on developments to improve Size, Weight, Power and Cost (SWAP-C) for inertial navigation PAVAM solutions which provide a 24/7 precision targeting capability. Develop improvements to celestial navigation and PAVAM solutions to improve availability of precision measurements over a wider range of environments. FY 2022 Plans: Continue development of reduced SWAP-C for PAVAM architecture. FY 2023 Plans: Continue development of reduced SWAP-C PAVAM architecture for integration into the next generation JETS. FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 increased funding supports testing costs.	0.463	0.225	0.241
Title: Joint Effects Targeting System (JETS) Threat Mitigation Development and Integration	0.331	0.356	0.215

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L79 / <i>Joint Effects Targeting Systems (JETS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Description: Focuses on developing and integrating technologies to counter battlefield threats to the system and the Soldier. This includes technologies and techniques to allow JETS to operate in GPS contested environments, and improved targeting sensor technologies, to include passive targeting, that will reduce the Soldier's signature on the battlefield.</p> <p>FY 2022 Plans: Continue integration of technologies and techniques into JETS to allow it to operate in GPS contested environments. In FY22 program will transition 3D Point Cloud applications for GPS contested operations to existing platforms. These apps will reside on the Nett Warrior End User Device and will provide the hooks necessary for the JETS to accurately determine its self-location in a GPS denied environment. Initiate development of image-based self-location and target location efforts for targeting in GPS contested environments.</p> <p>FY 2023 Plans: FY 2023 resources continue the development of image-based self-location and target location technologies for targeting in GPS contested environments.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 decreased funding supports an increase to JETS II Development.</p>			
<p>Title: Precision Targeting and Target Acquisition Development</p> <p>Description: This project develops prototype precision targeting systems incorporating improved target acquisition sensors and optics, improved targeting sensors, and updated targeting algorithms while reducing size, weight, and power requirements. Incorporates JETS into the Adaptive Squad Architecture (ASA) and integrates the Intra Soldier Wireless (ISW) capability.</p> <p>FY 2022 Plans: Continue development and component integration of improved precision targeting prototypes.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 decreased funding supports an increase to JETS II Development.</p>	4.076	4.348	-
<p>Title: JETS II Development</p> <p>Description: This project performs engineering and manufacturing development of the next generation JETS, transitioning technologies developed in the Precision Targeting and Target Acquisition Development project. The JETS II will be an advanced, lighter weight precision targeting systems incorporating improved target acquisition sensors and optics, improved targeting sensors, updated targeting algorithms, and a M-Code GPS receiver while reducing size, weight, and power requirements. It will integrate JETS into the Adaptive Squad Architecture (ASA) using the Intra Soldier Wireless (ISW) capability.</p>	-	-	10.978

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L79 / <i>Joint Effects Targeting Systems (JETS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<i>FY 2023 Plans:</i> The FY23 resources will initiate the engineering and manufacturing development of JETS II.			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> FY 2023 increased funding reflects the initiation of an engineering and manufacturing development phase for JETS II.			
<i>Title:</i> SBIR/STTR Transfer	-	0.187	-
<i>FY 2022 Plans:</i> Funding transferred in accordance with Title 15 USC 638			
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	5.363	5.116	11.434

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• VT8: <i>SOLDIER PRECISION TARGETING DEVICES - ADV DEV</i>	2.665	2.524	2.045	-	2.045	2.053	2.050	2.050	2.070	Continuing	Continuing
• K32101: <i>JOINT EFFECTS TARGETING SYSTEM (JETS)</i>	54.206	62.082	10.304	-	10.304	49.938	70.355	70.269	70.891	Continuing	Continuing

Remarks

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604710A / Night Vision Systems - Eng Dev				L79 / Joint Effects Targeting Systems (JETS)							
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	MIPR	PM-SMPT : Ft Belvoir, VA 22060	4.733	0.552	Dec 2020	0.418	Dec 2021	0.333	Dec 2022	-		0.333	Continuing	Continuing	Continuing
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.187		-		-		-	0.000	0.187	-
Subtotal			4.733	0.552		0.605		0.333		-		0.333	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PAVAM 2 Development	C/FFP	Various : Various	12.781	0.350	Jul 2021	0.225	Apr 2022	0.100	Jan 2023	-		0.100	Continuing	Continuing	Continuing
Threat Mitigation Development	C/FFP	Various : Various	4.837	0.250	Jul 2021	0.264	Apr 2022	0.185	Feb 2023	-		0.185	Continuing	Continuing	Continuing
Precision Targeting & Target Acquisition Development	C/FFP	Elbit : Merrimack, NH	6.278	3.081	Nov 2020	3.230	Jan 2022	-		-		-	Continuing	Continuing	Continuing
JETS II	C/FFP	TBD : TBD	-	-		-		9.666	Mar 2023	-		9.666	Continuing	Continuing	Continuing
Subtotal			23.896	3.681		3.719		9.951		-		9.951	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	Night Vision Electronics Sensors Directorate : Ft. Belvoir, VA	13.254	0.202	Dec 2020	0.225	Dec 2021	0.225	Dec 2022	-		0.225	Continuing	Continuing	-
Science and Engineering Support	SS/CPFF	Johns Hopkins University : Laurel, MD	7.933	0.555	Jan 2021	0.567	Jan 2022	0.800	Jan 2023	-		0.800	Continuing	Continuing	-
Subtotal			21.187	0.757		0.792		1.025		-		1.025	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>		Project (Number/Name) L79 / <i>Joint Effects Targeting Systems (JETS)</i>	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Low Rate Initial Production (LRIP)	[Blue Bar]				[Grey Bar]																							
Full Materiel Release (FMR)	LRIP				▲ 1 FMR																							
Reduce SWAP-C PAVAM development and integration	[Blue Bar]				[Blue Bar]				[Blue Bar]				[Blue Bar]															
SWAP-C PAVAM cut-in	[Blue Bar]				[Blue Bar]												▲ 3 PAVAM CUT-IN											
Threat Mitigation development and integration	[Blue Bar]				[Blue Bar]				[Blue Bar]				[Blue Bar]															
Threat Mitigation technology cut-in	[Blue Bar]				[Blue Bar]												▲ 4 Threat Mitigation											
Precision Targeting and Target Acquisition Development	[Blue Bar]				[Blue Bar]				[Blue Bar]																			
JETS II Production Decision	[Blue Bar]				▲ 2 JETS II Production Decision																							
JETS II Development	[Blue Bar]				[Blue Bar]				[Blue Bar]				[Blue Bar]															
JETS II Production	[Blue Bar]				[Blue Bar]												▲ 5 JETS II Production											
JETS II Full Rate Production (FRP)	[Blue Bar]				[Blue Bar]												[Blue Bar]				[Blue Bar]							
JETS II SWAP- C	[Blue Bar]				[Blue Bar]												[Blue Bar]				[Blue Bar]							

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604710A / <i>Night Vision Systems - Eng Dev</i>	Project (Number/Name) L79 / <i>Joint Effects Targeting Systems (JETS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Low Rate Initial Production (LRIP)	1	2017	4	2021
Full Materiel Release (FMR)	2	2022	2	2022
Reduce SWAP-C PAVAM development and integration	3	2016	2	2025
SWAP-C PAVAM cut-in	1	2026	1	2026
Threat Mitigation development and integration	2	2017	2	2025
Threat Mitigation technology cut-in	1	2026	1	2026
Precision Targeting and Target Acquisition Development	2	2019	4	2022
JETS II Production Decision	4	2022	4	2022
JETS II Development	2	2023	4	2025
JETS II Production	1	2026	1	2026
JETS II Full Rate Production (FRP)	3	2026	2	2032
JETS II SWAP- C	1	2026	4	2030

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	2.734	1.658	1.566	-	1.566	2.270	1.652	1.653	1.669	0.000	13.202
548: <i>Mil Subsistence Sys</i>	-	2.734	1.658	1.566	-	1.566	2.270	1.652	1.653	1.669	0.000	13.202

A. Mission Description and Budget Item Justification

Projects under this Program Element support the development, demonstration and Non-Developmental Item (NDI) Commercial Off The Shelf (COTS) evaluation of combat feeding equipment to enhance soldier efficiency, improve soldier survivability, and reduce food service logistics requirements for all four services. These Projects support multi-fuel, rapidly deployable field food service equipment initiatives. Efforts also support the Engineering and Manufacturing Development (EMD) phase of programs to improve equipment, enhance safety in food service, and decrease fuel and water requirements. The Projects develop critical enablers that support the Joint Future Capabilities and Joint Expeditionary mindset, by maintaining readiness through integrating new equipment, enhancing the field soldier's well-being, and providing soldiers usable equipment. The Projects also reduce sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands on lift, the combat zone footprint, and costs for logistical support.

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

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	2.734	1.658	0.000	-	0.000
Current President's Budget	2.734	1.658	1.566	-	1.566
Total Adjustments	0.000	0.000	1.566	-	1.566
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	1.566	-	1.566

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
548: <i>Mil Subsistence Sys</i>	-	2.734	1.658	1.566	-	1.566	2.270	1.652	1.653	1.669	0.000	13.202
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project enables system development and demonstration of Joint Service combat rations and field feeding equipment/systems designed to improve warfighter performance and reduce the logistics burden of subsistence support. Efforts funded in this Project support all four Services, the Special Operations Command, and the Defense Logistics Agency (DLA). The Army serves as the Executive Agent for this Department of Defense (DoD) program, with oversight and coordination provided by the DoD Combat Feeding Research and Engineering Board (CFREB) as required by DoD Directive (DoDD) 3235.02E. Centralized execution of the DoD Combat Feeding Research and Engineering Program (CFREP) with Joint Service review and approval eliminates unnecessary duplication of efforts across the Services and maximizes use of common materiel solutions.

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

	FY 2021	FY 2022	FY 2023
Title: Joint Service Combat Ration System Development	1.687	0.884	1.285
<p>Description: This effort integrates and demonstrates mature Joint Service combat ration systems that enable warfighter maneuver, readiness and effectiveness during highly mobile, dispersed operations. Prototypes are transitioned from APE 0603747A Project 610 to develop individual and group combat rations with improved capabilities including improved warfighter physical and cognitive performance through optimized nutrition and reduced logistics burden through weight and cube reduction. This effort completes operational test and evaluation (OT&E) to confirm system level performance, and develops ration specifications for transition to Defense Logistics Agency - Troop Support (DLA - Troop Support) for procurement.</p> <p>FY 2022 Plans: For existing ration platforms (Meal, Ready-to-Eat; First Strike Ration; Meal, Cold Weather, Modular Operational Ration Enhancement; Unitized Group Rations - A/M/H&S), will continue to integrate prototype components/technologies into menu systems and ration assembly processes to improve quality, optimize nutritional content, decrease weight/cube/cost and/or improve modularity and field utility; will continue to conduct OT&E on ration systems to validate system level performance; will present recommendations to the Joint Services for Milestone C approval; will finalize procurement documents and initiate transition to DLA-Troop Support; will obtain US Army, Surgeon General approval of revised menus; will execute production testing with industry to ensure consistent ration quality, validate documents, and resolve vendor/supplier technical production issues; and conduct confirmatory sensory, chemical, physical and shelf life testing.</p> <p>FY 2023 Plans: For existing ration platforms (Meal, Ready-to-Eat; Close Combat Assault Ration; Unitized Group Rations - A/M/H&S), will integrate prototype components/technologies into menu systems and ration assembly processes to improve quality, optimize</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>nutritional content, decrease weight/cube/cost and/or improve modularity and field utility; will continue to conduct OT&E on ration systems to validate system level performance; will present recommendations to the Joint Services for Milestone C approval; will finalize procurement documents and initiate transition to DLA-Troop Support; will obtain US Army, Surgeon General approval of revised menus; will execute production testing with industry to ensure consistent ration quality, validate documents, and resolve vendor/supplier technical production issues; and conduct confirmatory sensory, chemical, physical and shelf life testing. For developmental EGR, will present to the JSORF for Milestone C approval and develop Technical Data Packages (TDP?s) for procurement documents. Will conduct OT&E of through the mask feeding system to enable safe feeding capabilities in hazardous environments</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase in funding supports changes in OT&E for Joint Services Expeditionary Group Ration.</p>				
<p>Title: Joint Service Field Feeding Systems Development</p> <p>Description: This effort integrates and demonstrates field feeding equipment systems in support of the Navy (USN), Air Force (USAF), and Marine Corps (USMC) that reduce the logistics burden, improve efficiency, and decrease operation and support costs as directed by the DoD CFREB and Joint Service partners. Validated systems, specifications, and technical data packages are transitioned to the appropriate Service partner for procurement and fielding. Service partners include Product Manager Combat Support Equipment (PdM-CSE), Naval Sea Systems Command (NAVSEA), Naval Supply Systems Command (NAVSUP), Navy Expeditionary Combat Command (NECC) and USAF Basic Expeditionary Airfield Resources (BEAR) Program Office.</p> <p>FY 2022 Plans: Will complete OT&E of Inflatable Refrigerated Space (IRefS); will complete OT&E of expeditionary equipment with embedded sense and respond technology to track reliability, maintenance, and current health of equipment assets; will develop reports, Engineering Change Proposals (ECPs) and logistical data to reduce overall fuel and water consumption in support of the USMC; and will transition validated prototype equipment and technical data to USN, USMC and USAF.</p> <p>FY 2023 Plans: Will conduct OT&E the Expeditionary Field Feeding Equipment System to reduce logistics requirements for squad feeding; and will transition validated prototype equipment and technical data to USMC.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in funding supports completion of OT&E for Inflatable Refrigerated Space and expeditionary equipment with embedded sense and respond technology.</p>		1.047	0.714	0.281
<p>Title: FY22 SBIR/STTR Transfer</p>		-	0.060	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Description: Funding transferred in accordance with Title 15 USC ?638			
FY 2022 Plans: Funding transferred in accordance with Title 15 USC ?638			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC ?638			
Accomplishments/Planned Programs Subtotals	2.734	1.658	1.566

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 610: <i>Food Adv Development</i>	3.028	2.897	4.060	-	4.060	3.625	4.237	4.239	4.280	0.000	26.366

Remarks

D. Acquisition Strategy

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)						Project (Number/Name)					
2040 / 5				PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>						548 / <i>Mil Subsistence Sys</i>					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Combat Feeding Program Management	C/FP	CCDC Soldier Center : Natick, MA	3.863	0.601	Oct 2020	0.388	Oct 2021	0.363	Oct 2022	-		0.363	Continuing	Continuing	Continuing
FY 2018 NDAA SEC 825 MDAP Cost Overrun	TBD	N/A : N/A	0.002	-		-		-		-		-	0.000	0.002	-
FY2022 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.060	Mar 2022	-		-		-	0.000	0.060	-
Subtotal			3.865	0.601		0.448		0.363		-		0.363	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Service Rations and Combat Feeding Equipment	Various	Various : Various	6.831	0.240	Oct 2020	0.163	Oct 2021	0.154	Oct 2022	-		0.154	Continuing	Continuing	Continuing
Subtotal			6.831	0.240		0.163		0.154		-		0.154	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Service Rations and Combat Feeding Equipment	Allot	CCDC Soldier Center : Natick, MA	2.081	1.893	Oct 2020	1.047	Oct 2021	1.049	Oct 2022	-		1.049	Continuing	Continuing	Continuing
Subtotal			2.081	1.893		1.047		1.049		-		1.049	Continuing	Continuing	N/A
Project Cost Totals			12.777	2.734		1.658		1.566		-		1.566	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Conduct operational testing of combat ration systems	[Blue bar]																											
Conduct OT&E of Close Combat Assault Ration (CCAR)	[Blue bar]																											
Obtain Joint Service and Army Surgeon General approval of first generation	[Blue bar]																											
Develop CCAR Technical Data Package and contract for Low Rate Initial Pr	[Blue bar]																											
Develop and transition CCAR documents to DLA-TS for procurement	[Blue bar]																											
Conduct OT&E of Expeditionary Group Ration (EGR)	[Blue bar]																											
Develop and transition EGR documents to DLA-TS for procurement	[Blue bar]																											
Obtain Joint Service and Army Surgeon General approval of EGR	[Blue bar]																											
Conduct OT&E of through the mask feeding system	[Blue bar]																											
Develop and transition individual and group ration documents a	[Blue bar]																											
Obtain Joint Service and Army Surgeon General approval of MCRE Performance Pack	[Blue bar]																											
Conduct OT&E of Energy Conversation technologies for BEAR kitchens to USAF	[Blue bar]																											
Conduct OT&E & transition labor & energy saving galley/sculler	[Blue bar]																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Conduct OT&E of expeditionary kitchen systems for shore-based Navy units																												
Conduct OT&E of Improved Tray Ration Heater and transition to																												
Obtain Aerial Delivery Certification of Inflatable Refrigerated Sp																												
Conduct OT&E of IRefS and transition to Services																												
Conduct OT&E of EFK upgrades and transition to USMC																												
Conduct OT&E of intuitive kitchen and galley equipment; transiti																												
Conduct OT&E of EFFES at the squad/platoon level																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604713A / <i>Combat Feeding, Clothing, and Equipment</i>	Project (Number/Name) 548 / <i>Mil Subsistence Sys</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Conduct operational testing of combat ration systems	1	2018	4	2026
Conduct OT&E of Close Combat Assault Ration (CCAR)	1	2020	4	2022
Obtain Joint Service and Army Surgeon General approval of first generation CCAR	3	2021	2	2022
Develop CCAR Technical Data Package and contract for Low Rate Initial Production	3	2021	1	2022
Develop and transition CCAR documents to DLA-TS for procurement	1	2022	2	2022
Conduct OT&E of Expeditionary Group Ration (EGR)	1	2023	4	2023
Develop and transition EGR documents to DLA-TS for procurement	2	2023	4	2024
Obtain Joint Service and Army Surgeon General approval of EGR	2	2024	3	2024
Conduct OT&E of through the mask feeding system	1	2023	4	2025
Develop and transition individual and group ration documents annually to DLA-TS	1	2018	4	2027
Obtain Joint Service and Army Surgeon General approval of MORE Performance Pack	2	2022	3	2022
Conduct OT&E of Energy Conversation technologies for BEAR kitchens to USAF	1	2025	4	2025
Conduct OT&E and transition Mobile Feeding Galley to USN	1	2020	3	2020
Conduct OT&E & transition labor & energy saving galley/scullery upgrades to USN	1	2020	4	2021
Conduct OT&E of expeditionary kitchen systems for shore-based Navy units	1	2022	4	2022
Conduct OT&E of Improved Tray Ration Heater and transition to USMC	1	2020	4	2021
Obtain Aerial Delivery Certification of Inflatable Refrigerated Space (IRefS)	1	2020	4	2021
Conduct OT&E of IRefS and transition to Services	1	2021	4	2022
Conduct OT&E of EFK upgrades and transition to USMC	1	2024	4	2025
Conduct OT&E of intuitive kitchen and galley equipment; transition to Services	1	2021	4	2022
Conduct OT&E of EFFES at the squad/platoon level	1	2022	4	2024

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604715A / Non-System Training Devices - Eng Dev
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	27.013	26.514	18.600	-	18.600	13.146	18.440	15.792	15.078	Continuing	Continuing
241: Nstd Combined Arms	-	27.013	26.514	18.600	-	18.600	13.146	18.440	15.792	15.078	Continuing	Continuing

A. Mission Description and Budget Item Justification

Program Element funds development of Non-System Training Devices to support force-on-force and force-on-target training at the Combat Training Centers (CTC), general military training, and training on more than one item/system, as compared with system devices which are developed in support of a specific item/weapon system. Army training devices and training simulations contribute to the modernization of the forces by enabling readiness and strengthening combat effectiveness through realistic training solutions for the Warfighter. Training devices maximize the transfer of knowledge, skills, and experience from the training situation to a combat situation. Force-on-force training and force-on-target at the National Training Center (NTC), Ft. Irwin, CA; Joint Readiness Training Center (JRTC), Ft. Polk, LA, Joint Multinational Readiness Center (JMRC), Hohenfels, Germany; Home Stations and deployed locations around the world; and battle staff training in Battle Command Training Program (BCTP) provide increased combat readiness through realistic collective training in low, mid, and high intensity scenarios. Project 241, Non-System Training Devices-Combined Arms, develops simulation training devices for Army-wide use, including the CTCs.

FY 2023 Project 241 funds significant development efforts in support of U.S. Army Training and Readiness on the Combat Training Center Instrumentation Systems (CTC-IS), Instrumentable-Multiple Integrated Laser Engagement System (I-MILES), Home Station Instrumentation Training System (HITS), Common Training Instrumentation Architecture (CTIA), OPFOR Integrated Air Defense System (IADS), Digital Range Training System (DRTS), the Future Army System of Integrated Targets (FASIT), Medical Simulation Training Center (MSTC), Unmanned Aerial Systems (UAS) Swarm, and the Live, Virtual, Constructive Integrating Architecture (LVC-IA).

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	27.013	26.540	0.000	-	0.000
Current President's Budget	27.013	26.514	18.600	-	18.600
Total Adjustments	0.000	-0.026	18.600	-	18.600
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	18.600	-	18.600
• FFRDC Transfer	-	-0.026	-	-	-

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army Date: April 2022

Appropriation/Budget Activity
2040: *Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0604715A / *Non-System Training Devices - Eng Dev*

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>				Project (Number/Name) 241 / <i>Nstd Combined Arms</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
241: <i>Nstd Combined Arms</i>	-	27.013	26.514	18.600	-	18.600	13.146	18.440	15.792	15.078	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common Training Instrumentation Architecture (CTIA) program is the foundation architecture of the Live Training Transformation Family of Training Systems (LT2-FTS). The program contains critical core product-line architecture which provides commonality across training instrumentation systems and interoperability across Live, Virtual, Constructive Integrated Training Environment (LVC-ITE) and joint training systems. CTIA includes Army owned software components, architecture services, standards, protocols and governance used by domain-specific Live Training Transformation (LT2) and Live Training Systems (LTS) to include instrumented Force-On-Force (FOF) and Force-On-Target (FOT) training requirements. The CTIA also provides Post Deployment Software Support (PDSS) and technology refresh for the LT2 family of LTS supporting over 22 live instrumented training products which are fielded at over 200 CONUS and OCONUS sites across the Army.

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

The Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) program provides realistic, real-time casualty effects for force-on-force tactical engagement training scenarios. Its ability to integrate into training instrumentation systems provides for high fidelity combined arms combat exercises supporting the Chief of the Staff of the Army's priority of "Readiness" and closely aligns with the Modernization priority of Soldier Lethality. I-MILES is required for use at Home Stations, the Combat Training Centers (CTCs) and in theater of operations to meet force-on-force training requirements. I-MILES program funding provides for the Development and Integration of new vehicle and dismount weapon systems meeting the Common Operating Environment (COE) requirements, as well as embedded Tactical Engagement Simulation (TES) development. This includes development efforts of the LTEC / LPAN Development of Legacy software patches that incorporate the Government owned LTEC operating system software. This creates a common architecture that provides the ability to develop new services to adapt to evolving Army requirements (i.e. Changes in weapon platforms, technologies, Pk Table Updates).

The Home Station Instrumentation Training System (HITS) currently provides a high-fidelity deployable instrumented training capability to support platoon thru battalion ground based Soldiers and vehicles in Force-on-Force Training. HITS tracks location of soldiers and vehicles and simulates weapons' effects and engagements, allowing units to "Train as they Fight" against live opponents. HITS provides accurate feedback to training units. HITS consists of light deployable components that can be rapidly assembled/disassembled and transported to support deployed training. HITS is a member of the Live Training Transformation (LT2) product line of training systems implementing hardware and software reuse with other Instrumentation Systems (IS). HITS provides the only Live training component for the large scale Live-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
<p>Virtual-Constructive (LVC) military training exercises. HITS begins US Army aviation vehicle integration with Home Station instrumentation to cover comprehensive training engagements between ground and air forces.</p> <p>The Medical Simulation Training Center (MSTC) provides realistic medical training to both medical and non-medical Soldiers in the Active, Reserve, and National Guard. MSTCs provide hands-on instruction on the latest battlefield trauma and critical care techniques based on Army Medical Center of Excellence (MEDCoE) approved performance oriented Program of Instruction (POI). Medical treatment validation exercises simulate the high stress of performing medical interventions in combat. MSTC supports Unit Medical Readiness by validating Combat Medic (68W) Emergency Medical Technician (EMT) biennial recertification requirements and provides Combat Lifesaver (CLS) training to non-medical Soldiers. The Tactical Combat Casualty Care Exportable (TC3X) Soldier System provides an exportable capability to train Soldiers on medical Warrior skills at the individual, leader, and collective levels. The TC3X system will consist of Training Aides, Devices, Simulators, and/or Simulations (TADSS); utilized by Soldier medics to provide realistic, hands-on training in a "train the trainer" fashion to all Soldiers at home stations, initial training centers, and combat training centers.</p> <p>The Basic Electronics Maintenance Trainer (BEMT) provides the essential modernized electronic system maintenance training capability for the Army, Army National Guard, and the Army Reserve to achieve Military Occupational Specialty-Qualification (MOS-Q) for 40 Military Occupational Specialties (MOS) at 24 Active, National Guard, and Army Reserve camps, posts, and stations. Soldiers utilizing the BEMT system receive highly realistic training using scenarios which require performing basic electronic tasks in a virtual environment including tests, diagnosis, and repair while saving institutions significant expenses over live training alternatives. The BEMT consists of an Instructor Operator Station (IOS), Student Training Station(s) (STS), associated test equipment, COTS computer, electronics console(s), supporting experiment cards, soldering station, and content server as applicable.</p> <p>The Live, Virtual, Constructive Integrating Architecture (LVC-IA) provides a net-centric linkage that collects, retrieves and exchanges data among LVC Training Aids, Devices, Simulations, and Simulators (TADSS) to include: Aviation Combined Arms Tactical Trainer (AVCATT), Close Combat Tactical Trainer (CCTT), Games For Training (GFT), Home Station Instrumentation Training System (HITS), Joint Land Component Constructive Training Capability (JLCCTC) and Synthetic Environment Core (SE Core), Universal Mission Simulator (UMS) and Mission Command Information Systems. The LVC-IA defines "how" information is exchanged among the different LVC domains and the Mission Command Information Systems. The LVC-IA provides enterprise level tools for exercise control, after action review, and system information assurance. It develops hardware and software to interface the different Live, Virtual, Constructive and Gaming communication protocols and to provide a correlated common operating picture for the training audience on their organic Mission Command equipment. The integration of the LVC TADSS with the Mission Command equipment will enable larger and more robust training events, to better prepare U.S. Soldiers for their missions at an overall reduced cost. The end-state goal is to enable an LVC Integrated Training Environment that can replicate Operational Environments in a cost effective manner to provide a high level of value-added training and mission rehearsal opportunities to Army Commanders and their Soldiers. In FY 2019, the LVC-IA program commence design and developmental activities for Version 4, which allowed for Web-based optimization; inclusion of new simulations to the architecture; and concurrency with core system TADSS and Army Mission Command Information Systems through FY 2022. FY 2023 request will continue developmental and integration activities to ensure concurrency with the Synthetic Training Environment (STE), TADSS, and Mission Command Information Systems.</p> <p>The Army identified an operational gap in the training strategy for the OPFOR Integrated Air Defense System (IADS). It is a collection of enemy air defense weapons systems that engages Army aviation assets. Training Aircraft Survivability Equipment (ASE) Simulation Suite (TASS) is a live training system consisting of aircraft</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
<p>components and ground emitters that replicates current and emerging enemy Air Defense systems. Its fidelity supports individual pilot training as well as the collective training requirements of the Brigade Combat Team to fully plan, prepare, execute and react against an enemy air defense weapons at the Combat Training Centers (CTC).</p> <p>FASIT provides Live Fire training systems and software capable of supporting all Army automated ranges and it's Installations around the world. The FASIT training systems include: A single, universal target control software for all automated ranges (ground and aviation) identified in TC 25-8, providing users a controller with a common look and feel; downrange stationary and moving infantry and armor Presentation Devices (PDs) that interact with the control software to present targets and provide scoring feedback; battlefield/weapons effects devices that simulate combat situations, visuals, and sounds; and targets that provide visual, I2 and thermal representations of friendly/threat engagements. The FASIT systems enable trainers to develop scenarios to simulate wartime mission tasks in a stressful battlefield environment.</p> <p>The Digital Range Training System (DRTS) provides advanced instrumentation specifically required for live fire gunnery training and qualification with the Abrams, Bradley, Stryker/MGS and Apache Aircraft on larger mounted maneuver Instrumented "Digital" Ranges. DRTS provides crew, section, platoon and company training and qualification capabilities above and beyond any other range in the Army inventory. These ranges interface with the tactical vehicles through an Integrated Player Unit Recorder (IPUR) or Smart Onboard Data Interface Module (SMODIM) to provide both real-time feedback to leaders and rapid development of complete After Action Reviews (AARs) and Take Home Packages (THPs). These AAR THPs include synchronized Thru-Sight Video (TSV) from the Commander/Gunner sights, crew camera video from inside the vehicles, thermal field camera video from the range cameras and internal crew audio for a complete evaluation tool. Ten of these DRTS ranges also incorporate Aerial Weapons Scoring System (AWSS) to interface with Aviation and Unmanned Aerial System gunnery training and qualification in a similar manner. The five standard training ranges identified utilize all available combat systems capabilities and digitally integrate them to manage all forces undergoing crew through collective live-fire training and qualification: Digital Multi-Purpose Range Complex (DMPRC) supports all gunnery tables and Combined Arms Live fire Exercise (CALFEX) for Armor, Infantry and Aviation; Digital Multi-Purpose Training Range (DMPTR) supports crew and section qualification for Armor and Infantry; Battle Area Complex (BAX) supports crew through company CALFEX for Stryker & Infantry Brigade Combat Team (SBCT/IBCT); Digital Air Ground Integration Range (DAGIR) supports all gunnery tables and CALFEX for Armor, Infantry and Aviation platforms; Aerial Gunnery Range (AGR) at Fort Bragg supports crew through Company CALFEX for manned/unmanned aviation platforms.</p> <p>OPFOR Surrogate Wheeled Vehicles (OSWV) provides a collection of wheeled vehicles, used as training aids to portray threat vehicles including tactical vehicles, technical vehicles, and Civilian on the Battlefield vehicles (COB-V). The program supports the CTC OPFOR/COE Pillar capability through technical vehicles, unique VISMODs, and COB-Vs. This capability provides for an accurate replication of OPFOR and COB-Vs environment that rotational units must train against.</p> <p>Unmanned Aerial Systems (UAS) Swarm provides integrated, multi-domain threat representative UAS platforms through custom UAS components and payloads that challenge training communities' execution of UAS Tactics, Techniques and Procedures (TTPs), use of current and evolving UAS technologies (i.e., Drone buster), and gives feedback on their vulnerabilities to UAS-enabled Intelligence, Surveillance, and Reconnaissance, Cyber, Electronic Warfare, Dynamic Targeting and Swarm operations.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
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In November 2020, the FASIT program obtained a successful Milestone Development Decision. The program was approved entry into the Defense Acquisition System in multiple phases (EMD and Production) as an ACAT II program. FASIT is not a new start program, but is the continuation of requirements and formal update to the New Generation Army Targetry System (NGATS) Operational Requirements Document (ORD) that was approved 11 June 1996.

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

	FY 2021	FY 2022	FY 2023
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Common Training Instrumentation Architecture (CTIA) program.</p> <p>Description: Continue EMD phase contract activities for the CTIA program to provide common architecture capabilities.</p> <p>FY 2022 Plans: FY 2022 Base RDTE dollars in the amount of \$2.453 million will fund the continued development of CTIA to provide the common architecture capabilities that are essential for development, fielding, technology and capability insertion for 22 live training systems at 200+ training locations worldwide, to include the Combat Training Centers-Instrumentation System utilized at the National Training Center, the Joint Readiness Training Center, and at the Joint Multinational Readiness Center; the Home Station Instrumentation System; the Digital Ranges Training System, and future modernization efforts including emerging Army and joint architectures.</p> <p>FY 2023 Plans: FY 2023 Base RDTE dollars in the amount of \$2.699 million will fund the continued development of CTIA to provide the common architecture capabilities that are essential for development, fielding, technology and capability insertion for 22 live training systems at 200+ training locations worldwide, to include the Combat Training Centers-Instrumentation System utilized at the National Training Center, the Joint Readiness Training Center, and at the Joint Multinational Readiness Center; the Home Station Instrumentation System; the Digital Ranges Training System, and future modernization efforts including emerging Army and joint architectures.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase of in funding from FY 2022 to FY 2023 is due to a slight rise in material cost.</p>	2.417	2.453	2.699
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Combat Training Center Instrumentation System (CTC-IS).</p> <p>Description: Continue EMD phase contract activities for the CTC-IS.</p> <p>FY 2022 Plans: FY 2022 Base RDTE dollars in the amount of \$1.806 million will fund the initial design of the NTC Western Training Area extension for the NTC Instrumentation System. Tracking, Observer Controller / Trainer (OC/T) Situational Awareness, OC/T Voice. Army Aviation, Voice Tactical Monitoring, Spectrum Monitoring, video and AAR support will be extended into the Western Training area. Network, antenna site, antenna tower, fiber optics and power generation must be designed for this effort.</p>	3.386	3.744	2.680

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>FY 2022 Base RDTE dollars in the amount of \$.541 million will fund post deployment software support to implement software to support the next Integrated Player Unit (IPU) being developed. Improvements to increase battery life and reduce data plan usage include decentralized indirect fire, minefields and sleep functions.</p> <p>FY 2022 Base RDTE dollars in the amount of \$1.397 million will fund the Life Cycle Management (LCM) of Live Training Family of Systems, continuing the development of the architecture framework for future Life Cycle Efforts for the Hardware Product Line Framework.</p> <p>FY 2023 Plans: FY 2023 Base RDTE dollars in the amount of \$2.680 million will fund the modeling and final design efforts for the NTC Western Training Area extension for the NTC Instrumentation System. Tracking, Observer Controller / Trainer (OC/T) Situational Awareness, OC/T Voice. Army Aviation, Voice Tactical Monitoring, Spectrum Monitoring, video and AAR support will be extended into the Western Training area. Network, antenna site, antenna tower, fiber optics and power generation must be designed for this effort; Instrumented Player Unit(IPU) will fund the studies, capability analysis, and initial design for the next generation Combat Training Center IPU, which will be utilized at the three CTC's to provide improvements to increase battery life and reduce data plan usage include decentralized indirect fire, minefields and sleep functions; M SHORAD Integration effort will fund post deployment software support to implementation of software to support improved Air Defense Artillery (ADA) and Multi-Domain Operations (MDO) replication at the CTC's providing more realistic MDO training environment.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in funding reflects the elimination of activities for the LCM RDTE Effort.</p>				
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Instrumentable-Multiple Integrated Laser Engagement System (I-MILES).</p> <p>Description: EMD phase contract activities for the I-MILES program.</p> <p>FY 2022 Plans: FY 2022 Base RDTE dollars in the amount of \$2.876 million RDTE funding will analyze, develop, test and implement the Live Training Engagement Composition (LTEC) through Post Deployment Software Support efforts. Funding will ensure that baseline relevancy is maintained. Funding will also ensure that there is development and integration of new functionality to maintain concurrency.</p> <p>FY 2023 Plans: FY 2023 Base RDTE dollars in the amount of \$3.201 million RDTE funding will analyze, develop, test and implement the Live Training Engagement Composition (LTEC) through Post Deployment Software Support efforts. Funding will ensure that baseline relevancy is maintained. Funding will also ensure that there is development and integration of new functionality to maintain</p>		2.700	2.876	3.201

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>concurrency. By FY 2023 three of the five I-MILES product lines will be at end of useful live. This work will extend the useful life of the product lines.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase of in funding from FY 2022 to FY 2023 is due to a slight rise in material cost.</p>				
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Home Station Instrumentation Training System (HITS) program.</p> <p>Description: EMD phase contract activities for the HITS program.</p> <p>FY 2022 Plans: FY 2022 Base RDTE dollars in the amount of \$3.995 million will continue efforts for Home-Station Instrumentation Training Systems (HITS) to incorporate a new network that will enable Observer, Controller/Trainer (OC/T) interoperability using a tablet computer. This new network shall be in addition to the HITS network which is a closed loop system. HITS will develop a Voice Tactical Monitoring and Recording capability to interface with new tactical radios being fielded to the Army for After Action Reviews in home station training exercises. In addition, HITS maintains concurrency with the Combat Training Centers by developing software/hardware updates so that HITS has similar training capabilities found at the Combat Training Centers.</p> <p>FY 2023 Plans: FY 2023 Base RDTE dollars in the amount of \$1.679 million will continue efforts for Home-Station Instrumentation Training Systems (HITS) Concurrency for new software (either COTS or developmental) that will yield additional capabilities to HITS; HITS Aviation for small UAS adding this capability to HITS (Drones outfitted with tracking devices (radios) that can be picked up by the HITS tracking software). Tactical Radios- procure new radios that are integrated with a particular locations communication architecture. PDSS for new software support (exercise support) to provide expertise and troubleshooting during force on force exercises.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2022 to FY 2023 Decrease Statement: Decrease of \$2.316 million in RDTE due to fielding only one set of new radios per location per fiscal year as the new communication network is developed. Each HITS location will have a unique radio specification that could be different from other locations in order for the radios to communicate within that network. When each new communication network is fielded a radio procurement shall be instigated with radios unique to that location and network. Using this methodical approach shall allow the Government to improve force on force communications.</p>		1.810	3.995	1.679
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Medical Simulation Training Center (MSTC).</p>		0.432	0.484	1.209

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Description: EMD phase contract activities for the MSTC program to support the Virtual Patient System technologies. The approved MSTC Capability Production Document (CPD), Inc 1, Rev 1, dtd 6 MAR 2019 Capabilities has significant unfulfilled requirements, without which are enabling negative medical trauma training. The MSTC CPD requires and states that ALL GENDERS shall be represented within the medical training simulations and scenarios. The FEMALE GENDER is neither wholly, adequately, nor accurately represented in the MSTC at this time. The CPD also states that realistic medical scenarios are required. Realistic combat trauma training is not represented in the MSTC due to the inaccurate simulation of the Human Physiology and absence of representative battlefield wounds. These requirements align with near-peer competition over-match.</p> <p>FY 2022 Plans: FY 2022 Base RDTE dollars in the amount of \$.484 million will allow Instructor Support System (ISS) combat training scenarios to continue to be improved in a Synthetic Training Environment (STE) utilizing the hardware and software solutions developed by Industry in FY 2021, FEMALE trauma mannequin, Human Physiology software, and dynamic wound patterns shall continue to be modified through contract action to represent Army requirements. RDT&E funding is required for the Virtual Prototype Patient System (VPS) line of effort for FY 2022 for the integration and validation of a relevant and realistic GENDER-specific FEMALE mannequin/trauma simulator. RDT&E funding is required for the Virtual Prototype Patient System (VPS) line of effort for FY 2022 for the verification, validation, and accreditation (VV&A) of software that simulates, for each GENDER of mannequin, the dynamics of the Human Physiology to assess medical interventions and the verification, validation, and accreditation of hardware that represents the morphing wound patterns from gunshot, heat, chemical, electrical, biological, and nuclear events.</p> <p>FY 2023 Plans: FY 2023 Base RDTE dollars in the amount of \$1.209 million will allow the continued development and modification of the Female Trauma Mannequin, developed through a SBIR Phase II contract, utilizing the hardware and software solutions developed by Industry in FY 2021. The Female Trauma Mannequin, Human Physiology software, and dynamic wound patterns shall continue to be modified through contract action to represent Army requirements. RDT&E funding is required for the Virtual Prototype Patient System (VPS) line of effort for FY 2023 for the continued integration and validation of a relevant and realistic GENDER-specific FEMALE mannequin/trauma simulator. RDT&E funding will support the Virtual Prototype Patient System (VPS) line of effort for FY 2023 for the verification, validation, and accreditation (VV&A) of software that simulates, for each GENDER of mannequin, the dynamics of the Human Physiology to assess medical interventions and the verification, validation, and accreditation of hardware that represents the morphing wound patterns from gunshot, heat, chemical, electrical, biological, and nuclear events.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Increase in funding from FY 2022 \$.502 million to FY2023 \$1.209 reflects additional funding toward a realistic GENDER-specific FEMALE mannequin/trauma simulator.				
<p>Title: Live, Virtual, Constructive Integrating Architecture (LVC-IA) Engineering and Manufacturing Development (EMD) phase contract activity.</p> <p>Description: Continue EMD phase contract activities for the LVC-IA program.</p> <p>FY 2022 Plans: Live, Virtual, and Constructive-Integrating Architecture (LVC-IA) program will complete system development, integration and demonstration of the LVC-IA Version 4 capability which includes the developmental activities for Web-based optimization, Synthetic Training Environment (STE) compatibility, and concurrency with core system TADSS and Army Mission Command Information Systems.</p> <p>FY 2023 Plans: Live, Virtual, and Constructive-Integrating Architecture (LVC-IA) program will continue system development, integration and demonstration of the LVC-IA capability to ensure concurrency with STE, core system TADSS, and Army Mission Command Information Systems.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY2022 to FY2023 is due to the continued development to ensure concurrency with core system STE, TADSS and Army Mission Command Information Systems.</p>		4.345	2.514	2.723
<p>Title: Live, Virtual, Constructive Integrating Architecture (LVC-IA) Program Government System Test and Evaluation.</p> <p>Description: Government System Test and Evaluation for the LVC-IA Program.</p> <p>FY 2022 Plans: LVC-IA will complete Federation Integration and System Measurement of Performance (SMP) events, Functional Verification, Test Readiness Review (TRR) and Government Acceptance Testing for Version 4. Additionally, LVC-IA will continue integration, testing and evaluation activities in support of LVC-IA interoperability with TADSS and other Mission Command Information Systems.</p> <p>FY 2023 Plans: LVC-IA will continue integration, testing and evaluation activities in support of LVC-IA interoperability with STE, TADSS and other Mission Command Information Systems.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		1.277	0.631	0.638

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Increase from FY 2022 to FY 2023 is due to the additional testing and evaluation activities in support of LVC-IA interoperability with Mission Command Information Systems.				
<p>Title: Government Program Management for the Live, Virtual, Constructive Integrating Architecture (LVC-IA) Program.</p> <p>Description: Government Program Management for the LVC-IA Program.</p> <p>FY 2022 Plans: Will provide program management, engineering and technical oversight, contract support, and travel for the LVC-IA Program.</p> <p>FY 2023 Plans: Will provide program management, engineering and technical oversight, contract support, and travel for the LVC-IA Program.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY2022 to FY2023 is due to the additional engineering and technical oversight, and travel to support program activities.</p>		0.153	0.225	0.243
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Combat Training Center Live Fire Modernization (CTC Live Fire Mod)</p> <p>Description: Combat Training Center Live Fire Modernization (CTC Live Fire Mod) provides Future Army System of Integrated Targets (FASIT) qualified live-fire capable targets which includes Stationary Armor Targets (SAT) with accompanying Battlefield Effects Simulators (BES), Stationary Infantry Targets (SIT), Human Urban Targets (HUT), Double-Arm SITs, Moving Infantry Targets (MIT), and non-FASIT qualified Aviation 3-D and Unattended Aerial Systems (UAS) targets. These provide a capability for the CTCs to support the transition from Mission Rehearsal Exercise/Situational Training Exercise (MRE/ST) rotations to Unified Land Operations (ULO) against a hybrid threat.</p>		2.409	-	-
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Target Modernization program.</p> <p>Description: The Target Modernization program's primary innovation goals are the development of advanced non-contact ballistic hit detection and recognition system, high fidelity dynamic infrared threat representations, advanced human type targets, non-pyrotechnic battlefield effects replication systems, non-contact area scoring technology, and augmented reality on live fire ranges; all aimed at increasing training realism, enhancing Soldier resiliency, and lowering life cycle costs.</p>		3.650	-	-
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Future Army System of Integrated Targets (FASIT).</p> <p>Description: The FASIT program's primary innovation goals are the development of advanced non-contact ballistic hit detection and recognition system, advanced human type targets, non-contact area scoring technology, combat ID targets, electromagnetic/</p>		-	5.636	1.290

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>cyber replication, multi domain operations, and augmented reality on live fire ranges; all aimed at increasing training realism, enhancing Soldier resiliency, and lowering life cycle costs.</p> <p>FY 2022 Plans: FY 2022 Base RDTE dollars in the amount of \$5.636 million provides for the incremental funding of the Dynamic Infrared Projection research and development aimed at the completion and obtainment of a Technology Readiness Level of 8/9 for the system to be able to portray realistic thermal images onto target presentation devices, to include environmental verification and performance testing. Funding will also incrementally fund the Phase III SBIR contract for the non-pyrotechnic battlefield effects replication technologies. The Non-pyrotechnic battle field effects effort will focus on hostile shot replication, machine gun fire replication, black smoke generation, and sound effects simulators via non-pyrotechnic solutions. The Non-pyrotechnic battle field effects effort will provide for an inexpensive and ruggedized system that can be utilized to create accurate training environment realism enhancement. Current pyrotechnic solutions require specialized training, handling, and procurement of effects, and can effect training throughput by requiring the ranges to shut down during reloading. The nonpryo solutions will align with the defined OPTEMPO in the FASIT CPD. It also provides for incremental funding of the new Battlefield Effects Devices. These devices will focus on enhancing and simulating a hostile tank's main gun fire signature from a target device, tracer round shootback signature, and small arms hostile fire via pyrotechnic solutions. The pyrotechnic battlefield effect device effort will provide for an inexpensive and rugged systems that can be used to create a more realistic training environment for Soldiers to train with in a live fire environment. The pyrotechnic solutions will align with the defined OPTEMPO in the FASIT CPD.</p> <p>FY 2023 Plans: FY 2023 Base RDTE dollars in the amount of \$1.290 million provides for development of Non-Contact Area Scoring Technology (NCAST). NCAST is a capability that will be developed to replace the mobile Aerial Weapons Scoring System (AWSS) systems as well as the fixed AWSS on select aviation Home Station ranges to support Aviation Gunnery Training. Additionally, the system will provide real-time detection of incoming munitions, location of penetration, and determine the caliber and velocity of incoming rounds. These efforts and solutions will align with the defined OPTEMPO in the FASIT CPD and Army Training Circular 25-8.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease from FY 2022 to FY 2023 is due to the conclusion of two Phase III Small Business Innovative Research (SBIR) efforts, Dynamic Infrared (DIR) Projection and Non-pyrotechnic Battlefield Effects Replication Technology (BFER). DIR is a system that will be able to portray realistic thermal images onto target presentation devices, to include environmental verification and performance testing. BFER effort will produce hostile shot replication black smoke generation and sound effects simulators</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
via non-pyrotechnic solutions. Both of these SBIR Phase III efforts will begin fielding new capabilities in FY 2023 as part range upgrade and new range efforts.				
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Digital Range Training System (DRTS)</p> <p>Description: Conduct development of a government-owned Technical Data Package (TDP) for the DRTS program to enable competitive acquisitions for targets.</p> <p>FY 2022 Plans: RDTE of \$1.139 million will continue the development of a Government-owned and managed Technical Data Package (TDP) for the presentation devices utilized on the DRTS and Future Army Systems of Integrated Targets (FASIT). The funding will be used to complete the design efforts, build prototype units, and perform the developmental testing to validate that the TDP works as required and the presentation devices can be used to support the technology refresh and modernization efforts on all Army ranges.</p> <p>FY 2023 Plans: FY 2023 Base RDTE dollars in the amount of \$1.036 million will finalize the development, testing and evaluation of a Government-owned and managed Technical Data Package (TDP) for the presentation devices (target lifters) utilized on the DRTS and FASIT ranges. The funding will be used to build prototype and first article units to perform the developmental and environmental testing to validate that the TDP works as required and the presentation devices can be used to support the technology refresh and modernization efforts on all Army ranges. It will also be used to see how the new design works in its operational training environment to establish the Reliability, Availability and Maintainability performance of the devices.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The decrease in funding from FY 2022 to FY 2023 is due to the fact that FY 2023 is the final year/phase of the effort and the estimated amount of funding necessary to complete the testing and validation of the Technical Data Package has decreased.</p>		1.445	1.139	1.036
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the OPFOR Integrated Air Defense System (IADS)</p> <p>Description: EMD phase contract activities for the IADS Program</p> <p>FY 2022 Plans: FY 2022 RDTE funding of \$0.554 million will be used to start development of weapon processor software, integration with the training instrumentation systems at the Combat Training Centers (CTCs), and validate the solution through testing.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		2.566	0.554	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Decrease of \$.554 million from FY 2022 to FY 2023 is the result of completing the RDTE OPFOR IADS development effort resulting in the program no longer requiring RDTE funding in FY23.				
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for Basic Electronics Maintenance Trainer (BEMT)</p> <p>Description: BEMT provides the essential modernized electronic system maintenance training capability for the Army, Army National Guard, and the Army Reserve to achieve Military Occupational Specialty-Qualification (MOS-Q) for 40 MOS at 24 Active, National Guard, and Army Reserve camps, posts, and stations. BEMT will be modernizing the electronics maintenance training. BEMT provides training in basic electronics, while saving institutions significant administrative expenses over live training alternatives.</p> <p>FY 2022 Plans: FY 2022 Base RDTE dollars in the amount of \$.295 million will continue to fund the enhancement of the Learning Management System courseware. Developing solutions to improve Army Enterprise server capability.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease of \$.295 million from FY 2022 to FY 2023 is the result of completed BEMT development effort that no longer requires additional resources.</p>		0.229	0.295	-
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for OPFOR Attack Aircraft Shoot-back Capability (OA2SBC) program</p> <p>Description: EMD phase contract activities for the OPFOR Attack Aircraft Shoot-back Capability (OA2SBC) program.</p>		0.194	-	-
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Unmanned Aerial System (UAS) Swarm</p> <p>FY 2022 Plans: FY 2022 RDTE of \$.999 million provides for the incremental funding for development of Unmanned Aerial System (UAS) Swarm software and integration with 4G/LTE networks, development of payload and integration, initial operational assessments, and will support hardware development for charging stations, tablets, and manual/remote deployment systems.</p> <p>FY 2023 Plans: FY 2023 RDTE of \$1.202 million provides for the incremental funding for development of UAS Swarm software and integration with 4G/LTE networks, development of payload and integration, initial operational assessments, and will support hardware development for charging stations, tablets, and manual/remote deployment systems.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		-	0.999	1.202

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Increase of in funding from FY 2022 to FY 2023 is due to a slight rise in material cost.			
Title: SBIR/STTR	-	0.969	-
FY 2022 Plans: Funding transferred in accordance with Title 15 USC 2638.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 2638.			
Accomplishments/Planned Programs Subtotals	27.013	26.514	18.600

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MA6600: <i>Combat Training Centers Support</i>	87.580	94.965	48.046	-	48.046	40.186	50.374	47.871	44.747	Continuing	Continuing
• NA0100: <i>Training Devices, Nonsystem</i>	164.814	174.644	201.966	-	201.966	211.759	198.208	225.581	242.282	Continuing	Continuing

Remarks

D. Acquisition Strategy
Competitive development efforts based on performance specifications.

- In FY 2019 - 2023, Combat Training Center Instrumentation Systems (CTC-IS) RDTE will be used to fund a Life Cycle Product-line Management (LCPM) contract structured as a 5 year Single Award Indefinite-Delivery/Indefinite-Quantity (IDIQ) for the implementation of a Hardware Product Line (HPL), the contractor was selected. The strategy is to establish a deliberate approach to Life Cycle Management (LCM) of Live Training Family of Systems, providing the framework for future Life Cycle Efforts for the Hardware Product Line Framework.
- In FY 2020, a new competitive IDIQ contract with a 1-year base and 7 single-year option periods was awarded to General Dynamics Mission Systems - CTIA will be executed under this contract.
- The LVC-IA Enhanced Capability contract is the competitively awarded follow-on effort awarded in 3rd Quarter FY 2016. This contract has a two-year base and four single-year option periods to provide the additional capabilities for Versions 3, 4 and beyond. The contract was awarded to Cole Engineering and Science, Inc. (CESI) to provide for the development, fielding and training of each version capability for the designated Basis of Issue Plan (BOIP) sites and provide Post-Deployment Software

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<p>Support (PDSS) for all currently fielded versions. In FY 2021, the program will commence competitive action to award the LVC-IA contract in the 2nd Quarter FY 2022; this follow-on award will continue concurrency effort through program completion slated for FY2035.</p> <p>4. In FY 2023, FASIT will incrementally fund the Small Business Innovative Research Phase III contract for the development of the NCAST capabilities.</p> <p>5. In FY 2023, the Digital Range Training System (DRTS) will continue the funding under the Delivery Order (established in FY 2022) under the Life Cycle Product-line Management (LCPM) IDIQ contract, which will finalize the development and testing of the target Technical Data Package (TDP).</p> <p>6. In FY 2023, Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) will leverage the General Dynamics contract vehicle and competitive OTA approaches to address EUL / relevancy challenges as product lines reach those trigger points in their life cycle or changes to weapon system configurations drive those actions. By FY23 three of the five I-MILES product lines will be at end of useful live. These efforts will enable a wide range of industry partners to integrate LTEC/LPAN into existing systems and execute Tech Refresh activities as required until Live STE capabilities are introduced.</p> <p>8. In FY 2021, Home Station Instrumentation Training System (HITS) awarded a new delivery order on the General Dynamics contract.</p> <p>9. In FY 2022, OPFOR Integrated Air Defense System (IADS) will start development of weapon processor software, integration with the training instrumentation systems at the Combat Training Centers (CTCs), and validate the solution through testing.</p> <p>10. UAS Swarm will continue to provide the U.S. Army Combined Training Centers with UAS Swarm support utilizing the existing Aviation and Missile Technology Consortium OTA.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
OneTESS Program Management	Various	PEO STRI : Orlando, FL	8.046	-		-		-		-		-	0.000	8.046	8.046
OneTESS Program Management	Various	PEO STRI, : Orlando, FL	2.040	-		-		-		-		-	0.000	2.040	2.040
HITS Program Management	Various	PEO STRI : Orlando, FL	1.348	-		-		-		-		-	0.000	1.348	1.348
CTC-IS Program Management	Various	PEO STRI : Orlando, FL	9.018	-		-		-		-		-	0.000	9.018	9.018
MSTC Program Management	Various	PEO STRI : Orlando, FL	0.952	-		-		-		-		-	0.000	0.952	0.952
I-MILES Program Management	Various	PEO STRI : Orlando, FL	0.511	-		-		-		-		-	0.000	0.511	0.511
EST Program Management	Various	PEO STRI : Orlando, FL	0.214	-		-		-		-		-	0.000	0.214	0.214
LVC-IA Program Management	Various	PEO STRI : Orlando, FL	11.027	0.153	Nov 2020	0.225	Nov 2021	0.243	Nov 2022	-		0.243	Continuing	Continuing	Continuing
Target Modernization	Various	PEO STRI : Orlando, FL	0.614	-		-		-		-		-	0.000	0.614	0.614
ETC-IS Program Management	Various	PEO STRI : Orlando, FL	0.164	-		-		-		-		-	0.000	0.164	0.164
CTIA	Various	PEO STRI : ORLANDO, FL	0.876	-		-		-		-		-	0.000	0.876	0.876
Soldier Fitness Program	TBD	Mulitple : Various	2.100	-		-		-		-		-	0.000	2.100	2.100
Suicide Prevention	TBD	Multiple : Various	4.313	-		-		-		-		-	0.000	4.313	4.313
SVT Program Management	Various	PEO STRI : Orlando, FL	0.049	-		-		-		-		-	0.000	0.049	0.049
OPFOR Integrated Air Defense System (IADS) Program Management	Various	PEO STRI : Orlando, FL	0.742	-		-		-		-		-	0.000	0.742	0.742
Congressional Add for Combined Arms Center	Various	PEO STRI : Huntsville, AL	0.177	-		-		-		-		-	0.000	0.177	0.177

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Threat Integrated Air Defense System															
SBIR/STTR	TBD	Various : Various	-	-		0.969		-		-		-	0.000	0.969	-
Subtotal			42.191	0.153		1.194		0.243		-		0.243	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
I-MILES	Option/IDIQ	General Dynamics Mission Systems : Orlando, FL	2.785	2.700	Mar 2021	2.714	Dec 2021	3.041	Dec 2022	-		3.041	Continuing	Continuing	Continuing
I-MILES RELEVANCY	SS/IDIQ	Lockheed Martin : Orlando, FL	5.137	-		-		-		-		-	0.000	5.137	5.137
HITS	C/FFP	Riptide : Orlando, FL	1.379	-		-		-		-		-	0.000	1.379	1.379
HITS	C/IDIQ	General Dynamics Mission Systems : Orlando, FL 32826	6.436	1.180	Jul 2021	-		-		-		-	0.000	7.616	7.616
HITS	Option/IDIQ	General Dynamics Mission Systems (GDMS) : Orlando, FL 32826	4.212	0.630	Jan 2021	3.995	Mar 2022	1.679	Mar 2023	-		1.679	Continuing	Continuing	Continuing
MSTC Development	C/FP	Multiple : Various	5.601	0.432	Jul 2021	0.484	Jul 2022	1.209	Mar 2023	-		1.209	Continuing	Continuing	Continuing
LVC-IA Development	C/CPFF	Cole Engineering Services, Inc : Orlando, FL	29.822	-		-		-		-		-	0.000	29.822	29.822
LVC-IA Enhanced Capability	C/CPFF	Cole Engineering Services, Inc (CESI) : Orlando, FL	5.706	-		-		-		-		-	0.000	5.706	5.706
LVC-IA Enhanced Capability	Option/CPFF	Cole Engineering Services, Inc (CESI) : Orlando, FL	13.563	4.345	Nov 2020	-		-		-		-	0.000	17.908	18.569

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604715A / Non-System Training Devi ces - Eng Dev				Project (Number/Name) 241 / Nstd Combined Arms							
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
LVC-IA Follow-On Contract	C/TBD	TBD : TBD	-	-		2.514	Apr 2022	2.723	Apr 2023	-		2.723	Continuing	Continuing	Continuing
OneTESS	SS/CPFF	General Dynamics C4 Systems : Orlando, FL 32826	10.430	-		-		-		-		-	0.000	10.430	10.430
EST Development	C/FP	Cubic Simulation Systems, Inc. : Orlando, FL 32809-3813	1.528	-		-		-		-		-	0.000	1.528	1.528
OneTESS	SS/CPFF	General Dynamics : Fairfax, VA	124.769	-		-		-		-		-	0.000	124.769	124.769
CTIA	C/CPFF	General Dynamics Mission Systems, Inc (GDMS) : Orlando, FL	2.420	2.417	Jan 2021	2.453	Jan 2022	2.699	Jan 2023	-		2.699	Continuing	Continuing	Continuing
Target Modernization	SS/CPFF	Digital Solid State Propulsion, Inc. : Reno, NV	-	2.163	Feb 2021	-		-		-		-	0.000	2.163	2.163
CTC-IS	C/IDIQ	General Dynamics Mission Systems : Orlando, FL	45.105	1.573	Mar 2021	0.541	May 2022	2.680	May 2023	-		2.680	Continuing	Continuing	Continuing
Target Modernization	SS/CPFF	SensorMetrix : San Diego, CA	1.989	1.487	Jan 2021	-		-		-		-	0.000	3.476	3.476
EST Enhanced Capabilities	C/FFP	Meggitt Training Systems, Inc. : Suwanee, GA 30024-1247	2.075	-		-		-		-		-	0.000	2.075	2.075
EST	C/FP	Nova Technologies : Panama City, FL 32404-6747	0.609	-		-		-		-		-	0.000	0.609	0.609
CTC IS	Option/IDIQ	GENERAL DYNAMICS ONE SOURCE : ORLANDO, FL	-	-		1.806	Feb 2022	-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Target Modernization	C/CPFF	JRM Technologies : Orlando	1.149	-		-		-		-		-	0.000	1.149	1.149
Future Army System of Integrated Targets (FASIT) Battlefield Effects Devices	C/CPFF	General Dynamics One Source, LLC : Fairfax, VA	-	-		1.914	Feb 2022	-		-		-	Continuing	Continuing	Continuing
Future Army System of Integrated Targets (FASIT) Dynamic Infrared Projection	SS/CPFF	JRM Technologies : Orlando, FL	-	-		1.600	Jan 2022	-		-		-	Continuing	Continuing	Continuing
Future Army System of Integrated Targets (FASIT) Non-Pyro Effects	SS/CPFF	Digital Solid State Propulsion, Inc. : Reno, NV	-	-		2.122	Feb 2022	-		-		-	Continuing	Continuing	Continuing
Future Army Systems of Integrated Targets (FASIT) Non-Contact Area Scoring Technology	SS/TBD	TBD : TBD	-	-		-		1.290	Jan 2023	-		1.290	0.000	1.290	-
Digital Range Training System (DRTS)	C/CPFF	General Dynamics Mission Systems : Orlando, FL	3.071	-		-		-		-		-	0.000	3.071	3.071
Digital Range Training System (DRTS)	Option/CPFF	General Dynamics One Source, LLC : Fairfax, VA	-	1.445	Jan 2021	1.139	Jan 2022	1.036	Jan 2023	-		1.036	Continuing	Continuing	Continuing
OPFOR Integrated Air Defense System (IADS)	MIPR	PEO IEWS, PM Aircraft Survivability Equipment (ASE) : Huntsville, AL	21.371	-		-		-		-		-	0.000	21.371	21.371
OPFOR Integrated Air Defense System (IADS)	MIPR	Target Systems Management Office, PEO STRI, PEO STRI : Huntsville, AL	0.915	-		-		-		-		-	0.000	0.915	0.915
OPFOR Integrated Air Defense System (IADS) MANPADS	TBD	TBS : Orlando, FL	-	-		0.554	Dec 2021	-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / Non-System Training Devices - Eng Dev	Project (Number/Name) 241 / Nstd Combined Arms
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Radar Signal Emulator Development for IADS	C/TBD	To Be Determined : Orlando, FL	9.520	-		-		-		-		-	0.000	9.520	9.520
OPFOR Surrogate Wheeled Vehicles (OSWV)	IA	Tank Automotive Research Development and Engineering Center : Warren, MI	6.343	-		-		-		-		-	0.000	6.343	6.343
Unmanned Aerial System Swarm	Option/CPFF	Colsa : Huntsville, AL	-	-		0.999	Apr 2022	1.202	Jan 2023	-		1.202	Continuing	Continuing	Continuing
Congressional Add for Radio Frequency Emitters	C/TBD	ACC, Orlando : Orlando, Florida	3.500	-		-		-		-		-	0.000	3.500	3.500
EST Enhanced Capabilities Adaptive Marksmanship and Intelligent Tutoring	C/FFP	Dignitas Technologies : Orlando, FL 32817	0.776	-		-		-		-		-	0.000	0.776	0.776
Integrated Military Operations in Urban Terrain (MOUT) Training System (IMTS)	C/CPFF	General Dynamcis Mission Systems : Orlando, FL	0.958	-		-		-		-		-	0.000	0.958	0.958
Congressional Add for Combined Arms Center Threat Integrated Air Defense System	C/CPFF	Scientific Research Corporation : Huntsville, AL	9.823	-		-		-		-		-	0.000	9.823	9.823
Combat Training Center Live Fire Modernization (CTC Live Fire Mod)	C/CPFF	General Dynamics One Source, LLC : Fairfax, VA	-	2.409	Feb 2021	-		-		-		-	0.000	2.409	2.409
ETC-IS	SS/CPFF	General Dynamics C4 Systems : Orlando, FL 32826	4.836	-		-		-		-		-	0.000	4.836	4.836
CTIA	Option/IDIQ	General Dynamics Mission Systems : Orlando, FL	20.808	-		-		-		-		-	0.000	20.808	20.808

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / Non-System Training Devices - Eng Dev	Project (Number/Name) 241 / Nstd Combined Arms
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Target Modernization	C/IDIQ	Pratt and Miller Engineering : Orlando, FL	6.600	-		-		-		-		-	0.000	6.600	6.600
CTC-IS	C/IDIQ	GENERAL DYNAMICS ONE SOURCE : Orlando, FL	6.007	1.813	Aug 2021	1.397	Oct 2021	-		-		-	Continuing	Continuing	Continuing
Target Modernization	Option/CPFF	Pratt and Miller Engineering (P&M) : Orlando, FL	4.714	-		-		-		-		-	0.000	4.714	4.714
CFFT Enhanced Joint Fires Observer (JFO) Training and Certification Requirements	C/IDIQ	Nova Technologies : Panama City, FL 32404-6747	1.242	-		-		-		-		-	0.000	1.242	1.242
Congressional Add Center of Excellence for Military Operations in Urban Terrain and Cultural Trn	C/FP	Multiple : Various	2.996	-		-		-		-		-	0.000	2.996	2.996
Soldier/Squad Virtual Trainer (S/SVT) Program	C/CR	OTA - CUBIC and MEGGITT : Orlando, FL	5.534	-		-		-		-		-	0.000	5.534	5.534
Basic Electronics Maintenance Trainer (BEMT)	SS/FFP	Nida Corp : Melbourne, FL	0.173	0.229	Nov 2020	0.295	Nov 2021	-		-		-	0.000	0.697	0.708
OPFOR Attack Aircraft Shoot-back Capability	C/TBD	TBS : Orlando, FL	-	0.194	Mar 2021	-		-		-		-	0.000	0.194	0.194
Subtotal			373.902	23.017		24.527		17.559		-		17.559	Continuing	Continuing	N/A

Remarks

- The Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) - FY 2022 is the final phase of the LTEC integration into VTESS and TVS. Consequently the effort is ramping down in terms of burn rate per month from FY 2021.
- The LVC-IA program plans to award its follow-on contract in the 3rd quarter of FY 2022. This follow-on award will continue their concurrency efforts with the Synthetic Training Environment (STE) and Mission Command Information Systems (MCIS) through program completion slated for FY 2035.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / Non-System Training Devices - Eng Dev	Project (Number/Name) 241 / Nstd Combined Arms
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CTIA	Various	Various : Various	12.844	-		-		-		-		-	0.000	12.844	12.844
OneTESS	Various	Various : Orlando, FL	6.596	-		-		-		-		-	0.000	6.596	6.596
OneTESS	Various	Various : Various	0.262	-		-		-		-		-	0.000	0.262	0.262
Target Modernization	Various	Various : Various	0.192	-		-		-		-		-	0.000	0.192	0.192
Subtotal			19.894	-		-		-		-		-	0.000	19.894	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
OneTESS Development & Test	Various	Multiple : Orlando, FL	4.162	-		-		-		-		-	0.000	4.162	4.162
OneTESS Test Support	Various	Multiple : Orlando, FL	1.280	-		-		-		-		-	0.000	1.280	1.280
HITS	Various	Various : Orlando, FL	0.740	-		-		-		-		-	0.000	0.740	0.740
LVC-IA Test Support	Various	Multiple : Orlando, FL	12.363	1.277	Nov 2020	0.631	Nov 2021	0.638	Nov 2022	-		0.638	Continuing	Continuing	Continuing
IEDES	Various	Multiple : Orlando, FL	0.519	-		-		-		-		-	0.000	0.519	0.519
OPFOR Integrated Air Defense System (IADS)	SS/CPFF	Inter-Coastal Electronics, Inc. : Mesa, AZ	6.120	2.566	Mar 2021	-		-		-		-	0.000	8.686	8.686
I-MILES EPG Testing	MIPR	A TEC : FT Huachuca, AZ	0.162	-		0.162	Mar 2022	0.160	Mar 2023	-		0.160	Continuing	Continuing	Continuing
Subtotal			25.346	3.843		0.793		0.798		-		0.798	Continuing	Continuing	N/A

Project Cost Totals	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
	461.333	27.013	26.514	18.600	-	18.600	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CTIA Development and Architectural Evolution	[Redacted]																											
CTC IS Development	[Redacted]																											
I-MILES Development	[Redacted]																											
I-MILES RELEVANCY	[Redacted]																											
HITS Development	[Redacted]																											
MSTC Trainer Developments	[Redacted]																											
LVC-IA - Version 4 (Development, Integration, Demonstration and	[Redacted]																											
LVC-IA - Concurrency with STE, TADSS, and Mission Command Systems	[Redacted]																											
Target Modernization Development	[Redacted]																											
FASIT Battlefield Effects Device	[Redacted]																											
FASIT Dynamic Infrared Projections	[Redacted]																											
FASIT Non Pyro Effects	[Redacted]																											
FASIT Non Contact Area Scoring Tech	[Redacted]																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FASIT Combat Identification																												
Digital Range Training System (DRTS) Development																												
Integrated Military Operations in Urban Terrain (MOUT) Training																												
OPFOR Integrated Air Defense System (IADS)																												
Unmanned Aerial Systems (UAS) Swarm Development																												
OPFOR Surrogate Wheeled Vehicles (OSWV)																												
OPFOR Attack Aircraft Shoot-back Capability (OA2SBC)																												
BEMT Army Enterprise Network Server Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CTIA Development and Architectural Evolution	1	2012	4	2027
CTC IS Development	1	2010	4	2027
I-MILES Development	2	2017	3	2027
I-MILES RELEVANCY	2	2018	4	2027
HITS Development	3	2012	4	2024
MSTC Trainer Developments	2	2017	4	2025
LVC-IA - Version 3 (Development, Integration, Demonstration and Testing)	4	2016	3	2018
LVC-IA - Version 4 (Development, Integration, Demonstration and Testing)	4	2018	4	2022
LVC-IA - Concurrency with STE, TADSS, and Mission Command Systems	1	2022	4	2035
Target Modernization Development	1	2016	4	2021
FASIT Battlefield Effects Device	2	2022	2	2024
FASIT Dynamic Infrared Projections	2	2022	2	2024
FASIT Non Pyro Effects	4	2021	4	2023
FASIT Non Contact Area Scoring Tech	4	2022	4	2024
FASIT Combat Identification	1	2025	4	2027
Digital Range Training System (DRTS) Development	2	2018	4	2023
Integrated Military Operations in Urban Terrain (MOUT) Training System (IMTS)	2	2020	4	2021
OPFOR Integrated Air Defense System (IADS)	4	2017	4	2022
Unmanned Aerial Systems (UAS) Swarm Development	1	2022	4	2026
OPFOR Surrogate Wheeled Vehicles (OSWV)	2	2019	4	2021
OPFOR Attack Aircraft Shoot-back Capability (OA2SBC)	2	2021	2	2022
S/SVT - Development	3	2019	3	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army			Date: April 2022	
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		

Events	Start		End	
	Quarter	Year	Quarter	Year
BEMT Army Enterprise Network Server Development	1	2020	1	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	62.058	59.518	39.541	-	39.541	34.335	49.488	48.268	54.448	Continuing	Continuing
126: <i>PEO Electronic Protect</i>	-	15.049	3.827	-	-	-	-	-	-	-	0.000	18.876
146: <i>Air & Msl Defense Planning Control Sys</i>	-	8.085	2.877	1.255	-	1.255	3.495	3.281	3.282	3.315	Continuing	Continuing
149: <i>Counter-Rockets, Artillery & Mortar</i>	-	0.875	-	-	-	-	-	-	-	-	Continuing	Continuing
FG5: <i>Counter Unmanned Aerial Systems (UAS)</i>	-	38.049	52.814	38.286	-	38.286	30.840	46.207	44.986	51.133	Continuing	Continuing

A. Mission Description and Budget Item Justification

A portion of this funding line is a key enabler of the Army Modernization Priorities in support of Air Missile Defense Planning and Control System (AMDPCS). AMDPCS provides integration of air and missile defense operations at all echelons. Specifically, the Air and Missile Defense Work Station (AMDWS) provides a correlated air picture using local radars, allowing the Commander the visibility and situational understanding of the airspace; automated defense design and staff planning tools in AMDWS afford soldiers horizontal and vertical collaborative planning with adjacent units. Air Defense System Integrator (ADSI) serves as a joint tactical data link gateway/air picture, and when correlated by FAAD C2 and displayed on AMDWS, provides a near real time, three dimensional air picture for the Commander. Joint Tactical Terminal (JTT) provides soldiers Theater Ballistic Missile (TBM) early warning, allowing them to take appropriate actions. AMDPCS is fielded to Army Air and Missile Defense Commands (AAMDC), Air Defense Artillery Brigades (ADA BDE), Air and Missile Defense Battalions (AMD BN), and Terminal High Altitude Area Air Defense Batteries (THAAD BTRY). Air Defense Airspace Management (ADAM), a variant of AMDPCS with similar capabilities, is fielded to Corps, Divisions, Brigade Combat Teams (BCT), and multi-functional support brigades. As part of the capability and technology reuse, AMDWS external interfaces are being leveraged by Integrated Battle Command System (IBCS) to avoid redevelopment of existing capabilities. AMDWS and FAAD C2 are core components of the Air and Missile Defense system-of-systems currently deployed in combat zones.

The C-RAM system-of-systems is an evolutionary program that detects RAM launches, provides localized warning to the defended area, intercepts rounds in flight, and enhances response to and defeat of enemy forces. C-RAM combines multi-service fielded and non-developmental item sensors, command and control (C2) equipment, warning systems, and a modified U.S. Navy intercept system (Land-based Phalanx Weapon System [LPWS]), all connected via a wireless local area network. The FAAD C2 system has been enhanced to integrate the sensors, weapons, and warning systems to provide C2 for the C-RAM system-of-systems. FAAD C2 software correlates the RAM sensor data, evaluates the threat, provides early warning, directs engagements, and cues counterfire systems and reaction forces. FAAD C2 employs an agile software development, maintenance, and sustainment strategy, with Urgent Materiel Releases (UMR) every six (6) months and Full Materiel Releases (FMR) every 15-18 months to keep pace with rapidly fielding integrated systems to meet operational needs. C-RAM capability in theater is supported through the Overseas Contingency Operations (OCO) process. Base RDT&E supports FAAD C2 basic Air Defense functionality as well as directed enhancements to the C-RAM system-of-systems capability, such as development and integration of C-RAM network security enhancements and development of all-digital radar technology to address emerging threats.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>
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Counter-Unmanned Aircraft Systems (C-UAS) efforts will provide forces at all echelons with cross-domain capabilities, while supporting joint operational requirements. These combined arms solutions will support the full kill-chain and result in solutions addressing fixed/semi-fixed, mobile platform, and dismounted missions. Development efforts are aligned with Joint Requirements Oversight Council Memorandum (JROCM) 078-20, which codifies the threshold and objective capability requirements for C-UAS development and focuses on technologies which increase capabilities to identify, classify, track, and defeat Groups 1-3 UAS threats.

B. Program Change Summary (\$ in Millions)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	62.058	59.518	0.000	-	0.000
Current President's Budget	62.058	59.518	39.541	-	39.541
Total Adjustments	0.000	0.000	39.541	-	39.541
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	39.541	-	39.541

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev				Project (Number/Name) 126 / PEO Electronic Protect			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
126: PEO Electronic Protect	-	15.049	3.827	-	-	-	-	-	-	-	0.000	18.876
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Army Long-Range Persistent Surveillance (ALPS) is a passive sensor that provides long range surveillance against Cruise Missile (CM), Fixed Wing (FW), Rotary Wing (RW), and Unmanned Aircraft System (UAS) threats. Prototype systems will be provided to meet EUCOM, INDOPACOM, and CENTCOM (JUON-CC-0576) identified operational needs and to conduct an assessment via a report by the combatant commander(s). The objectives of this effort are to provide component and subsystem maturity in a system-of-systems environment and to reduce subsequent integration risk into Joint and Army Command and Control systems.

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

	FY 2021	FY 2022	FY 2023
<p>Title: ALPS Development and Integration</p> <p>Description: Provide ALPS systems to meet multiple Combatant Command (COCOM) operational needs and integrate ALPS into the Army Integrated Air and Missile Defense (AIAMD) architecture.</p> <p>Prototype systems are being provided to meet multiple Combatant Command operational needs and to conduct an assessment. The objectives of this effort are to prove component and subsystem maturity in a system-of-systems environment and to reduce subsequent integration risk. ALPS will also be integrated into the AIAMD architecture.</p> <p>FY 2022 Plans: Deploy and install ALPS prototype systems to meet the urgent operational requirements of multiple combatant commands, specifically EUCOM, INDOPACOM, and CENTCOM. Site survey and operational activities will support efforts to ensure mission success. Complete the combatant commander assessment.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease is based on a projected decline in requirements in FY 2023 for ALPS</p>	15.049	3.687	-
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC 638.</p> <p>FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>	-	0.140	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 126 / PEO Electronic Protection

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred in accordance with Title 15 USC 638.			
Accomplishments/Planned Programs Subtotals	15.049	3.827	-

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• EF9: System Integration and Test	-	-	-	-	-	-	-	-	-		
• EX2: Lower Tier Air Missile Defense (LTAMD) Capability	308.805	297.629	382.147	-	382.147	89.187	89.984	90.002	90.874	0.000	1,348.628
• FM3: Future Interceptor	-	6.895	8.179	-	8.179	8.210	8.202	8.205	8.285	0.000	47.976
• C53101: MSE Missile	678.148	771.696	1,037.093	-	1,037.093	978.741	982.922	991.265	1,002.608	Continuing	Continuing
• C62002: IFPC INC 2-I BLOCK 1 SYSTEM	62.461	19.053	18.924	-	18.924	386.383	670.667	712.994	722.152	0.000	2,592.634
• 0604117A: Maneuver - Short Range Air Defense (M-SHORAD)	5.776	39.376	225.147	-	225.147	461.536	519.511	252.825	271.364	0.000	1,775.535
• C14300: M-SHORAD - Procurement	517.287	331.575	135.747	-	135.747	58.336	205.657	487.003	487.120	Continuing	Continuing
• 0604820A: Radar Development	105.271	122.607	71.259	-	71.259	74.055	31.655	8.578	8.662	0.000	422.087
• S40: Army Integrated Air and Missile Defense	213.956	159.873	265.288	-	265.288	289.312	344.958	182.204	131.523	0.000	1,587.114
• BZ5075: IAMD Battle Command System	198.587	296.872	438.967	-	438.967	412.920	457.335	458.445	457.608	Continuing	Continuing
• 0604741A: Air Defense Command, Control and Intelligence - Eng Dev	62.058	59.518	39.541	-	39.541	34.335	49.488	48.268	54.448	Continuing	Continuing
• AD5070: AIR & MSL Defense Planning & Control Sys	62.517	67.193	72.619	-	72.619	-	-	-	-	0.000	202.329
• 0605052A: Indirect Fire Protection Capability Inc 2 - Block 1	152.399	182.257	131.093	-	131.093	59.266	10.774	10.778	-	0.000	546.567
• 149: Counter-Rockets, Artillery & Mortar	0.875	-	0.000	-	0.000	-	-	-	-	0.000	0.875
• 146: Air & Msl Defense Planning Control Sys	8.085	2.877	1.255	-	1.255	3.495	3.281	3.282	3.315	0.000	25.590

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 126 / PEO Electronic Protect

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

ALPS was previously funded under PE 0603327A.

D. Acquisition Strategy

ALPS utilizes an existing Defense Ordnance Technology Consortium (DOTC) Other Transaction Authority (OTA) to develop and integrate prototype systems to meet multiple Combatant Command operational needs. An assessment of the prototype systems, provided in response to Combatant Command operational needs, will be used to refine requirements and assess the Army's longer-term strategy.

ALPS is executing an acquisition strategy to rapidly deliver commercial off-the-shelf (COTS)-based prototypes to COCOMs based on urgent, operational requirements. ASA(ALT) designated PEO MS as the office of primary responsibility (OPR) for ALPS (19 Jan 2018 memo).

The ALPS Acquisition Strategy consists of rapid integration and deployment activities. Site survey, procurement of prototype systems, deployment of those systems, and contractor logistics support are the primary subordinate tasks within the ALPS efforts to rapidly integrate and deploy systems. These tasks will end by fourth quarter FY22 due to the conclusion of Urgent Need. ALPS will seek Operations and Maintenance, Army (OMA) Other Contingency Operations (OCO) for contractor logistics support of the systems after the end of funding, assuming COCOMs continued need for ALPS capability. ALPS will participate yearly in an integration event at the PEO MS level to integrate with current C2 and Air and Missile Defense (AMD) systems.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 126 / PEO Electronic Protect
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Other Government Agencies & Government Program Management	Various	Various : Various	1.161	1.461		1.200		-		-		-	Continuing	Continuing	Continuing
FY22 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.140		-		-		-	0.000	0.140	-
Subtotal			1.161	1.461		1.340		-		-		-	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ALPS Development, Integration, and Installation	Various	Various : Various	12.949	13.588	May 2021	2.487	May 2022	-		-		-	0.000	29.024	-
Subtotal			12.949	13.588		2.487		-		-		-	0.000	29.024	N/A

			Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			14.110	15.049	3.827	-	-	-	Continuing	Continuing	N/A

Remarks
ALPS was previously funded under PE 0603327A.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 126 / PEO Electronic Protection	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ALPS Prototype Development and Integration																												
ALPS Prototype Deployments																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 126 / PEO Electronic Protection

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ALPS Prototype Development and Integration	1	2017	4	2022
ALPS Prototype Deployments	3	2019	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev				Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
146: Air & Msl Defense Planning Control Sys	-	8.085	2.877	1.255	-	1.255	3.495	3.281	3.282	3.315	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is a key enabler of the Army Modernization Priorities in support of Air and Missile Defense.

The Air Missile Defense Planning and Control System (AMDPCS) provides integration of air and missile defense operations at all echelons. AMDPCS is comprised of the following major subsystems: Air Missile Defense Work Station (AMDWS) provides a correlated air picture using local radars, allowing the Commander the visibility and situational understanding of the airspace; tools in AMDWS afford Soldiers horizontal and vertical collaborative planning with adjacent units. Air Defense System Integrator (ADSI) serves as a joint tactical datalink gateway/air picture. Forward Area Air Defense Command and Control (FAAD C2), correlates the joint and local air picture and when displayed on AMDWS, provides a near real time, three dimensional air picture for the Commander. Joint Tactical Terminal (JTT) provides Soldiers Theater Ballistic Missile (TBM) early warning allowing them to take appropriate actions. AMDPCS are currently fielded to Army Air and Missile Defense Commands (AAMDC), Air Defense Artillery Brigades, (ADA BDE), Air and Missile Defense Battalions (AMD BN) and Terminal High Altitude Area Defense Batteries (THAAD BTRY). Air Defense Airspace Management (ADAM), a variant of AMDPCS, are fielded to Corps, Divisions, Brigade Combat Teams (BCTs) and multi-functional support brigades. AMDPCS is also being procured to support Interim Maneuver Short Range Air Defense (IM-SHORAD), European Deterrence Initiative (EDI), and Grow the Army (GTA) initiative. As part of the capability and technology reuse, AMDWS external interfaces are being leveraged by Integrated Battle Command System (IBCS) to avoid redevelopment of existing capabilities. AMDWS and FAAD C2 are core components of the Air and Missile Defense system-of-systems currently deployed in combat zones.

FY 2023 Base dollars in the amount of \$1.255 million fund cyber compliance and certification of AMDWS software, as well as accreditation of AMDPCS family-of-systems shelters and software.

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

	FY 2021	FY 2022	FY 2023
Title: AMDWS Software Development	7.305	2.097	0.559
Description: Supports LandWarNet, Common Operating Environments (COE), and Defense Information Systems Agency (DISA) architecture framework. AMDWS software engineering and development ensures interoperability and integration with maneuver battle command elements. AMDWS will interface with Integrated Air and Missile Defense (IAMD) and serves as a planning tool for the system-of-systems, as well as providing external interfaces.			
FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Funding maintains cyber security compliance and interoperability updates. FY 2023 Plans: Funding provides critical cyber security compliance only. FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in funding to support critical cyber security compliance in FY23.				
Title: Engineering, Development, Test and Evaluation Description: Ensure interoperability and cyber compliance through engineering, development, test, and evaluation of the AMDPCS family-of-systems shelter objective configurations; execute evaluation and finalization of the AMDPCS tactical communications, data processing, and vehicle/shelter/power generation/environmental system block upgrade program for fielded systems. FY 2022 Plans: Support updates to the AMDPCS family-of-systems shelter objective configurations and migration to Integrated Battle Command System (IBCS) configuration. FY 2023 Plans: Maintains interoperability and cyber compliance for AMDPCS family-of-systems shelter objective configurations and migration to Integrated Battle Command System (IBCS) configuration. FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to projected slight increases in interoperability and cyber compliance for AMDPCS family-of-systems.		0.529	0.424	0.437
Title: Software System Certification Testing, Accreditation, and Approval of Authority-to-Operate (ATO) Description: Accomplish software system certification testing, accreditation, and approval of ATOs for the various software systems; BitLocker encryption and other authorized/approved G6 software implementation; Army and joint integration and interoperability assessments. FY 2022 Plans: Conduct one Army Interoperability Certification (AIC) test and test activities required to maintain Authority to Operate (ATO). FY 2023 Plans: Conduct Information Assurance Vulnerability Assessments and Management activities, and maintain required Authority to Operate (ATO). FY 2022 to FY 2023 Increase/Decrease Statement:		0.251	0.251	0.259

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Increase due to projected slight cost to accomplish software system certification testing, accreditation, and approval of ATOs for the various software systems.			
Title: SBIR/STTR Transfer	-	0.105	-
Description: Funding transferred in accordance with Title 15 USC 638			
FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	8.085	2.877	1.255

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• AD5070: AIR & MSL Defense Planning & Control Sys	62.517	67.193	72.619	-	72.619	-	-	-	-	0.000	202.329
• 0605457A: Army Integrated Air and Missile Defense (AIAMD)	213.956	159.873	265.288	-	265.288	289.312	344.958	182.204	131.523	0.000	1,587.114
• BZ5075: IAMD Battle Command System	198.587	296.872	438.967	-	438.967	412.920	457.335	458.445	457.608	Continuing	Continuing
• 0604117A: Maneuver - Short Range Air Defense (M-SHORAD)	5.776	39.376	225.147	-	225.147	461.536	519.511	252.825	271.364	0.000	1,775.535
• C14300: M-SHORAD - Procurement	517.287	331.575	135.747	-	135.747	58.336	205.657	487.003	487.120	Continuing	Continuing

Remarks
This program is an integral part of the Army Integrated Fires Mission Command (IFMC) convergence capability for Integrated Battle Command System (IBCS) architecture.

D. Acquisition Strategy
The acquisition strategy relies on non-development items (NDI) and evolutionary software development to rapidly meet the demands of air defense battle management command, control, communications, computers, and intelligence (BM/C4I) requirements and to keep pace with automated information technologies. The concept

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	146 / <i>Air & Msl Defense Planning Control Sys</i>

of evolutionary software development is accomplished in a series of AMDWS block releases and upgrades. AMDPCS is being fielded to both the Army's Active and Reserve components.

The AMDWS software development contract is sole source (SS)/cost plus fixed fee (CPFF) to Northrop Grumman.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Various	34.026	0.839	Dec 2020	0.291	Dec 2021	0.299	Dec 2022	-		0.299	Continuing	Continuing	Continuing
SBIR/STTR	TBD	Various : TBD	-	-		0.105		-		-		-	0.000	0.105	-
Subtotal			34.026	0.839		0.396		0.299		-		0.299	Continuing	Continuing	N/A

Remarks
Not Applicable

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AMDWS Software Development and Engineering	SS/CPFF	Northrop Grumman : Huntsville AL	178.694	6.432	Oct 2020	2.037	Oct 2021	0.559	Oct 2022	-		0.559	Continuing	Continuing	Continuing
PIFF Development Engineering	C/FFP	Telephonics : Farmingdale NY	14.340	-		-		-		-		-	0.000	14.340	-
ADSI Software Development and Engineering	SS/T&M	Ultra Electronics : Austin, TX	6.859	-		-		-		-		-	0.000	6.859	-
Developmental Engineering	Various	Various : Various	47.339	0.755	Dec 2020	0.383	Dec 2021	0.334	Dec 2022	-		0.334	Continuing	Continuing	Continuing
Subtotal			247.232	7.187		2.420		0.893		-		0.893	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Certification/Testing	Various	JITC : Ft Huachuca, AZ	1.484	0.025	Feb 2021	0.026	Feb 2022	0.027	Feb 2023	-		0.027	Continuing	Continuing	Continuing
Interoperability Assessment	Various	CTSf : Ft Hood, TX	1.930	0.034	May 2021	0.035	May 2022	0.036	May 2023	-		0.036	Continuing	Continuing	Continuing

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 146 / Air & Msl Defense Planning Control Sys

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AMDWS Block V Contract	[Redacted]				[Redacted]																							
AMDWS Block VI Contract	[Redacted]				[Redacted]				[Redacted]				[Redacted]															
AMDWS AMD Interfaces: C2BMC, Kessel Run, AOC WS, etc	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
Passive Identification, Friend or Foe (PIFF) Eng./Integration	[Redacted]				[Redacted]																							
AMDWS AIC 7.0.3	[Redacted]				[Redacted]																							
AMDWS AIC 7.0.3.1	[Redacted]				[Redacted]																							
AMDWS AIC 7.0.3.2	[Redacted]				[Redacted]								[Redacted]															

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 146 / <i>Air & Msl Defense Planning Control Sys</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AMDWS Block V Contract	2	2011	4	2021
AMDWS Block VI Contract	1	2022	2	2026
AMDWS AMD Interfaces: C2BMC, Kessel Run, AOC WS, etc	4	2012	4	2030
Passive Identification, Friend or Foe (PIFF) Eng./Integration	4	2018	1	2022
ADSI Software Engineering Development and Test	1	2006	4	2017
AWA 16.1 (COE ADAM) DOTMLPF Eval / NIE 16.2	4	2015	4	2017
Army Warfighting Assessment (AWA) 17.1 / NIE 17.2	4	2016	3	2017
Army Warfighting Assess. 18.1 / Network Integration Eval. 18.2	4	2017	3	2018
AMDWS Software Certification Test (SCT) 7.0.2	3	2019	4	2019
AMDWS Army Interoperability Certification (AIC) 7.0.2	1	2020	3	2020
AMDWS AIC 7.0.3	1	2021	3	2021
AMDWS AIC 7.0.3.1	1	2022	3	2022
AMDWS AIC 7.0.3.2	1	2024	3	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev				Project (Number/Name) 149 / Counter-Rockets, Artillery & Mortar			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
149: Counter-Rockets, Artillery & Mortar	-	0.875	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Decrease in Fiscal Year (FY) 2022 as a result of Forward Area Air Defense Command and Control (FAAD C2) transitioning to sustainment.

A. Mission Description and Budget Item Justification

The Counter-Rocket, Artillery, Mortar (C-RAM) system-of-systems detects RAM launches, provides localized warning to the defended area, intercepts rounds in flight, and enhances response to and defeat of enemy forces. C-RAM combines multi-service fielded and non-developmental item sensors, command and control (C2) equipment, warning systems, and a modified U.S. Navy intercept system (Land-based Phalanx Weapon System [LPWS]), all connected via a wireless local area network. The FAAD C2 system integrates the sensors, weapons, and warning systems to provide C2 for the CRAM system-of-systems. FAAD C2 software correlates the RAM sensor data, evaluates the threat, provides early warning, directs engagements, and cues counterfire systems and reaction forces. FAAD C2 employs an agile software development strategy, with Urgent Materiel Releases (UMR) every six months and Full Materiel Releases (FMR) every 15-18 months. Base RDT&E supports FAAD C2 basic Air Defense functionality and incorporation of new Link-16 messaging.

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

	FY 2021	FY 2022	FY 2023
Title: FAAD C2 Software Development and Enhancements	0.875	-	-
Description: Funds system-of-systems development and upgrades based on the bi-annual release of the Integrated Air and Missile Defense (IAMD) Validated Online Lifecycle Threat (VOLT) and changes in threat, integration of emerging requirements from external PMs (Mission Command) and other services/agencies, technology insertions (Internet Protocol-based communications), and interoperability requirements (joint interoperability, military standard, information assurance compliance, external interface updates). Provides development and regression testing to ensure C-RAM C2 enhancements do not negatively impact the performance of the C-RAM system-of-systems. Includes continued development of electronic warfare capabilities to counter evolving threats. Includes product assurance and further incorporation of new Link-16 messaging.			
Accomplishments/Planned Programs Subtotals	0.875	-	-

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• H30504: C-RAM Enhancements	20.069	6.153	0.000	-	0.000	-	-	-	-	0.000	26.222

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 146: Air & Msl Defense Planning Control Sys	8.085	2.877	1.255	-	1.255	3.495	3.281	3.282	3.315	Continuing	Continuing
• AD5070: AIR & MSL Defense Planning & Control Sys	62.517	67.193	72.619	-	72.619	-	-	-	-	0.000	202.329
• S40: Army Integrated Air and Missile Defense	213.956	159.873	265.288	-	265.288	289.312	344.958	182.204	131.523	Continuing	Continuing
• BZ5075: IAMD Battle Command System	198.587	296.872	438.967	-	438.967	412.920	457.335	458.445	457.608	Continuing	Continuing
• E10: Sentinel	105.271	122.607	71.259	-	71.259	74.055	31.655	8.578	8.662	Continuing	Continuing
• L86: LIGHTWEIGHT COUNTER MORTAR RADAR (LCMR)	5.179	-	0.000	-	0.000	-	-	-	-	0.000	5.179
• L88: Enhanced AN/TPQ 36	13.099	-	0.000	-	0.000	-	-	-	-	0.000	13.099
• B05201: Lightweight Counter Mortar Radar	5.332	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• B05310: AN/TPQ-53 Counterfire Target Acquisition Radar	71.404	-	91.233	-	91.233	-	-	-	-	Continuing	Continuing
• FG5: Counter Unmanned Aerial Systems (UAS)	38.049	52.814	38.286	-	38.286	30.840	46.207	44.986	51.133	Continuing	Continuing
• H30505: Counter Unmanned Aerial Systems (C-UAS) Efforts	41.000	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• 0604117A: Maneuver - Short Range Air Defense (M-SHORAD)	5.776	39.376	225.147	-	225.147	461.536	519.511	252.825	271.364	0.000	1,775.535

Remarks

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

D. Acquisition Strategy

The C-RAM program is following an evolutionary acquisition strategy for rapid fielding of mature technology to the user. The objective of the strategy is to balance needs, available technology, and resources to quickly provide a robust capability to engage RAM threats. Multiple C-RAM systems have transitioned to acquisition programs, including C-RAM Intercept, which fields existing LPWS guns to two Indirect Fire Protection Capability/Avenger battalions, and RAM Warn, which provides early, localized warning to all maneuver brigade combat teams. Development and upgrade of FAAD/C-RAM C2 software, to include enhanced capability to support emerging mission command requirements, technology insertion, and interoperability, is accomplished through a five-year CPIF contract awarded to Northrop Grumman Mission Systems.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev				149 / Counter-Rockets, Artillery & Mortar							
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration	Various	Various : Various	26.829	0.073	Nov 2019	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			26.829	0.073		-		-		-		-	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C-RAM C2 Development and Enhancements	C/CPIF	Northrop Grumman : Redondo Beach, CA	108.495	0.802	Apr 2021	-		-		-		-	Continuing	Continuing	Continuing
Secure Communications	SS/CPFF	Northrop Grumman : Huntsville, AL	9.578	-		-		-		-		-	0.000	9.578	-
Secure Communications (Next Gen)	C/CPFF	Northrop Grumman : Huntsville, AL	15.000	-		-		-		-		-	0.000	15.000	-
All-Digital Radar Development	C/FFP	Raytheon Company : Andover, MA	16.000	-		-		-		-		-	Continuing	Continuing	Continuing
LPWS Enhancements	C/CPIF	Raytheon Company : Tucson, AZ	10.307	-		-		-		-		-	0.000	10.307	-
Multi-Layered Tactical Protection System	SS/FFP	DOTC Kord - Rocky Research : Huntsville, AL	5.000	-		-		-		-		-	0.000	5.000	-
Subtotal			164.380	0.802		-		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Miscellaneous Test Support	Various	Various : Various	24.210	-		-		-		-		-	Continuing	Continuing	Continuing
End-to-End Modeling & Simulation	SS/CPFF	Northrop Grumman : Redondo Beach, CA	14.615	-		-		-		-		-	0.000	14.615	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 149 / Counter-Rockets, Artillery & Mortar

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FAAD C2 Development	[Redacted]				[Redacted]																							
FAAD C2 Development, Updates, Virtualization & Integration w/IAMD																												
C-RAM Enhancements - Development, Integration & Test	[Redacted]																											
FAAD C2 v5.6B FMR	1				[Redacted]																							
v5.6B FMR																												
Network Security Enhance, All-Digital Radar, Multi-Layered Tactical Protect Sys																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) 149 / <i>Counter-Rockets, Artillery & Mortar</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
C-RAM C2 v5.5C-2.0 Full Materiel Release (FMR)	2	2016	2	2016
FAAD C2 Development	1	2013	4	2021
C-RAM Directed Enhancements - Integration & Test	1	2012	4	2017
C-RAM Enhancements - Development, Integration & Test	1	2016	4	2021
LPWS Sp. 6.4.1 Urgent Materiel Release (UMR)	4	2017	4	2017
C-RAM C2 v5.5C-2.2p3 Full Software Release	3	2018	3	2018
C-RAM C2 v5.6A-1.0p1.1 and v5.6A-1.0p3 Urgent Materiel Release (UMR)	4	2018	4	2018
LPWS Sp. 6.4.3.1 and FAAD C2 v5.6A-2.2 UMR	2	2019	2	2019
FAAD C2 v5.6A-2.4 UMR	3	2019	3	2019
FAAD C2 v5.6B System Certification Test (SCT)	3	2019	3	2019
Army Interoperability Certification (AIC) T11.24 (v5.6B)	4	2019	4	2019
Joint Interoperability Test (JIT) 20-02 (V5.6C)	1	2020	2	2020
FAAD C2 v5.6A Full Materiel Release (FMR)	1	2020	1	2020
C-RAM C2 v5.5C-2.0 Full Materiel Release (FMR)	2	2016	2	2016
C-RAM Intercept Operational Assessment (OA)	2	2015	2	2015
C-RAM Intercept (LPWS Spiral 6.0) Materiel Release	3	2016	3	2016
FAAD C2 v5.6A-2.4p2 Rapid Acquisition Authority (OFS/OIR)	1	2020	1	2020
AIC 20.2 (v5.6C)	2	2020	2	2020
FAAD C2 v5.6C SCT	4	2020	4	2020
FAAD C2 v5.6B FMR	1	2021	1	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>				Project (Number/Name) FG5 / <i>Counter Unmanned Aerial Systems (UAS)</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
FG5: <i>Counter Unmanned Aerial Systems (UAS)</i>	-	38.049	52.814	38.286	-	38.286	30.840	46.207	44.986	51.133	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Counter-Unmanned Aircraft Systems (C-UAS) efforts will provide forces at all echelons with cross-domain capabilities, while supporting joint operational requirements. These combined arms solutions will support the full kill-chain and result in solutions addressing fixed/semi-fixed, mobile platform, and dismounted missions. Development efforts are aligned with Joint Requirements Oversight Council Memorandum (JROCM) 078-20, which codifies the threshold and objective capability requirements for C-UAS development and focuses on technologies which increase capabilities to identify, classify, track, and defeat Groups 1-3 UAS threats.

Funding supports:

Fixed/Mobile System Development:

FY 2023 Base dollars in the amount of \$11.734 million will fund rapid component prototyping, facilitate operational assessments, pursue development and integration of mature hardware, address obsolescence, and test performance improvements of existing systems against current and near-term threats (managed by Program Executive Office Missiles and Space (PEO MS)).

Tech Refresh for Army JUON/JEON Efforts:

FY 2023 Base dollars in the amount of \$5.265 million will fund technological development of C-UAS capabilities supporting deployed systems, to keep pace with evolving threats in response to existing Joint Urgent Operational Need (JUON) CC-0558 (managed by PEO MS).

FY 2023 Base dollars in the amount \$1.647 million will fund technology refreshes in support of existing Army Joint Emergent Operational Need (JEON) system improvements in response to ST-0008, to provide Army priority fixed sites with the ability to detect, engage, and defeat Groups 1 and 2 UAS (managed by PEO Intelligence, Electronic Warfare and Sensors (IEWS)).

Family of Counter UAS Systems (FoCUS):

FY 2023 Base dollars in the amount of \$2.711 million will fund the development and test of a UAS detection system with man-out-of-the-loop (MOTL) operations, providing passive UAS search, target interrogation, and verification (managed by United States Army, Special Operations Command (USASOC)).

Next Generation Product Development:

FY 2023 Base dollars in the amount of \$16.929 million will fund prototyping, pursue development and integration of emerging technologies, and test performance improvements of new systems against a 2035 threat (managed by PEO MS).

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (UAS)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Title: Fixed/Mobile System Development</p> <p>Description: Funds rapid component prototyping, facilitates operational assessments, pursues development and integration of mature hardware, addresses obsolescence, and tests performance improvements of existing systems against current and near-term threats.</p> <p>FY 2022 Plans: FY 2022 Base funding will support efforts aligned with JROCM 078-20 and Army Requirements, including hardware and software development for a small, flat-panel fire control radar to provide Fixed Site LIDS (FS-LIDS) and mounted systems with an enhanced air surveillance capability against fixed wing, rotary wing, and Groups 1-3 UASs. Also supports twice-yearly C-UAS System of Systems integration/record tests for new and enhanced components, systems, and subsystems.</p> <p>FY 2023 Plans: FY 2023 Base funding will support prototype build and integration efforts for a small, flat-panel fire control radar, to provide fixed and mounted systems with an enhanced air surveillance capability against fixed wing, rotary wing, and Groups 1-3 UAS. Funding will support biannual C-UAS system of systems integration/record tests for new and enhanced components, systems, and subsystems.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 Base funds decrease due to completion of hardware and software design efforts.</p>		9.673	15.252	11.734
<p>Title: Tech Refresh for Army JUON/JEON Efforts</p> <p>Description: Funds technology refreshes in response to ST-0008 and continues technological development of C-UAS capabilities supporting deployed systems in response to JUON CC-0558.</p> <p>FY 2022 Plans: FY 2022 Base funding will provide technology refreshes in support of existing Army JEON system improvements in response to ST-0008 to provide Army priority fixed sites with the ability to detect, engage and defeat group 1 and 2 UAS. This funding will also support technological development of C-UAS systems deployed under existing JUON CC-0558, to include improvements to electronic warfare effectiveness against current and future threats.</p> <p>FY 2023 Plans: FY 2023 Base funding will provide technology refresh supporting existing Army JEON system improvements in response to ST-0008, to develop new and emerging signals of interest to pace the evolving threat and provide Army priority fixed sites with the ability to detect, engage, and defeat Groups 1 and 2 UAS. This funding will also support technological development of C-UAS</p>		5.000	6.688	6.912

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (UAS)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
systems deployed under existing JUON CC-0558, to include improvements to electronic warfare effectiveness against current and future threats. FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 Base funds increase due to a slight rise in C-UAS mission requirements costs.				
Title: Family of Counter UAS Systems (FoCUS) Description: Matures artificial intelligence and machine learning algorithms that enable FoCUS man-out-of-the-loop (MOTL) operations and passive UAS sensor search, target interrogation, and verification capabilities. Continued algorithm development supports operational assessment and follow-on procurement of FoCUS capabilities required to mitigate critical counter-small UAS capability gaps in CONUS and OCONUS. FY 2022 Plans: FY 2022 Base funding continues software development efforts increasing Artificial Intelligence and Machine Learning Algorithms used by JCO-identified "C2 Decision Aids" solutions, integrates additional passive sensor capabilities (e.g., passive radar and DRVID), and increases other prototype user interfaces. Continues to integrate advanced sensor input devices and output capabilities needed for a passive capability. Delivers two Inc 1B prototypes, resets Inc 1A prototypes, and provides sparing for transition of the prototypes to ARSOF for sustainment and CONOPS/TTP development. FY 2023 Plans: FY 2023 Base funding supports the development, test, and integration of software and artificial intelligence and machine learning algorithms that enable FoCUS MOTL operations and passive UAS sensor search, target interrogation, and verification capabilities. FY 2022 to FY 2023 Increase/Decrease Statement: FY 2023 Base funds decrease due to completion of development effort.		15.000	30.234	2.711
Title: Next Generation Product Development Description: Funds prototyping, purses development and integration of emerging technologies, and tests performance improvements of new systems against a 2035 threat. FY 2023 Plans: FY 2023 Base funding will identify and characterize emerging technologies which support prototyping, integration, and testing of new systems or components to increase the capability to detect, track, and defeat the 2035 C-sUAS threat. Testing will ensure technologies meet environmental and reliability/survivability/availability requirements. FY 2022 to FY 2023 Increase/Decrease Statement:		-	-	16.929

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (UAS)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
FY 2023 Base funds increase due to integration and testing.			
Title: OSD Universal C2 Demonstration Support	8.376	-	-
Description: Funds development, integration, testing, and demonstration of C-UAS C2 interoperability improvements for multi-domain C-UAS engagements.			
Title: FY 2022 SBIR/STTR Transfer	-	0.640	-
Description: Funding transferred in accordance with Title 15 USC 638			
FY 2022 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	38.049	52.814	38.286

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	<u>Cost To Complete</u>	<u>Total Cost</u>
• H30505: Counter Unmanned Aerial Systems (C-UAS) Efforts	41.000	-	0.000	-	0.000	-	-	-	-	0.000	41.000
• AD0511: C-SUAS FIXED	-	434.058	326.364	-	326.364	58.866	27.705	42.345	32.936	0.000	922.274

Remarks

D. Acquisition Strategy

The C-UAS program is transitioning from a rapid acquisition and deployment of interim capabilities, in response to JUON CC-0558 and JEON ST-0008, to a formalized acquisition approach. Technical refresh will enable JUON capabilities to remain current, and incremental improvements will mitigate gaps created by enemy Groups 1-3 UAS, until they can be acquired using a formal Program of Record based on a Capabilities Development Document (CDD). An Abbreviated-Capability Development Document (A-CDD) will address future C-UAS requirements, creating enduring next generation C-UAS solutions. The C-UAS program will leverage the flexibility of the Adaptive Acquisition Framework by pursuing a combination of acquisition pathways. C-UAS efforts utilize multiple contract vehicles, types, and vendors.

The C-UAS program incorporates development and test for survivability and resiliency in denied environments and will incorporate emerging technologies as they mature.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) FG5 / <i>Counter Unmanned Aerial Systems (UAS)</i>
<p>C-UAS is a component of an integrated fires development effort that includes survivability, resiliency, and effectiveness improvements against advanced threats from near-peer adversaries. This effort includes integration with an evolving common fires mission command, common development tools and processes, and annual test and evaluation to provide data to support program assessments and progress toward closure of performance gaps.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (UAS)
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - JUON CC-0558	Various	Various : Various	31.800	0.769	Dec 2020	1.868	Nov 2021	1.163	Nov 2022	-		1.163	Continuing	Continuing	-
Program Management - FoCUS	Various	Various : Various	-	-		3.050	Nov 2021	0.244	Nov 2022	-		0.244	0.000	3.294	-
Program Management - JEON ST-0008	Various	Various : Various	-	-		-		0.148	Nov 2022	-		0.148	Continuing	Continuing	-
Program Management - Next Generation	Various	Various : Various	-	-		-		1.524	Dec 2022	-		1.524	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.640		-		-		-	0.000	0.640	-
Subtotal			31.800	0.769		5.558		3.079		-		3.079	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fixed/Mobile System Development	C/IDIQ	Multiple : Multiple	85.149	7.717	Mar 2021	12.934	Mar 2022	10.287	Mar 2023	-		10.287	Continuing	Continuing	-
Kinetic Defeat Development	Various	Multiple : Multiple	138.953	-		-		-		-		-	0.000	138.953	-
Sensor Development	Various	Various : Various	94.439	-		-		-		-		-	0.000	94.439	-
C-UAS C2 Software Development	C/CPFF	Northrop Grumman : Redondo Beach, CA	30.490	8.376	Apr 2021	-		-		-		-	0.000	38.866	-
Dismounted/Handheld Systems Development	Various	Multiple : Multiple	19.022	-		-		-		-		-	0.000	19.022	-
Family of Counter UAS Systems (FoCUS)	Various	Multiple : Multiple	-	15.000	Jan 2022	23.184	Jan 2022	2.199	Feb 2023	-		2.199	0.000	40.383	-
Tech Refresh for Army JUON/JEON Efforts	C/Various	Multiple : Multiple	-	5.000	Mar 2021	5.920	Mar 2022	5.606	Mar 2023	-		5.606	Continuing	Continuing	-
Next Generation Product Development	TBD	To Be Determined : To Be Determined	-	-		-		13.729	Feb 2023	-		13.729	Continuing	Continuing	-
FY20 OMNIBUS Funding	Various	Various : Various	37.950	-		-		-		-		-	0.000	37.950	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (UAS)	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C-UAS Emerging Threat Development	Emerging Threat Development, Obsolescence Mitigation, and System Updates																											
Q-50A False Track Mitigation Development	Q-50A False Track Mitigation Development																											
Coyote Block 2 Enhanced Seeker Development	Coyote Block 2 Enhanced Seeker Development																											
C-UAS SoS Integration/Record Test (Winter FY21)	C-UAS SoS Integration/Record Test (Winter FY21)																											
C-UAS SoS Integration/Record Test (Summer FY21)	C-UAS SoS Integration/Record Test (Summer FY21)																											
FoCUS 1A Developmental Test					FoCUS 1A Developmental Test																							
C-UAS FY22 Winter Test					C-UAS FY22 Winter Test																							
Universal C2 Demonstration					Universal C2 Demonstration																							
FoCUS 1A Record Test					FoCUS 1A Record Test																							
Flat Panel Radar (FPR) HW/SW Design Updates & Producibility, Build & Integration	Build & Integration				FPR HW/SW Design Updates & Producibility, Build & Integration																							
FoCUS 1B Preliminary Design Review (PDR)					FoCUS 1B Preliminary Design Review (PDR)																							
C-UAS FY22 Summer Test					C-UAS FY22 Summer Test																							
FoCUS 1B Developmental Test					FoCUS 1B Developmental Test																							

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (UAS)

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Next Generation Product Development & Prototyping																												
FoCUS 1B Critical Design Review (CDR)																												
C-UAS FY23 Winter Test																												
C-UAS FY23 Summer Test																												
FPR Engineering Test #1																												
FoCUS 1B Record Test																												
FPR Environmental Test and Qualification																												
FPR Engineering Test #2																												
FPR Engineering Test #3																												
FPR Record Test																												
FPR Tech Manuals, Training Materials, and Safety Documentation																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) FG5 / Counter Unmanned Aerial Systems (UAS)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
C-UAS Emerging Threat Development	1	2017	4	2027
Q-50A False Track Mitigation Development	1	2021	2	2022
Coyote Block 2 Enhanced Seeker Development	2	2021	4	2021
Mobile LIDS (M-LIDS) Inc 1 Testing and Downselect	1	2018	1	2018
Expeditionary LIDS (E-LIDS) Engineering and Record Test	2	2018	2	2018
M-LIDS Inc 1 Engineering and Record Test	3	2018	4	2018
LIDS System-of-Systems (SoS) Record Test	4	2018	1	2019
E-LIDS/M-LIDS Inc 1 Engineering Test	3	2019	3	2019
LIDS Advanced Position, Navigation & Timing (PNT) Test	4	2019	4	2019
Inc 2 SoS Record Test	1	2020	1	2020
FS-LIDS/M-LIDS Inc 2 Record Test	1	2020	2	2020
M-LIDS Inc 2 Delta Record Test #1	3	2020	3	2020
M-LIDS Inc 2 Delta Record Test #2	4	2020	4	2020
C-UAS FY20 Summer Test	4	2020	4	2020
C-UAS SoS Integration/Record Test (Winter FY21)	2	2021	2	2021
C-UAS SoS Integration/Record Test (Summer FY21)	4	2021	4	2021
FoCUS 1A Developmental Test	1	2022	1	2022
C-UAS FY22 Winter Test	2	2022	2	2022
Universal C2 Demonstration	2	2022	2	2022
FoCUS 1A Record Test	2	2022	2	2022
Flat Panel Radar (FPR) HW/SW Design Updates & Producibility, Build & Integration	3	2022	3	2024
FoCUS 1B Preliminary Design Review (PDR)	4	2022	4	2022

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / <i>Air Defense Command, Control and Intelligence - Eng Dev</i>	Project (Number/Name) FG5 / <i>Counter Unmanned Aerial Systems (UAS)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
C-UAS FY22 Summer Test	4	2022	4	2022
FoCUS 1B Developmental Test	4	2022	2	2023
Next Generation Product Development & Prototyping	1	2023	4	2027
FoCUS 1B Critical Design Review (CDR)	1	2023	1	2023
C-UAS FY23 Winter Test	2	2023	2	2023
C-UAS FY23 Summer Test	4	2023	4	2023
FPR Engineering Test #1	4	2023	4	2023
FoCUS 1B Record Test	4	2023	4	2023
FPR Environmental Test and Qualification	4	2023	4	2024
FPR Engineering Test #2	2	2024	2	2024
FPR Engineering Test #3	2	2025	2	2025
FPR Record Test	2	2026	2	2026
FPR Tech Manuals, Training Materials, and Safety Documentation	2	2026	2	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	9.779	22.240	29.570	-	29.570	30.848	30.151	30.565	14.291	0.000	167.444
361: <i>Intelligence Simulation Systems</i>	-	1.950	5.525	6.958	-	6.958	7.838	7.853	7.812	8.090	0.000	46.026
362: <i>Jnt Land Component Constructive Trng</i>	-	7.829	16.715	22.612	-	22.612	23.010	22.298	22.753	6.201	0.000	121.418

A. Mission Description and Budget Item Justification

This Program Element funds the development of constructive and wargame simulations used to realistically train commanders and their battle staffs on today's complex battlefield conditions.

Project 361 funds the development of the Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT). IEWTPT is a Non-System Training Device (NSTD) which supports home-station training by simulating and stimulating Military Intelligence (MI) organic or surrogate equipment. It enables sustainment of critical individual and collective MI tasks/skills and is the core of the U.S. Army Intelligence Center of Excellence (USAICoE) Military Intelligence (MI) holistic training strategy supporting mission command, targeting, and MI Soldier readiness. IEWTPT provides a realistic simulation intelligence target environment for multi-intelligence disciplines such as All Source Analysis, Signals Intelligence (SIGINT), Imagery Intelligence (IMINT), Human Intelligence (HUMINT), Geospatial Intelligence (GEOINT) and emerging electronic warfare (EW) systems. IEWTPT provides training for analyst and system operators to exploit intelligence data during training, just as they would in "Real World" operations. The IEWTPT Technical Control Cell (TCC) is composed of two components: the Lower Enclave (LE) which supports exercise planning and development and drives the All Source and GEOINT (and emerging EW) training tasks and the Upper Enclave (UE) which supports all SIGINT related training and operates at the Top Secret / Sensitive Compartmented Information (TS/SCI) classification level.

Project 362, Joint Land Component Constructive Training Capability (JLCCTC) supports Army Title X training worldwide for Army Commanders and their staff at Mission Training Complexes (MTCs), Training and Doctrine Command (TRADOC) facilities, and other customer locations. JLCCTC trains Commanders and their staff in Decisive Actions to include offensive, defensive, stability, and civil support operations. JLCCTC is a software modeling and simulation capability that contributes to Army Training Mission Area by providing appropriate levels of modeling and simulation resolution and fidelity to support unit collective and combined arms training. JLCCTC provides a composable federation configurable to any combination of models and simulations, as required by training exercise intent/design. JLCCTC provides accurate representations of tactically and operationally relevant land warfare operations executed in a contemporary Joint operating environment/context and in support of Army Training and Readiness.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	9.779	22.331	0.000	-	0.000
Current President's Budget	9.779	22.240	29.570	-	29.570
Total Adjustments	0.000	-0.091	29.570	-	29.570
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	29.570	-	29.570
• FFRDC Transfer	-	-0.091	-	-	-

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>				Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
361: <i>Intelligence Simulation Systems</i>	-	1.950	5.525	6.958	-	6.958	7.838	7.853	7.812	8.090	0.000	46.026
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2022 is IEWTPT's year of transition to Increment 2 and FY 2023 begins Increment 2. When FY 2022 actuals can be updated, the forms will be corrected to reflect Increment 2 begins in 2023.

A. Mission Description and Budget Item Justification

Project 361 funds the development of the Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT). IEWTPT is a Non-System Training Device (NSTD) which supports home-station training and multi-domain operations by simulating and stimulating Military Intelligence (MI) organic or surrogate equipment. It enables sustainment of critical individual and collective MI tasks/skills and is the core of the U.S. Army Intelligence Center of Excellence (USAICoE) Military Intelligence (MI) holistic training strategy supporting mission command, targeting, and MI Soldier readiness. IEWTPT provides a realistic simulation intelligence target environment for multi-intelligence disciplines such as All Source Analysis, Signals Intelligence (SIGINT), Imagery Intelligence (IMINT), Human Intelligence (HUMINT), Geospatial Intelligence (GEOINT) and emerging electronic warfare (EW) systems. IEWTPT provides training for analyst and system operators to exploit intelligence data during training, just as they would in "Real World" operations. The IEWTPT Technical Control Cell (TCC) is composed of two components: the Lower Enclave (LE) which supports exercise planning and development and drives the All Source and GEOINT (and emerging EW) training tasks and the Upper Enclave (UE) which supports all SIGINT related training and operates at the Top Secret / Sensitive Compartmented Information (TS/SCI) classification level.

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

	FY 2021	FY 2022	FY 2023
Title: IEWTPT development, integration and support.	1.950	-	-
Description: Continue IEWTPT development, integration and support to the user community.			
Title: Software Engineering, Development, Integration and Testing	-	5.323	6.958
FY 2022 Plans: Supports Increment 2 validated requirements for multi-intelligence discipline and electronic warfare individual, crew, and collective training for military intelligence unit certification and Soldier readiness. The Information Systems-Capability Development Document (IS-CDD) sets the conditions for program entry into the software acquisition pathway for development as a software intensive system facilitating rapid and iterative delivery of intelligence training capabilities. Supports Intelligence Requirements and Configuration Control Board (RC2B) priorities for development engineering, integration, and testing. Supports RC2B General Officer priorities for simulation interface development supporting the Terrestrial Layer System (TLS) and Signals Intelligence Electronic Warfare (SIGINT/EW) integration for home-station training. Funding supports a cloud ready baseline architecture for the			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Technical Control Cell (TCC) transition from stand-alone to point of need. Continues baseline improvements for the distributed/federated constructive simulation environment and a baseline architecture that is cloud ready for point of need delivery; develop improved All Source intelligence messaging, and continue detailed support of the Electronic Warfare Program Management Tool (EWPMT) Integration into IEWTPT in support of multi domain capable training requirements.</p> <p>Expands SIGINT scenario development tools for cloud employment; sensor emulation effects modeling as well as theater and National level intelligence replication for the simulation/user environment. Will execute technology development and integration supporting product deliverables needed to meet Intelligence Center of Excellence (ICoE) and Army G2 training and modernization strategies.</p> <p>FY 2023 Plans: Supports validated requirements for multi-intelligence discipline and electronic warfare individual, crew, and collective training for military intelligence unit certification and Soldier readiness. The Information Systems-Capability Development Document (IS-CDD) sets the conditions for program execution as a software intensive system facilitating rapid and iterative delivery of intelligence training capabilities. Supports priorities of work established by the General Officer led Requirements and Configuration Control Board (RC2B) for development, engineering, integration, and testing. Supports intelligence modernization training development for emerging systems such as the Terrestrial Layer System (TLS) for integrated Signals Intelligence Electronic Warfare (SIGINT/ EW) home-station training. Funding supports training mission analysis and development for the Tactical Intelligence Targeting Access Node (TITAN) multi-domain ground station. Supports cloud ready baseline architecture development for point of need intelligence critical task training and constructive simulation interface. Improves All Source intelligence messaging development and Electronic Warfare Program Management Tool (EWPMT) integration into the Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT) in support of multi-domain capable training requirements. Expands SIGINT scenario development tools for cloud employment, sensor emulation effects, threat systems modeling, and Theater/National level intelligence replication for the simulation/user environment . Will execute development and integration supporting product deliverables needed to meet Intelligence Center of Excellence (ICoE) and Army G2 training and modernization strategies.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Project 361 funding increase of \$1.433M from FY 2022 to FY 2023 provides critical multi-domain intelligence training development, integration and support for emerging Intelligence, Surveillance, and Reconnaissance (ISR) terrestrial platforms and soldier readiness. Provides DevSecOps tools and integration for Software Acquisition Pathway execution.</p>				
<p>Title: SBIR/STTR</p> <p>FY 2022 Plans: Funding transferred in accordance with Title 15 USC ?638.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		-	0.202	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred in accordance with Title 15 USC ?638.			
Accomplishments/Planned Programs Subtotals	1.950	5.525	6.958

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• NA0102: <i>NSTD INTELLIGENCE</i>	1.607	3.680	0.000	-	0.000	-	-	-	-	0.000	5.287

Remarks
NA0102= Other Procurement Army (OPA)

D. Acquisition Strategy
The current IEWTPT Increment 1 contract will continue via a 12-month bridge to provide continued program support through 2nd QTR FY 2023. FY 2023 funds will provide support for the Increment 2 competitive contract award and formal transition to the software acquisition pathway. This strategy will support incremental capability development, integration and testing in an agile acquisition/development environment to meet the Information Systems-Capability Development Document (IS-CDD), Military Intelligence Corps requirements and the Requirements and Configuration Control Board (RC2B) priorities. FY 2023 funding continues to support home-station intelligence and emerging electronic warfare training. The Increment 2 contract will ensure alignment with Army and Military Intelligence modernization priorities.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	PEO STRI : Orlando, FL	11.018	-		-		-		-		-	0.000	11.018	-
SBIR/STTR	Various	Various : Various	-	-		0.202		-		-		-	0.000	0.202	-
Subtotal			11.018	-		0.202		-		-		-	0.000	11.220	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TCC Technology	C/CPFF	General Dynamics C4 Systems : Orlando, Florida	7.900	-		-		-		-		-	0.000	7.900	-
TCC Technology	C/CPFF	General Dynamics Mission Systems : Orlando, Florida	11.673	1.895	Nov 2020	-		-		-		-	0.000	13.568	-
Eng & Manufacturing Dev. (Cloud Environment)	Option/CPFF	General Dynamics C4 Systems : Orlando, FL	64.799	0.055	Jul 2021	-		-		-		-	0.000	64.854	29.003
Increment 2 Software Eng, Development, Integration and Test	C/IDIQ	TBD : Orlando, FL	-	-		3.658	Feb 2022	4.494	Feb 2023	-		4.494	Continuing	Continuing	Continuing
TCC Cloud Ready Architecture	C/IDIQ	TBD : Orlando, FL	-	-		1.665	Feb 2022	-		-		-	Continuing	Continuing	Continuing
DevSecOps Tools/Agile Ready Architecture	C/CPFF	TBD : Orlando, Florida	-	-		-		2.464	May 2023	-		2.464	0.000	2.464	-
Subtotal			84.372	1.950		5.323		6.958		-		6.958	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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 & Technical Support	Various	Various : Various	2.743	-		-		-		-		-	0.000	2.743	2.743
Subtotal			2.743	-		-		-		-		-	0.000	2.743	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TEMP Support	Various	Multiple : Various	0.319	-		-		-		-		-	0.000	0.319	0.319
Test Engineering Support	Various	Multiple : Various	1.313	-		-		-		-		-	0.000	1.313	1.313
Subtotal			1.632	-		-		-		-		-	0.000	1.632	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		99.765	1.950	5.525	6.958	-	6.958	Continuing	Continuing	N/A

Remarks
 FY 2023 marks the closeout of the Increment 1 Bridge contract period of performance and the transition to the Increment 2 contract leveraging the software acquisition pathway. The IEWTPT Increment 2 contract is planned as a full and open competitive acquisition.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
TCC Development/Integration/Test																													
Version 11.0 Security Accred.			▲ 1																										
Version 11.0 Release				▲ 2																									
Increment 1 Bridge							▲ 3																						
Increment 2 Contract Award																													
Min. Viable Capability Release 1														▲ 4															
Min. Viable Capability Release 2																			▲ 5										
Min. Viable Capability Release 3																								▲ 6					
Min. Viable Capability Release 4																													▲ 7

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TCC Development/Integration/Test	4	2007	4	2021
Version 4.0 Security Accred.	3	2014	3	2014
Version 4.0 Release	4	2014	4	2014
Version 5.0 Security Accred.	3	2015	3	2015
Version 5.0 Release	4	2015	4	2015
Version 6.0 Security Accred.	3	2016	3	2016
Version 6.0 Release	4	2016	4	2016
Version 7.0 Security Accred.	2	2017	2	2017
Version 7.0 Release	3	2017	3	2017
Version 8.0 Security Accred.	3	2018	3	2018
Version 8.0 Release	4	2018	4	2018
Version 9.0 Security Accred.	3	2019	3	2019
Version 9.0 Release	4	2019	4	2019
Version 10.0 Security Accred.	3	2020	3	2020
Version 10.0 Release	4	2020	4	2020
Version 11.0 Security Accred.	3	2021	3	2021
Version 11.0 Release	4	2021	4	2021
FOC	4	2020	4	2020
Increment 1 Bridge	2	2022	2	2022
Increment 2 Contract Award	2	2023	2	2028
Min. Viable Capability Release 1	2	2024	2	2024
Min. Viable Capability Release 2	2	2025	2	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 361 / <i>Intelligence Simulation Systems</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Min. Viable Capability Release 3	2	2026	2	2026
Min. Viable Capability Release 4	2	2027	2	2027
Min. Viable Capability Release 5	2	2028	2	2028
Min. Viable Capability Release 6	2	2029	2	2029

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>				Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
362: <i>Jnt Land Component Constructive Trng</i>	-	7.829	16.715	22.612	-	22.612	23.010	22.298	22.753	6.201	0.000	121.418
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding transferred in accordance with Title 15 USC §638.

A. Mission Description and Budget Item Justification

The Joint Land Component Constructive Training Capability (JLCCTC) supports Army Title X training worldwide for Army Commanders and their staff at Mission Training Complexes (MTCs), Training and Doctrine Command (TRADOC) facilities, and other customer locations. JLCCTC trains Commanders and their staff in Decisive Actions to include offensive, defensive, stability, and civil support operations. JLCCTC is a software modeling and simulation capability that contributes to Army Training Mission Area by providing appropriate levels of modeling and simulation resolution and fidelity to support unit collective and combined arms training. JLCCTC provides a composable federation configurable to any combination of models and simulations, as required by training exercise intent/design. JLCCTC provides accurate representations of tactically and operationally relevant land warfare operations executed in a contemporary Joint operating environment/context and in support of Army Training and Readiness.

FY 2023 base funding in the amount of \$22.612 million will be used for the development, integration and test, and verification activities for JLCCTC Version 10.0 to train Commanders and their Staff. JLCCTC will continue to support emerging Common Operating Environment / Computing Environment (COE/CE), Mission Command (MC), Cyber Security/Risk Management Framework (RMF), Concurrency warfighter requirements, SE Core No Fail activities, and OWT Data to JLCCTC Runtime Translation Tool development. In addition, JLCCTC will continue to support the integration activities with Live, Virtual, Constructive-Integrated Architecture (LVC-IA), Combat Training Center Instrumentation System (CTC- IS), IEWTPT, and to begin interfacing the Army ground model with the Joint simulation capability.

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

	FY 2021	FY 2022	FY 2023
Title: Improve JLCCTC software models to comply with emerging Common Operating Environment (COE)/Computing Environment (CE) requirements.	0.650	0.650	0.650
Description: Improve JLCCTC software models to comply with emerging COE/CE requirements.			
FY 2022 Plans: Will continue improvements of JLCCTC software models to include common overlay development/modifications in support of COE compliance/standards.			
FY 2023 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Will continue improvements of JLCCTC software models to include common overlay development/modifications in support of COE compliance/standards.				
<p>Title: Improve JLCCTC software models to meet emerging Mission Command (MC) stimulation and Cyber Security requirements.</p> <p>Description: Improve JLCCTC software models to meet emerging Mission Command (MC) stimulation and Risk Management Framework (RMF)/Cyber Security requirements.</p> <p>FY 2022 Plans: Continue to evolve JLCCTC to support emerging Mission Command requirements and fully comply with the Cyber Security/Risk Management Framework (RMF) requirement.</p> <p>FY 2023 Plans: Continue to evolve JLCCTC to support emerging Mission Command requirements and fully comply with the Cyber Security/Risk Management Framework (RMF) requirement.</p>		0.800	0.800	0.800
<p>Title: Improve JLCCTC software models to meet emerging warfighter requirements for Concurrency of Commander and staff training (Battalion thru Theater Level).</p> <p>Description: Improve JLCCTC software models to meet emerging warfighter requirements for Concurrency of Commander and staff training (Brigade through Theater Level).</p> <p>FY 2022 Plans: Continue to evolve JLCCTC software models to support additional emerging requirements in support of Commander and staff warfighter training exercises through Theater level</p> <p>FY 2023 Plans: Continue to evolve JLCCTC software models to support additional emerging requirements in support of Commander and staff warfighter training exercises through Theater level</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase from FY 2022 to FY 2023 for Recovery of Concurrency Warfighter requirements.</p>		2.834	2.321	6.226
<p>Title: Government System Test and Evaluation for the Joint Land Component Constructive Training Capability (JLCCTC) Program.</p> <p>Description: Government System Test and Evaluation for the Joint Land Component Constructive Training Capability (JLCCTC).</p> <p>FY 2022 Plans:</p>		1.651	1.701	1.750

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Continue conducting JLCCTC v10.0 system test events (Integration and Testing) and verification. FY 2023 Plans: Continue conducting system test events (Integration and Testing) in support of the JLCCTC v10.0 validation event (VE). FY 2022 to FY 2023 Increase/Decrease Statement: Minimal increase from FY 2022 to FY 2023 due to additional testing.				
Title: Conduct Army Ground Model Analysis of Alternative FY 2022 Plans: Begin interfacing the Army ground model with the Joint simulation capability . FY 2023 Plans: Continue development to interface the Army ground model with the Joint simulation capability. FY 2022 to FY 2023 Increase/Decrease Statement: Increase in funding from FY 2022 to FY 2023 is due to continuing development to interface the Army ground model with the Joint simulation capability.		1.894	5.692	7.660
Title: Constructive Terrain and Tools Development FY 2022 Plans: Plan is to execute SE Core No Fail Activities and development of tools to transform One World Terrain (OWT) data into JLCCTC compliant runtime formats. FY 2023 Plans: Continue execution of the SE Core No Fail Activities and development of tools to transform One World Terrain (OWT) data into JLCCTC compliant runtime formats. FY 2022 to FY 2023 Increase/Decrease Statement: Increase in funding from FY 2022 to FY 2023 is to continue execution of the SE Core No Fail Activities and development of tools to transform One World Terrain (OWT) data into JLCCTC compliant runtime formats.		-	4.937	5.526
Title: SBIR/STTR Transfer FY 2022 Plans: SBIR/STTR Transfer FY 2022 to FY 2023 Increase/Decrease Statement:		-	0.614	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred in accordance with Title 15 USC ?638.			
Accomplishments/Planned Programs Subtotals	7.829	16.715	22.612

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• NA0103: <i>NSTD</i>	35.038	37.147	35.470	-	35.470	32.850	32.064	32.466	32.778	Continuing	Continuing
<i>COMMAND & CONTROL</i>											

Remarks

D. Acquisition Strategy

The new JLCCTC contract (with Base contract of 4 years and two-three year options) was awarded to Phoenix Logistics Inc. (PLI) on 17 March 2020.

Activities under the current new contract and follow-on contracts include System Engineering, Software Development, Integration and Test, support to validation events and PDSS/P3I support.

JLCCTC produces a major software release/version which is then distributed/fielded to over 40 MTCs worldwide in support of Army Command and Staff Training.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	Various : Various	68.854	-		-		-		-		-	Continuing	Continuing	Continuing
SBIR/STTR Transfer	TBD	PEO STRI : Orlando, FL	0.843	-		0.614		-		-		-	0.000	1.457	-
Subtotal			69.697	-		0.614		-		-		-	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Constructive Strategy Implementation	C/CPFF	Lockheed Martin : Orlando, FL	9.869	-		-		-		-		-	Continuing	Continuing	Continuing
Integration of JLCCTC	SS/FFP	Various : Various	56.851	-		-		-		-		-	0.000	56.851	-
Improve JLCCTC to meet emerging warfighter requirements.	C/CPFF	Phoenix Logistics, Inc. : Orlando, FL	11.418	2.834	Dec 2020	2.321	Dec 2021	6.226	Dec 2022	-		6.226	Continuing	Continuing	Continuing
MC Systems Stimulation and Cyber Security	C/CPFF	Phoenix Logistics, Inc. : Orlando, FL	8.332	0.800	Dec 2020	0.800	Dec 2021	0.800	Dec 2022	-		0.800	Continuing	Continuing	Continuing
COE Compliance	C/CPFF	Phoenix Logistics, Inc. : Orlando, FL	5.740	0.650	Dec 2020	0.650	Dec 2021	0.650	Dec 2022	-		0.650	Continuing	Continuing	Continuing
JLCCTC mission command training program simulation upgrades	C/CPFF	Lockheed Martin : Orlando, FL	7.397	-		-		-		-		-	Continuing	Continuing	Continuing
Conduct Army ground Model AoA	C/CPFF	TBD : Orlando, FL	-	1.894	Dec 2020	5.692	Dec 2021	7.660	Dec 2022	-		7.660	Continuing	Continuing	Continuing
Constructive Terrain and Tools Development	C/CPFF	TBD : Orlando, FL	-	-		4.937	Dec 2021	5.526	Dec 2022	-		5.526	Continuing	Continuing	Continuing
Subtotal			99.607	6.178		14.400		20.862		-		20.862	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JLCCTC Version 9.0 System Engr / Develop / I&T / Validation	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
JLCCTC Version 9.0 Release	[Redacted]				▲ 1 JLCCTC V9.0 Release				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
JLCCTC Version 10.0 System Engr / Develop / I&T / Validation	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
JLCCTC Version 10.0 Release	[Redacted]				[Redacted]				[Redacted]				▲ 2 JLCCTC V10.0 Release				[Redacted]				[Redacted]							
JLCCTC Integration into LVC-IA / CTC-IS	[Redacted]																											
JLCCTC Version 2027 Sys Engr/ Develop/I&T/ Validation	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
JLCCTC Version 2027 Release	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				▲ JLCCTC V2027 Release			

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604742A / <i>Constructive Simulation Systems Development</i>	Project (Number/Name) 362 / <i>Jnt Land Component Constructive Trng</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JLCCTC Version 9.0 System Engr / Develop / I&T / Validation	1	2018	4	2021
JLCCTC Version 9.0 Release	3	2022	3	2022
JLCCTC Version 10.0 System Engr / Develop / I&T / Validation	3	2022	4	2024
JLCCTC Version 10.0 Release	1	2025	1	2025
JLCCTC Integration into LVC-IA / CTC-IS	1	2014	4	2027
JLCCTC Version 2027 Sys Engr/ Develop/ I&T/ Validation	1	2025	4	2027
JLCCTC Version 2027 Release	1	2028	1	2028

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	5.375	8.807	5.178	-	5.178	4.395	4.698	4.719	4.764	Continuing	Continuing
L59: <i>Diagnost/Expert Sys</i>	-	3.885	5.574	1.150	-	1.150	1.178	1.197	1.221	1.233	0.000	15.438
L65: <i>Test Equipment Development</i>	-	1.490	3.233	4.028	-	4.028	3.217	3.501	3.498	3.531	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element (PE) provides for development and testing of automatic test equipment, precision calibration instruments, general-purpose test equipment, state-of-the-art diagnostics and prognostics technologies, and software and systems to support the increasingly complex electronic components of the Army's new and upgraded weapon systems focused on joint operations in a sophisticated multi-domain area of operation. It focuses on standardization and implementation of commercial test and diagnostic technologies across multiple weapon platforms to minimize the cost of troubleshooting and maintenance of Army equipment in the field. Funding supports modernization of the test equipment fleets by investigating technology insertions including, but not limited to, predictive and prognostic maintenance, instrument reduction/miniaturization, electro-mechanical, electro-optics (EO), radio frequency (RF), physical, radiological, chemical, and biological warfare sensor calibration support capabilities, and other emerging technologies. Funding also supports development of initial prototypes to enable refinement of Operational Requirements documented by Combatant Commands (COCOM), Program Executive Offices (PEO), Army Futures Command (AFC), Army Staff, US Army Training and Doctrine Command (TRADOC), and early user feedback to support future sustainment and testing capabilities required for emerging weapons platforms. This PE provides for continued development and improvement of general-purpose test equipment and calibration standards with emphasis on the incorporation of digital electronics and tailoring of configurations to improve deployability, mobility and survivability of the support equipment. It includes development, demonstration and testing of calibration standards and techniques to support new Army test equipment requirements; and, it provides for feasibility studies, market research, inventory analyses, bid sample testing and prototyping to support acquisition of calibration systems and general-purpose test and diagnostics equipment

The Department of Defense (DoD) has designated the Integrated Family of Test Equipment (IFTE), comprised of the Maintenance Support Device (MSD) and the Next Generation Automatic Test System (NGATS), as the authorized Army standard for field and sustainment maintenance. The MSD provides at-system automatic test and diagnostic support and the NGATS consolidates off-system automatic test and diagnostic equipment requirements. The IFTE systems being developed under this PE provide electronic fault isolation, diagnostic and repair capabilities at all levels of maintenance and do it more cost effectively than system-specific testers. They provide state-of-the-art test and diagnostic capabilities, reducing costs and logistics footprints while providing the Warfighter fix-forward capability for current and future weapon systems in multi-domain operations. The systems are designed to support the Cross-Functional Teams (CFT) in the Army Futures Command (AFC) as they mature in accordance with the DoD Automatic Test Systems strategy. The MSD is employed by more than thirty military occupational specialties to perform field level maintenance on approximately 50 weapon systems, including Abrams, Bradley, Stryker, aviation platforms, missile systems, and the Army's wheeled vehicle fleet.

FY 2023 base funding for this PE continues incremental development of the Army's standard At-Platform Automatic Test System, MSD, which will enhance testing and diagnostic capability required by supported weapon systems. Funding supports tactical vehicle sustainment concepts, evaluates evolving weapon system diagnostic testing requirements, incorporates additional organic diagnostic software capabilities to troubleshoot weapon systems, and ensures data bus compatibility and

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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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 0604746A / <i>Automatic Test Equipment Development</i>
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readability with commercial technology. It evaluates and incorporates cyber security enhancements into at-platform diagnostic hardware and software. Funding also provides for market research, feasibility assessment, and interaction with supported weapon systems to determine most effective methodology for diagnostic software to incorporate emerging At-Platform Predictive & Prognostic Maintenance (PPMx) requirements. The FY 2023 funding will develop or significantly modify test equipment to satisfy modular force and homeland security support requirements that cannot be accommodated with test equipment currently available in the commercial marketplace such as RF and EO testing capability. It will also develop and test general-purpose test equipment and calibration standards to meet Army weapon system support requirements, and initiate development of enhanced diagnostic software and interfaces to support emerging maintenance concepts for Long Range Precision Fires, Next Generation Combat Vehicle, Future Vertical Lift, and Air and Missile Defense. The funding will provide prototype test and evaluation of field level calibration and repair support for the Radiation Detection System (RDS) fielded in FY 2020-2021 in response to Operational Needs Statement ONS 17-22580. The project resolves significant radiation measurement accuracy gaps throughout the Department of the Army operational areas and CONUS. This funding also provides for analysis of courses of action to incorporate additional intrinsic calibration instruments and general-purpose test equipment to reduce the maintenance hierarchy, increase calibration intervals, extend lifecycle reliability, and increase supportability across generational changes in weapon systems and weapon support systems technology.

B. Program Change Summary (\$ in Millions)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	5.375	8.807	0.000	-	0.000
Current President's Budget	5.375	8.807	5.178	-	5.178
Total Adjustments	0.000	0.000	5.178	-	5.178
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	5.178	-	5.178

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development				Project (Number/Name) L59 / Diagnost/Expert Sys			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
L59: Diagnost/Expert Sys	-	3.885	5.574	1.150	-	1.150	1.178	1.197	1.221	1.233	0.000	15.438
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds development of system enhancements for the Maintenance Support Device (MSD) and the Next Generation Automatic Test System (NGATS). The MSD and the NGATS are general-purpose automatic test systems (ATS) that provide test and diagnostic capabilities required to support current and future weapons and combat support systems across the Cross-Functional Teams (CFTs) in the Army Futures Command (AFC) and will facilitate retirement of aging, obsolete and non-cyber secure test equipment that imposes increasing logistics and operations and support cost burdens. The MSD is the Army's standard at-system tester and requires continuing technology insertions to support modernization of the supported weapon systems. This Project funds development efforts to insert the most current relevant technology into the next generation MSD, supports capability enhancement of at-platform test adapters, develops and standardizes capabilities to minimize or eliminate Army dependency on expensive proprietary software to support tactical vehicles, and maintains compatibility with emerging platform hardware bus technology and software interface requirements. The test and diagnostic systems and procedures developed under this Project are essential for ensuring the operational readiness, accuracy and effectiveness of the Army's warfighting systems.

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

	FY 2021	FY 2022	FY 2023
Title: NGATS Increment 2	0.300	0.297	-
Description: Develop and test hardware and software for NGATS Increment 2 support capability			
FY 2022 Plans: Develop and test state-of-the-art hardware and software for support of emerging required capabilities to support Cross-Functional Teams (CFT) such as Peripheral Component Interconnect (PCI) Extensions for Instrumentation (PXI) based instrument solutions providing increased readiness and smaller logistics footprint.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funds were reduced due to revised distribution plans for NGATS which reduced the need for additional efforts in this area.			
Title: NGATS Electro-Optics (EO) Subsystem	0.200	-	-
Description: Develop and test hardware and software for NGATS electro-optics (EO) subsystem (to include the capability to support new ground and aerial sensors for unmanned air and ground vehicles)			
Title: Additional Software Capabilities for Use with NGATS	0.200	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L59 / Diagnost/Expert Sys		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Description: Develop software capabilities to incorporate common logistics operating environment/netcentric and embedded diagnostics data collection and analysis for closed loop diagnostic maintenance in support of Predictive & Prognostic Maintenance (PPMx)				
Title: NGATS Performance Enhancement Description: NGATS core instrument/software modifications to increase NGATS performance FY 2022 Plans: Improve system software and libraries to take advantage of WIN10 processing structure and new Application Program Interface (API) which will increase system processing and throughput. Use of instrument vendor WIN10 drivers will increase measurement accuracy and reliability. Improvements in architecture will allow faster remote system updates and provide enhanced communication channels for support of Predictive & Prognostic Maintenance (PPMx). FY 2022 to FY 2023 Increase/Decrease Statement: Funds were reduced due to ongoing and planned performance enhancements that are projected to end in FY 2022.		0.700	0.500	-
Title: Abrams/Bradley Test Program Set (TPS) Design Description: Design, test and evaluate Abrams/Bradley TPSs to utilize modern core NGATS instrumentation vice continuing to execute on single-purpose instrumentation specifically developed to emulate Abrams/Bradley legacy test equipment (i.e., Direct Support Electrical System Test Set (DSESTS)) FY 2022 Plans: Continue redesign of Abrams/Bradley TPSs to execute on core commercial NGATS instrumentation vice single-purpose NGATS instrumentation. FY 2022 to FY 2023 Increase/Decrease Statement: Funds were reduced due because all scheduled TPS design requirements are projected to end in FY 2022.		0.700	2.612	-
Title: NGATS Logistics Support Products Description: Develop NGATS initial logistics support products (including provisioning, technical manuals and calibration) FY 2022 Plans: Develop updates to technical manuals, technical data packages, depot maintenance work requirements and provisioning as NGATS system and TPS changes occur. FY 2022 to FY 2023 Increase/Decrease Statement:		0.853	0.500	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L59 / <i>Diagnost/Expert Sys</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Funding is decreased because the Initial logistics support products are projected to be completed in FY 2022.				
<p>Title: Maintenance Support Device (MSD) Technology Enhancements</p> <p>Description: Modernizes the current MSD fleet by investigating and incorporating relevant technology into the next-generation MSD and supporting capability enhancement of the Wireless At-platform Test Set (WATS). Develops diagnostic capabilities to minimize or eliminate Army dependency on proprietary software to support tactical vehicles and maintain compatibility with emerging platform hardware bus technology and software interface requirements. Provides a data processing capability to enable Predictive & Prognostic Maintenance (PPMx) on weapon systems.</p> <p>FY 2022 Plans: Continue to incorporate greater range of supported weapons system diagnostic code fault detection into Diagnostic Software to minimize dependency on proprietary software, support tactical system sustainment concepts, and ensure data bus compatibility and readability. Evaluate emerging technology for insertion into next generation At-Platform Automatic Test System (APATS) to support evolving weapon system diagnostic testing concepts. Complete and test software that enables transition to the Army's emerging single interactive electronic technical manual (IETM) viewer/authoring environment for use with future generation APATS and Diagnostic Software. Continue market research, feasibility assessment, and interaction with supported weapon systems to determine best methodology to collect and aggregate weapon system PPMx information.</p> <p>FY 2023 Plans: Continue market research for the Next Generation At-Platform Test System (Maintenance Support Device). Continue to incorporate greater range of supported weapon systems diagnostic code fault detection into diagnostic software to minimize dependency on proprietary/non-cyber compliant software. Continue to evaluate and incorporate cyber security enhancements into at-platform diagnostic hardware and software. Continue market research, feasibility assessment, and interaction with supported weapon systems to determine most effective methodology to incorporate emerging Predictive & Prognostic Maintenance (PPMx) capabilities.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding requirement increased to meet cyber security needs.</p>		0.633	0.962	1.150
<p>Title: TPS Development Environment</p> <p>Description: Develop a standardized TPS development environment for NGATS</p> <p>FY 2022 Plans:</p>		0.299	0.500	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L59 / Diagnost/Expert Sys

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Continue development of COTE TPS development software for NGATS to be used for emerging systems including those planned for CFTs. FY 2022 to FY 2023 Increase/Decrease Statement: Funds were reduced due to the projected completion of Phase V of COTE TPS development environment.			
Title: FY 2022 SBIR/STTR Transfer Description: Funding transferred in accordance with Title 15 USC ?638 FY 2022 Plans: Funding transferred in accordance with Title 15 USC ?638203. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC ?638.	-	0.203	-
Accomplishments/Planned Programs Subtotals	3.885	5.574	1.150

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MB4000: Integrated Family Of Test Equipment (IFTE)	77.214	42.934	36.514	-	36.514	31.162	12.161	12.192	12.187	0.000	224.364

Remarks

D. Acquisition Strategy
This developmental Project consists of organic and contractual actions. When the necessary expertise and capability are available within the Department of Defense, services required for the individual development projects are ordered from the government source via a support agreement; otherwise, commercial contracts are used. Equipment required for developmental projects is obtained by contract from the commercial supplier. Developmental efforts for the Next Generation Automatic Test System (NGATS) are being completed under a number of contracts awarded to the prime contractor for the Integrated Family of Test Equipment off-platform testers and other contractors with automatic test equipment (ATE) and test program set development capabilities. NGATS followed an evolutionary acquisition strategy using incremental development to satisfy Army depot and field testing requirements for new and existing systems.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604746A / Automatic Test Equipment Development				L59 / Diagnost/Expert Sys							
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management	Various	Various : Various	0.849	-		-		-		-		-	0.000	0.849	-
FY 2022 SBIR/STTR Transfer	Various	Various : Various	-	-		0.203	Mar 2022	-		-		-	0.000	0.203	-
Subtotal			0.849	-		0.203		-		-		-	0.000	1.052	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development/ Verification/Validation	Various	Various, : Various	44.778	1.646	Feb 2021	2.568	Apr 2022	0.640	Jan 2023	-		0.640	0.000	49.632	-
Hardware/Support Items Development	Various	Various, : Various	75.291	1.839	Jan 2021	2.253	Apr 2022	0.345	Jan 2023	-		0.345	0.000	79.728	-
Subtotal			120.069	3.485		4.821		0.985		-		0.985	0.000	129.360	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Support	Various	Various, : Various	51.863	0.300	Dec 2020	0.450	Apr 2022	0.115	Dec 2022	-		0.115	0.000	52.728	-
Other Direct	Various	Various, : Various	6.228	0.100	Dec 2020	0.100	Apr 2022	0.050	Dec 2022	-		0.050	0.000	6.478	-
Subtotal			58.091	0.400		0.550		0.165		-		0.165	0.000	59.206	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental/ Operational Testing	Various	Various, : Various	3.096	-		-		-		-		-	0.000	3.096	-
Subtotal			3.096	-		-		-		-		-	0.000	3.096	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L59 / Diagnost/Expert Sys
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Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
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
Test program set (TPS) and contractor developmental test and evaluation are included in the product development cost.

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	182.105	3.885	5.574	1.150	-	1.150	0.000	192.714	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L59 / Diagnost/Expert Sys

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Full Materiel Release	1 FMR																											
First Unit Equipped	2 FUE																											
Full Rate Production Decision Review			3 FRP-DR																									
NGATS Full-Rate Production (Increment 1)																												
NGATS Testing (Increment 2)																												
NGATS Development (RF Subsystem)																												
NGATS EO Integration																												
NGATS RF Integration																												
NGATS Testing (EO & RF Subsystems)																												
NGATS Product Improvements - Netcentric																												
New Systems Test Capability																												
MSD Technology Enhancements																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L59 / Diagnost/Expert Sys
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NGATS Testing (Increment 1)	1	2011	1	2012
Production for First Article	1	2015	2	2017
Training Materiel Release	4	2019	4	2019
Full Materiel Release	1	2021	1	2021
First Unit Equipped	1	2021	1	2021
Full Rate Production Decision Review	3	2021	3	2021
NGATS Testing (Increment 1 Follow-On DT/OT)	1	2016	3	2016
NGATS Full-Rate Production (Increment 1)	2	2019	4	2023
NGATS System Development and Demonstration (SDD) (Increment 2)	1	2016	4	2020
NGATS Testing (Increment 2)	1	2016	4	2023
FOT&E Completed (DT)	3	2018	3	2018
NGATS Development (EO Subsystem)	4	2010	4	2015
NGATS Development (RF Subsystem)	1	2016	4	2021
NGATS EO Integration	3	2016	4	2021
NGATS RF Integration	3	2017	1	2022
NGATS Testing (EO & RF Subsystems)	1	2016	2	2022
NGATS Product Improvements - Netcentric	1	2016	4	2023
New Systems Test Capability	1	2016	4	2023
MSD Technology Enhancements	1	2016	4	2027

Note

Test program set (TPS) compatibility testing runs continually throughout the product development process.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>				Project (Number/Name) L65 / <i>Test Equipment Development</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
L65: <i>Test Equipment Development</i>	-	1.490	3.233	4.028	-	4.028	3.217	3.501	3.498	3.531	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project supports Program Executive Office (PEO) and Army Futures Command (AFC) system support requirements with modernization of calibration instruments, techniques, and existing Army calibration systems by investigating technology insertions including automated and autonomous operations and other emerging technologies. Funding also supports development of initial prototypes to enable refinement of Operational Requirements and early user feedback to support future calibration systems and general-purpose test, measurement and diagnostic equipment (TMDE) acquisitions. This Project develops calibration software and calibration capability for electro-optical, chemical, biological agent, radiation sourcing and detection systems, signal measurement from direct current to microwave ranges, physical and mechanical measurements such as torque, pressure, and temperature, and improvements in test and measurement performance envelopes. It provides for product improvements and development/evaluation of advanced technologies to increase reliability of calibration systems and general-purpose TMDE. The product improvements eliminate gaps in existing organic capabilities and ensure operational readiness and safety of Army weapons and combat support systems. These improvements employ reconfigurable open-electronics architecture and computer-based instrumentation where feasible and focus on reduced test equipment footprints to improve deployability and mobility in complex multi-domain areas of operation.

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

	FY 2021	FY 2022	FY 2023
Title: Calibration Sets (CALSETS) Software Environment and Calibration Procedures	0.356	0.499	0.500
Description: Continue development and testing of Army automated calibration environment (ACE) and develop calibration procedures. Develop and test an enterprise data system to capture management and test data for reporting, metrics, and dashboard to inform management and leader decisions in acquisition and operations. Test and evaluate automated calibration equipment software efforts in support of the Army risk management framework (RMF).			
FY 2022 Plans: Develop calibration software and test/update cyber security to accelerate the program and develop support for a wider range of Army test, measurement and diagnostic equipment (TMDE); populate the enterprise database with historical information and begin collection of new data to test the agility of the enterprise under load from global imports. Develop metrics and dashboard for managers and leaders to inform decisions in acquisition and operations.			
FY 2023 Plans: Develop automated support capability in the Army automated calibration environment (ACE) for a wider range of Army test, measurement and diagnostic equipment (TMDE). Development of ACE features to support enhanced data sharing capabilities.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L65 / <i>Test Equipment Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Relatively small increase in funding required in FY 2023 to meet schedules of planned projects.				
<p>Title: Physical Instruments</p> <p>Description: Research, develop, and test physical parameter calibration instrumentation to support areas such as intrinsic high reliability physical and dimensional standards. Modernize force and torque calibration capability. Develop radiological, chemical and biological agent detection systems, small arms gage calibration, pneumatic pressure systems, and temperature radiometer calibration related to target detection in the infrared spectrum.</p> <p>FY 2022 Plans: Complete existing projects in small arms gage calibration, infrared systems calibration, and radiation sources to support on-system calibration of radiation detection sensors. Initiate projects in chemical and biological agent defense systems calibration and develop performance requirements for Army primary level measurement in pressure, temperature, and mass for increased reliability and extended periods between scheduled maintenance actions and calibration.</p> <p>FY 2023 Plans: Complete development of measurement standards for vapor contamination in support of chemical warfare agent (CWA) detector JCAD, as well as begin Bio-Sensor Calibrator research to provide an alternative solution in support of biological warfare agent (BWA) detector JBPDS. Complete NIST on a chip (NOAC) mass measurement project to modernize Army mass support system. Initiate development of torque multiplier calibration capability on the torque calibration system (TCS) in support of aviation maintenance equipment.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding decrease from FY 2022 to FY 2023 after radiation source prototype development in FY22.</p>		0.433	1.837	1.048
<p>Title: Electrical Instruments</p> <p>Description: Research, develop, and test electrical parameter calibration instrumentation to support modernization and replacement of aged and obsolete test instruments in areas such as intrinsic electrical standards, electrical transport standards and electro-optic standards. Develop calibration support for advanced capability in spectral and vector dense signal analysis in complex Multi-Domain areas of operation.</p> <p>FY 2022 Plans: Develop solutions to meet expanding gaps in measurement capability for optical time domain reflectometry. Continue development of fiber optic power source calibration, Army-wide alternating current/direct current (AC/DC) voltage measurement modernization, and replacement of 30+ year old microwave power sensor calibration to national standards meeting Army Futures</p>		0.306	0.554	2.075

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L65 / <i>Test Equipment Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Command support requirements for Multi-Domain secured signal send and receive capability with integrated antenna functionality advancements.</p> <p>FY 2023 Plans: Complete testing of Army-wide alternating current/direct current (AC/DC) voltage measurement modernization project. Complete replacement and testing of microwave power sensor calibration to national standards meeting Army Futures Command support requirements for Multi-Domain secured signal send and receive capability with integrated antenna functionality. Develop Quantum Hall Resistance (QHR) system to reduce recurring operational costs and improve mission readiness in support of Army's sustainment and traceability for all electrical resistance measurement systems.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increased funding required in FY 2023 to meet schedules of planned projects and develop prototypes.</p>				
<p>Title: Test Equipment Modernization (TEMOD)</p> <p>Description: Perform market research, bid sample testing and evaluation of commercial general-purpose electronic test equipment (GPETE), and develop performance specifications for TEMOD acquisitions.</p> <p>FY 2022 Plans: Perform market research and evaluation of commercial GPETE and validate performance specifications for improved test equipment. Conduct bid sample testing to support acquisition program. The GPETE will support numerous Army weapon systems to include multiple CFT's.</p> <p>FY 2023 Plans: Perform market research and evaluation of commercial GPETE and validate performance specifications for improved test equipment. Conduct bid sample testing to support acquisition program. The GPETE will support numerous Army weapon systems to include multiple CFT's.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increased to meet support demand of numerous Army weapon systems.</p>		0.395	0.225	0.405
<p>Title: FY 2022 SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC ?638</p> <p>FY 2022 Plans: Funding transferred in accordance with Title 15 USC ?638.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		-	0.118	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L65 / Test Equipment Development
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred in accordance with Title 15 USC ?638.			
Accomplishments/Planned Programs Subtotals	1.490	3.233	4.028

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• N10000: Calibration Sets Equipment	2.511	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• N11000: Test Equipment Modernization (TEMOD)	14.941	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• G02510: Test Equipment Modernization (TEMOD)	-	24.304	32.734	-	32.734	36.734	54.364	54.599	54.579	0.000	257.314

Remarks
Funds in SSNs N10000 and N11000 for FY 2022 through FY 2026 have been realigned to Test Equipment Modernization, SSN G02510.

D. Acquisition Strategy

Projects focus on commercial and nondevelopmental item technologies. Department of Defense services provide programmatic, engineering expertise and capability for individual development projects; otherwise, commercial service contracts are used to obtain required capabilities. Equipment required for development projects is obtained from commercial suppliers. Candidate commercial equipment and nondevelopmental items are identified and evaluated through market research and government test and evaluation.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L65 / Test Equipment Development
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
In-house Engineering	SS/ Various	Various : Various	6.667	-		-		-		-		-	0.000	6.667	-
FY 2022 SBIR/STTR Transfer	Various	various : Various	-	-		0.118	Mar 2022	-		-		-	0.000	0.118	-
Subtotal			6.667	-		0.118		-		-		-	0.000	6.785	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CALSETS Software Environment and Calibration	Various	Various : Various	7.824	0.119	Feb 2021	0.247	Apr 2022	0.271	Mar 2023	-		0.271	Continuing	Continuing	-
Physical Instruments	Various	Various : Various	9.558	0.166	Apr 2021	1.050	Feb 2022	0.600	Feb 2023	-		0.600	Continuing	Continuing	-
Electrical Instruments	Various	Various : Various	11.015	0.089	Feb 2021	0.280	Mar 2022	1.216	Mar 2023	-		1.216	Continuing	Continuing	-
Test Equipment Modernization	Various	Various : Various	3.747	0.237	Feb 2021	0.135	Feb 2022	0.243	Mar 2023	-		0.243	Continuing	Continuing	-
Subtotal			32.144	0.611		1.712		2.330		-		2.330	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contract Engineering	C/FFP	Various : Various	3.462	0.473	Feb 2021	0.260	Jan 2022	0.145	Feb 2023	-		0.145	Continuing	Continuing	-
Subtotal			3.462	0.473		0.260		0.145		-		0.145	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / Automatic Test Equipment Development	Project (Number/Name) L65 / Test Equipment Development
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Physical Instruments																												
CALSETS Software Environment and Calibration																												
Electrical Instruments																												
Test Equipment Modernization																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / <i>Automatic Test Equipment Development</i>	Project (Number/Name) L65 / <i>Test Equipment Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AN/GSM-421(V2) User Testing	2	2007	4	2012
Physical Instruments	1	2016	4	2027
CALSETS Software Environment and Calibration	1	2016	4	2027
Electrical Instruments	1	2016	4	2027
Test Equipment Modernization	1	2016	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604760A / Distributive Interactive Simulations (DIS) - Eng Dev
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	7.605	12.453	8.189	-	8.189	8.206	8.280	8.288	8.370	0.000	61.391
C74: Devel Simulation Tech	-	0.963	0.945	1.022	-	1.022	1.026	1.035	1.035	1.046	0.000	7.072
C77: Army Geospatial Data Master Plan	-	0.703	5.540	0.568	-	0.568	0.575	0.581	0.587	0.593	0.000	9.147
C78: One Semi-Automated Forces	-	5.939	5.968	6.599	-	6.599	6.605	6.664	6.666	6.731	0.000	45.172

A. Mission Description and Budget Item Justification

The program element "Distributive Interactive Simulations - Engineering Development" applies to the Army's Advanced Simulation Program, which enables operational readiness and the development of concepts and systems for the Future Force through the application of new simulation technology and techniques. The development and application of simulation technology will provide the means to link electronically a range of various simulation tools in a manner that is transparent to the user. The amalgam of simulations and tools is linked together to enable execution of an event; to verify the scenarios, tactics/techniques and procedures; to train testers on new hardware/software; and to conduct trial test runs before costly live field tests. The tools developed are available for reuse by developers and users of simulations throughout the Army.

Project C74 funds the HQDA-chartered mission of the Simulation-to-Mission Command Interoperability (SIMCI) Overarching Integrated Product Team (OIPT) in support of Army Training and Readiness. The SIMCI OIPT mission is to provide policy recommendations to Army senior leadership to improve organizations by allowing Soldiers to fight in the same manner in which they train. This is accomplished by interoperability between Mission Command (MC) systems and the Modeling and Simulation (M&S) systems the Army uses to stimulate MC systems for training Soldiers and their Leaders. SIMCI also invests in targeted solutions to critical problem areas that exist between MC and Simulations. The SIMCI OIPT, led by Program Executive Office (PEO) Simulation, Training, and Instrumentation (STRI) and PEO Command Control Communications-Tactical (C3T), uses focused collaborative processes among its 30+ Army organizations to identify key/critical interoperability shortfalls and the required materiel solutions.

Project C77, Army Geospatial Data Master Plan, focuses on activities that start with data acquisition from multiple sources and culminate in (1) accurate, robust and timely geospatial data and data management and (2) integration and conversion tools that support multiple battle command, training and mission-rehearsal applications. Project C77 continues development efforts associated with the Ground-Warfighter Geospatial Data Model (GGDM) and Geospatial Data Standards.

One Semi-Automated Forces (OneSAF) Project C78 develops and delivers a software application that represents activities of units and forces in simulation to support Army Training and Readiness. The application is used by Army agencies to support the concept evaluation, experimentation, materiel acquisition and training throughout the communities. The focus of this project is systems/software engineering and design for development and evolution of the architecture and software tools for a universal system of Army computer-generated forces -- OneSAF. OneSAF is a high fidelity brigade-and-below SAF that represents a full range of operations, systems and control processes in support of stand-alone and embedded training and Research, Development and Acquisition (RDA) simulation applications. OneSAF is fully

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>
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interoperable with the Army's emerging virtual, live, and division-and-above constructive simulations and provides next-generation simulation products. OneSAF replaces a variety of legacy simulations used within the Army to support analytic and training simulation activities.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	7.605	7.453	0.000	-	0.000
Current President's Budget	7.605	12.453	8.189	-	8.189
Total Adjustments	0.000	5.000	8.189	-	8.189
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	8.189	-	8.189

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

Project: C77: *Army Geospatial Data Master Plan*

Congressional Add: *FY22 Congressional Add - Bathymetric Unmanned Littoral LiDar for Operational GEOINT (BULLDOG)*

Congressional Add Subtotals for Project: C77

Congressional Add Totals for all Projects

	FY 2021	FY 2022
	-	5.000
	-	5.000
	-	5.000

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>				Project (Number/Name) C74 / <i>Devel Simulation Tech</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>C74: Devel Simulation Tech</i>	-	0.963	0.945	1.022	-	1.022	1.026	1.035	1.035	1.046	0.000	7.072
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project C74 funds the HQDA-chartered mission of the Simulation-to-Mission Command Interoperability (SIMCI) Overarching Integrated Product Team (OIPT) in support of Army Training and Readiness. The SIMCI OIPT mission is to provide policy recommendations to Army senior leadership to improve organizations by allowing Soldiers to fight in the same manner in which they train. This is accomplished by interoperability between Mission Command (MC) systems and the Modeling and Simulation (M&S) systems the Army uses to stimulate MC systems for training Soldiers and their Leaders. SIMCI also invests in targeted solutions to critical problem areas that exist between MC and Simulations. The SIMCI OIPT, led by Program Executive Office (PEO) Simulation, Training, and Instrumentation (STRI) and PEO Command Control Communications-Tactical (C3T), uses focused collaborative processes among its 30+ Army organizations to identify key/critical interoperability shortfalls and the required materiel solutions.

The SIMCI OIPT provides the following: (1) Advisor to Army Leadership--improve MC and M&S interoperability programs, policies, directives, resourcing, and procedures; (2) Technical Investment--sponsor/support initiatives that seek common solutions to critical interoperability issues surrounding MC and M&S systems; (3) Outreach--conduct & participate in interoperability outreach activities. SIMCI investments consist primarily of cost-sharing initiatives, leveraging initial system solutions of acquisition programs to enhance the interoperability of multiple systems in the Joint Operational Environment. SIMCI investments accelerate implementation within MC and M&S systems, of common data models and information exchanges that are used by other Services and coalition nations, thus enhancing the inherent ability of Army systems to interoperate seamlessly in a Joint, Interagency, Intergovernmental, and Multinational (JIIM) environment.

FY 2023 base funding in the amount of \$1.022 million continues progress with embedding simulation into Mission Command Systems via the Ozone Widget Framework, continues management of the SIMCI OIPT's Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. It is focused first on reducing costs and improving capabilities in the areas of automating Operational Plans, Orders, and Reports in support of Army, Joint, and Coalition operations. Objectives are: identify and articulate to HQDA senior leadership specific standards that require Army-wide implementation; co-develop data standards, architecture standards, implementation specifications and Joint/Coalition products; continue transition of SIMCI knowledge and proof-of-principle products to Army and Joint acquisition programs.

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

	FY 2021	FY 2022	FY 2023
Title: Program Management for the SIMCI Overarching Integrated Product Team (OIPT) Projects.	0.963	0.911	1.022
Description: Program Management of the SIMCI OIPT's Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. The OIPT consists of a Product Director, engineers, and finance personnel.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p><i>FY 2022 Plans:</i> Will continue management and support of the SIMCI OIPT'S Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. Will continue focus on gap-analysis of the current model and simulation programs and capabilities in the areas of Live, Virtual, and Constructive (LVC) simulations. This will support the Vice Chief of Staff of the Army's request to find redundancy within the Modeling and Simulation (M&S) community and reduce it. Objectives are to compare the current M&S capabilities with what will be required in the upcoming LVC-Information Assurance (LVC-IA) and Synthetic Environment (SE) environments.</p> <p><i>FY 2023 Plans:</i> Will continue management and support of the SIMCI OIPT'S Army-wide collaborative, interoperability enhancement activities, including architecture alignment, data model alignment, common standards, components, and products. Will continue focus on gap-analysis of the current model and simulation programs and capabilities in the areas of Live, Virtual, and Constructive (LVC) simulations. This will support the Vice Chief of Staff of the Army's request to find redundancy within the Modeling and Simulation (M&S) community and reduce it. Objectives are to compare the current M&S capabilities with what will be required in the upcoming LVC-Information Assurance (LVC-IA) and Synthetic Environment (SE) environments.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Increase in funding will be used to leverage additional architecture support in the Army Modeling Simulation Office (AMSO) community.</p>			
<p><i>Title:</i> SBIR/STTR Transfer</p> <p><i>FY 2022 Plans:</i> SBIR/STTR Transfer</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC 7638.</p>	-	0.034	-
Accomplishments/Planned Programs Subtotals	0.963	0.945	1.022

<p>C. Other Program Funding Summary (\$ in Millions) N/A</p> <p>Remarks SIMCI uses other contract vehicles (internal/external) and awards money to work on specific technical projects. This provides the opportunity to leverage technical expertise from different agencies. SIMCI chooses projects that enhance current capabilities, closes the gaps of existing capabilities, and makes the determination for</p>
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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>

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

future projects that affect both the Mission Command and Live, Virtual, Constructive simulations environment. SIMCI only chooses those projects that meet specific requirements and criteria as stated above. It is one of SIMCI's missions to locate, utilize, or upgrade those projects or specific products that do just that.

D. Acquisition Strategy

SIMCI Overarching Integrated Product Team (OIPT) resources are allocated to multiple organizations in both the Mission Command (MC) and Modeling and Simulation (M&S) Communities. The funds are contracted to execute approved functions and to projects that advance the efforts of SIMCI and components-based architecture alignment. Products developed transition to the lead or sponsor's program which then maintains the product for the cost savings of itself and other programs in both Communities. The primary focus for these projects are the following: Embedded simulations with current Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems, gap-analysis for current simulations, and the proper implementation of Next-Generation modeling and simulation capabilities in regards to the Synthetic Training Environment (STE).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	PEO STRI : Orlando, FL	10.563	0.140	Jan 2021	0.140	Jan 2022	0.140	Jan 2023	-		0.140	Continuing	Continuing	Continuing
SBIR/STTR	TBD	PEO STRI : Orlando, FL	0.326	-		0.034		-		-		-	0.000	0.360	-
Subtotal			10.889	0.140		0.174		0.140		-		0.140	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Transition of simulation initialization capability	Various	TBD : TBD	3.134	-		-		-		-		-	Continuing	Continuing	Continuing
Geospatial Initiative	Various	TBD : TBD	1.388	-		-		-		-		-	Continuing	Continuing	Continuing
Data Model applications and reference implementations	Various	TBD : TBD	2.363	-		-		-		-		-	Continuing	Continuing	Continuing
Implementation of Initialization Products	Various	TBD : TBD	2.255	-		-		-		-		-	Continuing	Continuing	Continuing
Initialization Study Implementation	Various	TBD : TBD	1.038	-		-		-		-		-	Continuing	Continuing	Continuing
Mission Comand systems data mediation/web services	Various	TBD : TBD	2.910	-		-		-		-		-	Continuing	Continuing	Continuing
Expanding MTOE System Architecture (SA) Data	Various	TBD : TBD	1.821	-		-		-		-		-	Continuing	Continuing	Continuing
C2 Adapter Web Services and Tools	Various	TBD : TBD	2.660	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			17.569	-		-		-		-		-	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Implementation of Initialization Products	[Redacted]																											
Transition of simulation initialization capability	[Redacted]																											
Data Model applications and reference implementations	[Redacted]																											
C2 Adapter Web Services and Tools	[Redacted]																											
Quarterly SIMCI OIPT Meeting	[Redacted]																											
Annual Project Call	[Redacted]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C74 / <i>Devel Simulation Tech</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Implementation of Initialization Products	1	2010	4	2027
Transition of simulation initialization capability	1	2010	4	2027
Data Model applications and reference implementations	1	2010	4	2027
C2 Adapter Web Services and Tools	1	2010	4	2027
Quarterly SIMCI OIPT Meeting	1	2010	4	2027
Annual Project Call	1	2010	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>				Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>C77: Army Geospatial Data Master Plan</i>	-	0.703	5.540	0.568	-	0.568	0.575	0.581	0.587	0.593	0.000	9.147
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line provides support to synthetic training environment, network and soldier lethality cross functional teams. This effort provides a geospatial/GEOINT standards-based framework that enables the management, dissemination, and update of 2D and 3D geospatial data and services within the Army Geospatial Enterprise (AGE) across Mission Command, Cross-Functional Team (CFT) initiatives, and with our National and UAP partners ensuring a common operational picture enhancing soldier situational awareness and increasing mission success. Establishes a geospatial enterprise architecture framed around geospatial standards that enable address geospatial/GEOINT data, services, and application interoperability from National to tactical as required by as Department of Defense Instruction (DoDI) 5000.56, AR 115-11 - Geospatial Information and Services, Geospatial Annex to COE IP, Net-Enabled Mission Command ICD, OMB-Circular A-119 and A-130, the FY17 NDAA (National Defense Authorization Act), section 875, 10 U.S. Code § 2223, Public Law 108-237, Standards Development Organization Advancement Action of 2004 and Public Law 108-113, National Technology Transfer and Advancement Act of 1995 and Public Law 82-436.

The Army Geospatial Enterprise (AGE) provides the geospatial foundation, consisting of accurate, robust, and timely 2D and 3D geospatial data, robust tools and services, in support of mission command, intelligence, training, mission-rehearsal and other mission-applications. It addresses the implementation and acceleration of Army modernization objectives focused on enhancing situational awareness to the warfighter.

Key lines of effort include Ground-Warfighter Geospatial Data Model (GGDM), development and maintenance of geospatial Standards, and integration with the Army Modelling and Simulation Enterprise. FY 2023 funding continues development efforts associated with the Ground-Warfighter Geospatial Data Model (GGDM) and integration with the Army Modelling and Simulation Enterprise.

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

	FY 2021	FY 2022	FY 2023
Title: Ground-Warfighter Geospatial Data Model (GGDM)	0.130	0.110	0.110
Description: The GGDM incorporates common data elements that conform to standards mandated by the Department of Defense Information Technology Standards Registry (DISR) for the National System for Geospatial Intelligence (NSG). Incorporating common geospatial data standards into the GGDM makes the Programs of Record (POR) consistent with new DISR-mandated geospatial intelligence standards for the NSG. The implementation of GGDM across the Army increases system-interoperability at the geospatial data level.			
FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Initiate development of the next version of GGDM based upon revisions to the National System for Geospatial-Intelligence (NSG) Application Schema (NAS) as well as new requirements from the US Army, especially as result from HQDA EXORD 154-20 (Army 3D Geospatial Data Integration Strategy), USMC, and ABCANZ Allies. Provide GGDM training classes to Army and USMC personnel. Ensure major Army PORs are implementing the GGDM (I.E. DCGS-A and SECORE).</p> <p>FY 2023 Plans: Initiate development of the next version of GGDM based upon revisions to the National System for Geospatial-Intelligence (NSG) Application Schema (NAS) as well as new requirements from the US Army, especially as result from HQDA EXORD 154-20 (Army 3D Geospatial Data Integration Strategy), USMC, and ABCANZ Allies. Provide GGDM training classes to Army and USMC personnel. Ensure major Army PORs are implementing the GGDM (I.E. DCGS-A and SECORE).</p>			
<p>Title: Geospatial Data Standards</p> <p>Description: Army Geospatial Standards including data standards and standards for services to manage, process and disseminate and utilize geospatial data. Alignment of industry and Open geospatial standards from organizations such as the Open Geospatial Consortium (OGC) and others into the Army Geospatial Enterprise (AGE).</p> <p>FY 2022 Plans: Will initiate work in collaboration with industry and other agencies to develop new geospatial data and services standards, DOD Profiles of these standards, and technology implementations of these standards. Focus on standards to support 2D raster tiled maps, 3D globe standards, and initial assessment about vector tile maps. Additionally, cont. to develop modifications/updates elevation data formats and services. Maintain Geospatial Standards compliance matrix, Std-V1, in alignment with quarterly updated NSG standards and DoD Information Technology Standards and Profile Registry (DISR) cycle updates of GEOINT standards and coordinate results with Army CIO/G6 and ASA(ALT) Programs. Will continue to provide SME support on geospatial data and technology standards to Army PORs. Utilize the AGDIMP resource to perform integration of multiple geospatial standards (both 2d and 3d). Specifically in support of extending the One World Terrain (OWT) capabilities into non-training-like applications, such as mission planning, mission rehearsal, and Army operations. The integration of the geographic 2D world and the capabilities of the polygon based 3D world will provide the soldier with cutting-edge geospatial capabilities and over match moving forward. Increased support to Army Futures Command is anticipated to drive increased funding requirements starting in FY 2021 and an increase in programming starting in FY 2022.</p> <p>FY 2023 Plans: Will initiate work in collaboration with industry and other agencies to develop new geospatial data and services standards, DOD Profiles of these standards, and technology implementations of these standards. Focus on standards to support 2D raster tiled maps, 3D globe standards, and initial assessment about vector tile maps. Additionally, cont. to develop modifications/updates elevation data formats and services. Maintain Geospatial Standards compliance matrix, Std-V1, in alignment with</p>	0.573	0.411	0.458

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>quarterly updated NSG standards and DoD Information Technology Standards and Profile Registry (DISR) cycle updates of GEOINT standards and coordinate results with Army CIO/G6 and ASA(ALT) Programs. Will continue to provide SME support on geospatial data and technology standards to Army PORs. Utilize the AGDIMP resource to perform integration of multiple geospatial standards (both 2d and 3d). Specifically in support of extending the One World Terrain (OWT) capabilities into non-training-like applications, such as mission planning, mission rehearsal, and Army operations. The integration of the geographic 2D world and the capabilities of the polygon based 3D world will provide the soldier with cutting-edge geospatial capabilities and over match moving forward.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increased support to Army Futures Command is anticipated to drive increased funding requirements in FY 2023.</p> <p>Title: SBIR/STTR Transfer</p> <p>FY 2022 Plans: SBIR/STTR Transfer</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC ?638.</p>	-	0.019	-
Accomplishments/Planned Programs Subtotals	0.703	0.540	0.568

	FY 2021	FY 2022
<p>Congressional Add: FY22 Congressional Add - Bathymetric Unmanned Littoral LiDar for Operational GEOINT (BULLDOG)</p> <p>FY 2022 Plans: Analysis and finalization of the optimal airborne bathymetric collection platform to support high altitude data collection to enable littoral operations. Identification of process to support real-time terrain collection, and creation of littoral 3 dimensional artificially enabled models. Engineering, airworthiness and accuracy validation. Engineering/production alternatives to optimize size, weight, power and bathometric data acquisition/data processing. Strategy to transition current prototype into an operational capable deployable unit.</p>	-	5.000
Congressional Adds Subtotals	-	5.000

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

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>

D. Acquisition Strategy

Resources are allocated to several critical geospatial projects in support of the Army Geospatial Data Integrated Master Plan (AGDIMP) and the Army Geospatial Enterprise (AGE).

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Ground Warfighter Geospatial Data Model																												
Geospatial Data Standards																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C77 / <i>Army Geospatial Data Master Plan</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Ground Warfighter Geospatial Data Model	1	2010	4	2027
Geospatial Data Standards	1	2010	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>				Project (Number/Name) C78 / <i>One Semi-Automated Forces</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>C78: One Semi-Automated Forces</i>	-	5.939	5.968	6.599	-	6.599	6.605	6.664	6.666	6.731	0.000	45.172
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

One Semi-Automated Forces (OneSAF) develops and delivers a software application that represents activities of units and forces in simulation to support Army Training and Readiness. The application is used by Army agencies to support the concept evaluation, experimentation, materiel acquisition and training throughout the communities. The focus of this project is systems/software engineering and design for development and evolution of the architecture and software tools for a universal system of Army computer-generated forces -- OneSAF. OneSAF is a high fidelity brigade-and-below SAF that represents a full range of operations, systems and control processes in support of stand-alone and embedded training and Research, Development and Acquisition (RDA) simulation applications. OneSAF is fully interoperable with the Army's emerging virtual, live, and division-and-above constructive simulations and provides next-generation simulation products. OneSAF replaces a variety of legacy simulations used within the Army to support Acquisition, Analysis, Experimentation, Intelligence, Test & Evaluation, and Training simulation activities.

FY 2023 base funding in the amount of \$6.599 million allows for continued development of the software product line by addressing OneSAF Pre-Planned Product Improvements (P3Is) as prioritized and approved by the Training and Doctrine Command (TRADOC). This funding also provides for the management of the infrastructure, equipment, laboratories, and processes needed to develop, test, and release the required product baseline.

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

	FY 2021	FY 2022	FY 2023
Title: Engineering and Manufacturing Development (EMD) phase contract activities for the One Semi-Automated Forces program.	4.589	4.400	5.249
Description: Continue EMD phase contract activities for the OneSAF program.			
FY 2022 Plans: Will continue the development of software capabilities based on OneSAF P3Is as prioritized and approved by TRADOC. Will continue the software development of functionality that enhances architectural services, components, synthetic environment and infrastructure of the OneSAF Product Line and will provide for software integration, test and release of required software refreshes and Version 11.0.			
FY 2023 Plans: Will continue the development of software capabilities based on OneSAF P3Is as prioritized and approved by TRADOC. Will continue the software development of functionality that enhances architectural services, components, synthetic environment and infrastructure of the OneSAF Product Line and will provide for software integration, test and release of required software refreshes and Version 12.0.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C78 / <i>One Semi-Automated Forces</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Increase from FY2022 to FY2023 funding is a result of incorporating additional P3I capabilities into OneSAF Software Baseline Version 12.0				
<p>Title: Government System Test and Evaluation for the One Semi-Automated Forces (OneSAF) program.</p> <p>Description: Government System Test and Evaluation for the OneSAF program.</p> <p>FY 2022 Plans: Will provide for the conducting of software, test, integration and release for Version 11.0. Will provide support to the user community in conducting experiments, analyses, and validation events for integration into the Home Station Training Federation, Network Integration Events (NIE), Battle Lab Collaborative Simulation Environment (BLCSE), Entity Simulation Service (ESS) in support of Joint Land Component Constructive Training Capability (JLCCTC), and other Live, Virtual and Constructive (LVC) applications.</p> <p>FY 2023 Plans: Will provide for the conducting of software, test, integration and release for Version 11.0. Will provide support to the user community in conducting experiments, analyses, and validation events for integration into the Home Station Training Federation, Network Integration Events (NIE), Battle Lab Collaborative Simulation Environment (BLCSE), Entity Simulation Service (ESS) in support of Joint Land Component Constructive Training Capability (JLCCTC), and other Live, Virtual and Constructive (LVC) applications.</p>		1.050	1.050	1.050
<p>Title: Government Program Management for the One Semi-Automated Forces (OneSAF) program.</p> <p>Description: Government Program Management for the One Semi-Automated Forces (OneSAF) program.</p> <p>FY 2022 Plans: Will provide a portion of program management, engineering and technical oversight, contract support, and travel for support of site surveys and Subject Matter Experts for the development of OneSAF.</p> <p>FY 2023 Plans: Will provide a portion of program management, engineering and technical oversight, contract support, and travel for support of site surveys and Subject Matter Experts for the development of OneSAF.</p>		0.300	0.300	0.300
<p>Title: SBIR/STTR Transfer</p> <p>FY 2022 Plans: SBIR/STTR Transfer</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		-	0.218	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C78 / <i>One Semi-Automated Forces</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred in accordance with Title 15 USC ?638.			
Accomplishments/Planned Programs Subtotals	5.939	5.968	6.599

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

N/A

Remarks

D. Acquisition Strategy

OneSAF continues to manage two Task Orders under one Indefinite Delivery/Indefinite Quantity (ID/IQ) Production and Support contract. The Task Order for support includes Program Management; Development and Customer support; Training; Travel and Other Direct Costs (ODC). The Task Order for Production includes Capability P3I; Tailored Product Baseline Release; Capability Concurrence; and Integration, Test, and Release. The OneSAF Production and Support contract is tailored to fully serve the current and evolving needs of the user community.

The enhancements will be executed within the development line as modifications to the released baseline via Engineering Change Proposals (ECPs); Change Requests (CRs): Pre-Planned Product Improvements (P3I); and correction of deficiencies identified as Problem Test Reports (PTRs) and Deficiency Reports (DRs) by the user community.

In FY 2023, the program will continue with yearly releases of the OneSAF Software versions containing performance enhancements resulting from the development and integration of Pre-Planned Product Improvements (P3I), concurrency enhancements, user feedback, corrections of deficiencies identified as Problem Test Reports (PTR) and Deficiency Reports (DR) and Co-Developers handovers. The OneSAF program will continue to manage the single award contract for the continuing development and maintenance of the software baseline as well as continue to manage the Integrated Development Environment (IDE).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
2040 / 5				PE 0604760A / Distributive Interactive Simulations (DIS) - Eng Dev					C78 / One Semi-Automated Forces						
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	Various	PEO STRI, Orlando, FL : Various	29.212	0.300	Oct 2020	0.300	Oct 2021	0.300	Oct 2022	-		0.300	Continuing	Continuing	Continuing
SBIR/STTR	TBD	PEO STRI : Orlando, FL	0.460	-		0.218		-		-		-	0.000	0.678	-
Subtotal			29.672	0.300		0.518		0.300		-		0.300	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration, Interoperability, and Support (I2S) & Logical Follow On (LFO)	C/CPFF	Cole Engineering Services, Inc. : Orlando, FL	7.290	-		-		-		-		-	Continuing	Continuing	Continuing
Software Development & Production Logical Follow On (LFO)	C/CPFF	Leidos : Orlando, FL	19.985	-		-		-		-		-	Continuing	Continuing	Continuing
Software Development	C/CPFF	Riptide : Orlando, FL	15.275	4.164	Dec 2020	3.975	Dec 2021	4.824	Dec 2022	-		4.824	Continuing	Continuing	Continuing
Subtotal			42.550	4.164		3.975		4.824		-		4.824	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Analysis	Various	Various : Various	6.597	-		-		-		-		-	Continuing	Continuing	Continuing
Domain Analysis	Various	Various : Various	6.539	0.125	Dec 2020	0.125	Dec 2021	0.125	Dec 2022	-		0.125	Continuing	Continuing	Continuing
Integrated Development Environment	Various	Various : Various	9.936	-		-		-		-		-	Continuing	Continuing	Continuing
Architecture Engr & Tech Spt	SS/FP	MITRE FFRDC : Aberdeen Proving Ground, MD	6.323	0.300	Dec 2020	0.300	Dec 2021	0.300	Dec 2022	-		0.300	Continuing	Continuing	Continuing

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C78 / <i>One Semi-Automated Forces</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
P3I Requirements Development																												
P3I																												
OneSAF Version Release 10.0 (Concurrency Updates)	1 V10.0																											
OneSAF Version Release 11.0 (Concurrency Updates)					2 V11.0																							
OneSAF Version Release 12.0 (Concurrency Updates)									3 V12.0																			
OneSAF Version Release 13.0 (Concurrency Updates)													4 V13.0															
OneSAF Version Release 14.0 (Concurrency Updates)																	5 V14.0											
OneSAF Version Release 15.0 (Concurrency Updates)																					6 V15.0							
OneSAF Version Release 16.0 (Concurrency Updates)																									7 V16.0			
OneSAF Support																												
Life Cycle Software Support																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604760A / <i>Distributive Interactive Simulations (DIS) - Eng Dev</i>	Project (Number/Name) C78 / <i>One Semi-Automated Forces</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
P3I Requirements Development	1	2006	4	2027
OneSAF Version Release 9.0 (Concurrency Updates)	2	2020	2	2020
OneSAF Version Release 10.0 (Concurrency Updates)	2	2021	2	2021
OneSAF Version Release 11.0 (Concurrency Updates)	2	2022	2	2022
OneSAF Version Release 12.0 (Concurrency Updates)	2	2023	2	2023
OneSAF Version Release 13.0 (Concurrency Updates)	2	2024	2	2024
OneSAF Version Release 14.0 (Concurrency Updates)	4	2024	4	2024
OneSAF Version Release 15.0 (Concurrency Updates)	3	2026	3	2026
OneSAF Version Release 16.0 (Concurrency Updates)	3	2027	3	2027
OneSAF Support	1	2006	4	2027