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**Department of Defense
Fiscal Year (FY) 2024 Budget Estimates**

March 2023



Army

Justification Book Volume 3b of 3

Research, Development, Test & Evaluation, Army

RDT&E – Volume II, Budget Activity 5B

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Army • Budget Estimates FY 2024 • 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, \$15,772,215,000.00 to remain available for obligation until September 30, 2025.

The FY 2024 Overseas Operations accounted for in the base budget are as follows:

In-theater and in-CONUS expenses that remain after combat operations cease and have been previously funded in Overseas Operations \$3,166,000.00.

COST STATEMENT

The following Justification Books were prepared at a cost of \$365,839.52: 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 2024 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 2024.

2. **Relationship of the FY 2024 Budget Submitted to Congress to the FY 2023 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:

<u>Budget Activity</u>	<u>OSDPE / Project</u>	<u>Project Title</u>
02	0602146A / AM6	Modular RF Communications Technology
02	0602148A / CI4	Adaptive Avionics Technologies
02	0602141A / CIC	Fire Control Lethality Technology
02	0602182A / DA8	Quantum PNT & Radio Frequency Sensing
02	0602182A / DB4	Enabling Long Standoff 3D (ELS3D) Tech
02	0602002A / DC6	Sci & Analysis for Autonomous Sys & Counter-Auton
02	0602183A / DE2	Airborne Threat Defeat
02	0602150A / DE3	Adv Beam Control Component Development for C-CM
02	0602182A / DE6	Understanding Environment as a Threat Tech
03	0603044A / CW1	Technical-SAVVY Soldier Advanced Research
03	0603116A / DB2	Future Armaments Scalable Technologies
03	0603042A / DB5	Enabling Long Standoff 3D (ELS3D) Adv Tech
03	0603463A / DB6	Pathfinder 3D Advanced Technology
04	0604103A / DG4	NAVWAR SA
04	0603779A / DH6	Installation Resilience
05	0604802A / DC9	30mm MMPA M-SHORAD INC 3

05	0604818A / DD1	Unified Network Technology Trans & Integ (UNTTI)
05	0605206A / DG3	CI and HUMINT Equipment Program-Army (CIHEP-A)
05	0605013A / DH1	Operational Medicine Information System
05	0605216A / EFA	Joint Target Integrated Cmd & Coordination Suite
05	0605036A / EQ5	Combating Weapons of Mass Destruction (CWMD)
05	0605049A / XT4	Advanced Threat Detection System (ATDS)
06	0605601A / WD1	West Desert Test Center
07	0203735A / DD4	AMPV Improvement Program
07	0607315A / DD5	Army Power Systems Modernization

Program Element/Project Restructures:

<u>Budget Activity</u>	<u>Old OSDPE / Project: Title</u>	<u>New OSDPE / Project</u>
02	0602145A / CU5: Next Generation Combat Vehicle Technolog	0602141A / CIA
02	0602181A / CM7: All Domain Convergence Applied Research	0602141A / CIB
02	0602143A / AZ9: Soldier Lethality Technology	0602143A / BB4
02	0602143A / BBG: Soldier Lethality Technology	0602143A / BC2
02	0602145A / BG8: Next Generation Combat Vehicle Technology	0602144A / DG1
02	0602180A / CL7: Artificial Intelligence and Machine Learning Technologies	0602180A / DE8
03	0603040A / CL6: Artificial Intelligence and Machine Learning Technologies	0603040A / DE9
03	0603463A / AR6: Network C3I Advanced Technology	0603042A / DE7
03	0603041A / CM8: All Domain Convergence Advanced Technology	0603116A / CID
03	0603462A / BH6: Next Generation Combat Vehicle Advanced Technology	0603118A / BD9
03	0603462A / BG9: Next Generation Combat Vehicle Advanced Technology	0603119A / DG2
03	0603464A / CZ8: Long Range Precision Fires Advanced Technology	0603464A / AF2
04	0604036A / BY9: Multi-Domain Sensing System (MDSS) Adv Dev	0604036A / DD6
04	0604036A / BY9: Multi-Domain Sensing System (MDSS) Adv Dev	0604036A / DD6

05	0604818A / EJ5: Family of Heavy Vehicles	0604622A / DG7
05	0605224A / CK4: Long-Range Hypersonic Weapon	0604182A / HX2
05	0605224A / CK4: All Up Round and Canister (AUR+C)	0604182A / HX2
05	0605457A / S40: Common Hypersonic Glide Body (CHGB)	0604182A / HX2
05	0605601A / F30: Ground Support Equipment (GSE)	0604182A / HX2
05	0203744A / EB6: HX6: Test and Evaluation	0604182A / HX2
05	0605224A / CK4: Multi-Domain Intelligence	0604805A / 593
05	0605224A / CK4: Multi-Domain Intelligence	0605224A / DD8
05	0605457A / S40: Multi-Domain Intelligence	0605224A / DD9
05	0605601A / F30: Army Integrated Air and Missile Defense (AIAMD)	0605457A / SS1
06	0605601A / F30: Army Integrated Air and Missile Defense (AIAMD)	0605702A / 128
07	0203744A / EB6: Army Test Ranges and Facilities	0305219A / MQ2

Program Terminations (including transfers to Procurement and Sustainment):

<u><i>Budget Activity</i></u>	<u><i>OSDPE / Project</i></u>	<u><i>Project Title</i></u>
03	0603465A / AI8	Future Vertical Lift Advanced Technology / Alternative Concept Engine Advanced Technology
03	0603463A / AV4	Network C3I Advanced Technology / Foundational S&T for Network C3I Advanced Tech
04	0305251A / DD3	Cyberspace Operations Forces and Force Support / Joint Cyber Warfighting Architecture Cyber Train
04	0604115A / AX8	Technology Maturation Initiatives / Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)
04	0604115A / AX9	Technology Maturation Initiatives / Adv Mobility Experimental Prototype Adv Tech
05	0604802A / CE3	Weapons and Munitions - Eng Dev / Precision Munition (Sniper)
05	0604802A / EU4	Weapons and Munitions - Eng Dev / 40mm HV Improved High Explosive Dual Purpose
05	0604804A / FG4	Logistics and Engineer Equipment - Eng Dev / Ultra-Lightweight Camouflage Net System (ULCANS)
05	0604822A / DV6	General Fund Enterprise Business System (GFEBs) / General Fund Enterprise Business System
05	0604854A / HB6	Artillery Systems - EMD / Mobile 155MM Howitzer
05	0605013A / 184	Information Technology Development / Installation Support Modules
07	0305204A / 11A	Tactical Unmanned Aerial Vehicles / Advanced Payload Develop & Spt

07	0305206A / EH2	Airborne Reconnaissance Systems / EMARSS ADV DEV
07	0305206A / EH3	Airborne Reconnaissance Systems / EMARSS Payloads ADV DEV
08	0608041A / DD2	Defensive CYBER - Software Prototype Development / Joint Cyber Warfighting Architecture Software

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 Defense
 FY 2024 President's Budget
 Exhibit R-1 FY 2024 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

Mar 2023

<u>Appropriation</u>	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment	FY 2024 Request
Research, Development, Test and Evaluation, Army	14,660,654	17,142,121	9,100	17,151,221	15,775,381
Total Research, Development, Test, & Evaluation	14,660,654	17,142,121	9,100	17,151,221	15,775,381

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Department of Defense
 FY 2024 President's Budget
 Exhibit R-1 FY 2024 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

Mar 2023

	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment	FY 2024 Request
<u>Summary Recap of Budget Activities</u>					
Basic Research	590,078	635,395		635,395	497,455
Applied Research	1,521,472	1,823,330		1,823,330	948,358
Advanced Technology Development	2,145,309	2,532,690		2,532,690	1,455,986
Advanced Component Development & Prototypes	3,799,417	4,631,111	6,000	4,637,111	4,420,315
System Development & Demonstration	3,178,005	4,317,752	600	4,318,352	5,639,364
Management Support	1,901,655	1,820,502		1,820,502	1,624,585
Operational Systems Development	1,416,677	1,286,510	2,500	1,289,010	1,105,748
Software And Digital Technology Pilot Programs	108,041	94,831		94,831	83,570
Total Research, Development, Test, & Evaluation	14,660,654	17,142,121	9,100	17,151,221	15,775,381
<u>Summary Recap of FYDP Programs</u>					
General Purpose Forces	559,789	372,120		372,120	404,375
Intelligence and Communications	262,480	248,995		248,995	212,694
Research and Development	13,733,825	16,382,072	9,100	16,391,172	15,055,009
Central Supply and Maintenance	101,466	132,270		132,270	75,317
Administration and Associated Activities	101				
Classified Programs	2,993	6,664		6,664	27,986
Total Research, Development, Test, & Evaluation	14,660,654	17,142,121	9,100	17,151,221	15,775,381

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Department of the Army
 FY 2024 President's Budget
 Exhibit R-1 FY 2024 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

Mar 2023

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<u>Summary Recap of Budget Activities</u>					
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Applied Research	1,521,472	1,823,330		1,823,330	948,358
Advanced Technology Development	2,145,309	2,532,690		2,532,690	1,455,986
Advanced Component Development & Prototypes	3,799,417	4,631,111	6,000	4,637,111	4,420,315
System Development & Demonstration	3,178,005	4,317,752	600	4,318,352	5,639,364
Management Support	1,901,655	1,820,502		1,820,502	1,624,585
Operational Systems Development	1,416,677	1,286,510	2,500	1,289,010	1,105,748
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Research and Development	13,733,825	16,382,072	9,100	16,391,172	15,055,009
Central Supply and Maintenance	101,466	132,270		132,270	75,317
Administration and Associated Activities	101				
Classified Programs	2,993	6,664		6,664	27,986
Total Research, Development, Test, & Evaluation	14,660,654	17,142,121	9,100	17,151,221	15,775,381

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Department of the Army
 FY 2024 President's Budget
 Exhibit R-1 FY 2024 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

Mar 2023

Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Se c	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
1	0601102A	Defense Research Sciences	01	U	358,521	391,642		391,642
2	0601103A	University Research Initiatives	01	U	88,797	107,160		107,160
3	0601104A	University and Industry Research Centers	01	U	122,521	121,160		121,160
4	0601121A	Cyber Collaborative Research Alliance	01	U	5,067	5,355		5,355
5	0601601A	Artificial Intelligence and Machine Learning Basic Research	01	U	15,172	10,078		10,078
	Basic Research				590,078	635,395		635,395
6	0602002A	Army Agile Innovation and Development-Applied Research	02	U		1,000		1,000
7	0602115A	Biomedical Technology	02	U	11,489			
8	0602134A	Counter Improvised-Threat Advanced Studies	02	U	1,904	6,192		6,192
9	0602141A	Lethality Technology	02	U	89,285	194,717		194,717
10	0602142A	Army Applied Research	02	U	28,654	27,833		27,833
11	0602143A	Soldier Lethality Technology	02	U	201,221	253,539		253,539
12	0602144A	Ground Technology	02	U	214,489	264,523		264,523
13	0602145A	Next Generation Combat Vehicle Technology	02	U	239,284	277,445		277,445
14	0602146A	Network C3I Technology	02	U	161,759	212,115		212,115
15	0602147A	Long Range Precision Fires Technology	02	U	107,454	128,529		128,529
16	0602148A	Future Verticle Lift Technology	02	U	130,108	104,348		104,348
17	0602150A	Air and Missile Defense Technology	02	U	92,926	88,768		88,768
18	0602180A	Artificial Intelligence and Machine Learning Technologies	02	U	14,486	16,068		16,068

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Se c	FY 2024 Request
1	0601102A	Defense Research Sciences	01	U	296,670
2	0601103A	University Research Initiatives	01	U	75,672
3	0601104A	University and Industry Research Centers	01	U	108,946
4	0601121A	Cyber Collaborative Research Alliance	01	U	5,459
5	0601601A	Artificial Intelligence and Machine Learning Basic Research	01	U	10,708
	Basic Research				497,455
6	0602002A	Army Agile Innovation and Development-Applied Research	02	U	5,613
7	0602115A	Biomedical Technology	02	U	
8	0602134A	Counter Improvised-Threat Advanced Studies	02	U	6,242
9	0602141A	Lethality Technology	02	U	85,578
10	0602142A	Army Applied Research	02	U	34,572
11	0602143A	Soldier Lethality Technology	02	U	104,470
12	0602144A	Ground Technology	02	U	60,005
13	0602145A	Next Generation Combat Vehicle Technology	02	U	166,500
14	0602146A	Network C3I Technology	02	U	81,618
15	0602147A	Long Range Precision Fires Technology	02	U	34,683
16	0602148A	Future Verticle Lift Technology	02	U	73,844
17	0602150A	Air and Missile Defense Technology	02	U	33,301
18	0602180A	Artificial Intelligence and Machine Learning Technologies	02	U	24,142

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Se c	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
19	0602181A	All Domain Convergence Applied Research	02	U	25,019	27,360		27,360
20	0602182A	C3I Applied Research	02	U	11,954	27,868		27,868
21	0602183A	Air Platform Applied Research	02	U	6,356	41,588		41,588
22	0602184A	Soldier Applied Research	02	U	10,660	15,716		15,716
23	0602213A	C3I Applied Cyber	02	U	12,119	13,605		13,605
24	0602386A	Biotechnology for Materials - Applied Research	02	U	19,889	21,811		21,811
25	0602785A	Manpower/Personnel/Training Technology	02	U	18,414	19,649		19,649
26	0602787A	Medical Technology	02	U	124,002	80,656		80,656
	Applied Research				1,521,472	1,823,330		1,823,330
27	0603002A	Medical Advanced Technology	03	U	147,287	31,588		31,588
28	0603007A	Manpower, Personnel and Training Advanced Technology	03	U	13,865	15,598		15,598
29	0603025A	Army Agile Innovation and Demonstration Artificial Intelligence and Machine Learning Advanced Technologies	03	U	21,420	20,900		20,900
30	0603040A		03	U	876	6,395		6,395
31	0603041A	All Domain Convergence Advanced Technology	03	U	20,095	45,377		45,377
32	0603042A	C3I Advanced Technology	03	U	3,036	12,716		12,716
33	0603043A	Air Platform Advanced Technology	03	U	727	17,946		17,946
34	0603044A	Soldier Advanced Technology	03	U	858	479		479
35	0603115A	Medical Development	03	U	25,540			
36	0603116A	Lethality Advanced Technology	03	U	7,772	9,796		9,796
37	0603117A	Army Advanced Technology Development	03	U	76,815	134,874		134,874

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Line No	Program Element Number	Item	Act	Se c	FY 2024 Request
19	0602181A	All Domain Convergence Applied Research	02	U	14,297
20	0602182A	C3I Applied Research	02	U	30,659
21	0602183A	Air Platform Applied Research	02	U	48,163
22	0602184A	Soldier Applied Research	02	U	18,986
23	0602213A	C3I Applied Cyber	02	U	22,714
24	0602386A	Biotechnology for Materials - Applied Research	02	U	16,736
25	0602785A	Manpower/Personnel/Training Technology	02	U	19,969
26	0602787A	Medical Technology	02	U	66,266
	Applied Research				948,358
27	0603002A	Medical Advanced Technology	03	U	4,147
28	0603007A	Manpower, Personnel and Training Advanced Technology	03	U	16,316
29	0603025A	Army Agile Innovation and Demonstration Artificial Intelligence and Machine Learning Advanced Technologies	03	U	23,156
30	0603040A		03	U	13,187
31	0603041A	All Domain Convergence Advanced Technology	03	U	33,332
32	0603042A	C3I Advanced Technology	03	U	19,225
33	0603043A	Air Platform Advanced Technology	03	U	14,165
34	0603044A	Soldier Advanced Technology	03	U	1,214
35	0603115A	Medical Development	03	U	
36	0603116A	Lethality Advanced Technology	03	U	20,582
37	0603117A	Army Advanced Technology Development	03	U	136,280

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Line No	Program Element Number	Item	Act	Se c	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
38	0603118A	Soldier Lethality Advanced Technology	03	U	148,458	154,639		154,639
39	0603119A	Ground Advanced Technology	03	U	281,637	415,846		415,846
40	0603134A	Counter Improvised-Threat Simulation	03	U	23,920	21,486		21,486
41	0603386A	Biotechnology for Materials - Advanced Research	03	U	51,774	56,853		56,853
42	0603457A	C3I Cyber Advanced Development	03	U	61,426	41,354		41,354
43	0603461A	High Performance Computing Modernization Program	03	U	222,220	301,964		301,964
44	0603462A	Next Generation Combat Vehicle Advanced Technology	03	U	294,491	471,434		471,434
45	0603463A	Network C3I Advanced Technology	03	U	205,576	177,917		177,917
46	0603464A	Long Range Precision Fires Advanced Technology	03	U	138,482	202,830		202,830
47	0603465A	Future Vertical Lift Advanced Technology	03	U	255,323	272,551		272,551
48	0603466A	Air and Missile Defense Advanced Technology	03	U	125,027	99,147		99,147
49	0603920A	Humanitarian Demining	03	U	18,684	21,000		21,000
		Advanced Technology Development			2,145,309	2,532,690		2,532,690
51	0603305A	Army Missile Defense Systems Integration	04	U	56,579	118,001		118,001
52	0603308A	Army Space Systems Integration	04	U	25,401	30,945		30,945
53	0603327A	Air and Missile Defense Systems Engineering	04	U	15,000	15,000		15,000
54	0603619A	Landmine Warfare and Barrier - Adv Dev	04	U	44,933	55,953	6,000	61,953
55	0603639A	Tank and Medium Caliber Ammunition	04	U	61,641	51,488		51,488
56	0603645A	Armored System Modernization - Adv Dev	04	U	154,010	135,122		135,122
57	0603747A	Soldier Support and Survivability	04	U	2,791	4,060		4,060
58	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	U	113,365	72,314		72,314

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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 (Dollars in Thousands)

Mar 2023

Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Se c	FY 2024 Request
38	0603118A	Soldier Lethality Advanced Technology	03	U	102,778
39	0603119A	Ground Advanced Technology	03	U	40,597
40	0603134A	Counter Improvised-Threat Simulation	03	U	21,672
41	0603386A	Biotechnology for Materials - Advanced Research	03	U	59,871
42	0603457A	C3I Cyber Advanced Development	03	U	28,847
43	0603461A	High Performance Computing Modernization Program	03	U	255,772
44	0603462A	Next Generation Combat Vehicle Advanced Technology	03	U	217,394
45	0603463A	Network C3I Advanced Technology	03	U	105,549
46	0603464A	Long Range Precision Fires Advanced Technology	03	U	153,024
47	0603465A	Future Vertical Lift Advanced Technology	03	U	158,795
48	0603466A	Air and Missile Defense Advanced Technology	03	U	21,015
49	0603920A	Humanitarian Demining	03	U	9,068
		Advanced Technology Development			1,455,986
51	0603305A	Army Missile Defense Systems Integration	04	U	12,904
52	0603308A	Army Space Systems Integration	04	U	19,120
53	0603327A	Air and Missile Defense Systems Engineering	04	U	
54	0603619A	Landmine Warfare and Barrier - Adv Dev	04	U	47,537
55	0603639A	Tank and Medium Caliber Ammunition	04	U	91,323
56	0603645A	Armored System Modernization - Adv Dev	04	U	43,026
57	0603747A	Soldier Support and Survivability	04	U	3,550
58	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	U	65,567

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Line No	Program Element Number	Item	Act	Se c	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment	FY 2023 Total Enactment
59	0603774A	Night Vision Systems Advanced Development	04	U	62,534	97,478		97,478
60	0603779A	Environmental Quality Technology - Dem/Val	04	U	22,491	76,749		76,749
61	0603790A	NATO Research and Development	04	U	3,639	3,805		3,805
62	0603801A	Aviation - Adv Dev	04	U	1,138,457	1,157,472		1,157,472
63	0603804A	Logistics and Engineer Equipment - Adv Dev	04	U	10,797	24,638		24,638
64	0603807A	Medical Systems - Adv Dev	04	U	27,768	5,598		5,598
65	0603827A	Soldier Systems - Advanced Development	04	U	25,288	23,444		23,444
66	0604017A	Robotics Development	04	U	78,309	26,555		26,555
67	0604019A	Expanded Mission Area Missile (EMAM)	04	U	26,855	258,320		258,320
68	0604020A	Cross Functional Team (CFT) Advanced Development & Prototyping	04	U		77,000		77,000
69	0604035A	Low Earth Orbit (LEO) Satellite Capability	04	U	18,922	35,509		35,509
70	0604036A	Multi-Domain Sensing System (MDSS) Adv Dev	04	U	50,548	47,915		47,915
71	0604037A	Tactical Intel Targeting Access Node (TITAN) Adv Dev	04	U	28,347	863		863
72	0604100A	Analysis Of Alternatives	04	U	9,723	10,659		10,659
73	0604101A	Small Unmanned Aerial Vehicle (SUAV) (6.4)	04	U	892	1,425		1,425
74	0604103A	Electronic Warfare Planning and Management Tool (EWPMT)	04	U				
75	0604113A	Future Tactical Unmanned Aircraft System (FTUAS)	04	U	76,349	134,719		134,719
76	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04	U	408,766	380,147		380,147
77	0604115A	Technology Maturation Initiatives	04	U	127,725	219,742		219,742
78	0604117A	Maneuver - Short Range Air Defense (M-SHORAD)	04	U	37,939	274,838		274,838

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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59	0603774A	Night Vision Systems Advanced Development	04	U	73,675
60	0603779A	Environmental Quality Technology - Dem/Val	04	U	31,720
61	0603790A	NATO Research and Development	04	U	4,143
62	0603801A	Aviation - Adv Dev	04	U	1,502,160
63	0603804A	Logistics and Engineer Equipment - Adv Dev	04	U	7,604
64	0603807A	Medical Systems - Adv Dev	04	U	1,602
65	0603827A	Soldier Systems - Advanced Development	04	U	27,681
66	0604017A	Robotics Development	04	U	3,024
67	0604019A	Expanded Mission Area Missile (EMAM)	04	U	97,018
68	0604020A	Cross Functional Team (CFT) Advanced Development & Prototyping	04	U	117,557
69	0604035A	Low Earth Orbit (LEO) Satellite Capability	04	U	38,851
70	0604036A	Multi-Domain Sensing System (MDSS) Adv Dev	04	U	191,394
71	0604037A	Tactical Intel Targeting Access Node (TITAN) Adv Dev	04	U	10,626
72	0604100A	Analysis Of Alternatives	04	U	11,095
73	0604101A	Small Unmanned Aerial Vehicle (SUAV) (6.4)	04	U	5,144
74	0604103A	Electronic Warfare Planning and Management Tool (EWPMT)	04	U	2,260
75	0604113A	Future Tactical Unmanned Aircraft System (FTUAS)	04	U	53,143
76	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04	U	816,663
77	0604115A	Technology Maturation Initiatives	04	U	281,314
78	0604117A	Maneuver - Short Range Air Defense (M-SHORAD)	04	U	281,239

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Line No	Program Element Number	Item	Act	Se c	FY 2022	FY 2023 Less	FY 2023	FY 2023 Total
					Actuals	Supplementals Enactment	Supplementals Enactment*	Enactment
79	0604119A	Army Advanced Component Development & Prototyping	04	U	179,483	198,111		198,111
80	0604120A	Assured Positioning, Navigation and Timing (PNT)	04	U	80,858	57,620		57,620
81	0604121A	Synthetic Training Environment Refinement & Prototyping	04	U	198,815	242,468		242,468
82	0604134A	Counter Improvised-Threat Demonstration, Prototype Development, and Testing	04	U	12,891	14,840		14,840
83	0604135A	Strategic Mid-Range Fires	04	U		404,291		404,291
84	0604182A	Hypersonics	04	U	305,406	238,168		238,168
85	0604403A	Future Interceptor	04	U	6,643	8,179		8,179
86	0604531A	Counter - Small Unmanned Aircraft Systems Advanced Development	04	U	18,449	35,110		35,110
87	0604541A	Unified Network Transport	04	U	33,879	36,966		36,966
88	0604644A	Mobile Medium Range Missile	04	U	275,989			
89	0604785A	Integrated Base Defense (Budget Activity 4)	04	U	2,040			
90	0305251A	Cyberspace Operations Forces and Force Support	04	U	55,895	55,599		55,599
999	999999999	Classified Programs	04	U				
Advanced Component Development & Prototypes					3,799,417	4,631,111	6,000	4,637,111
91	0604201A	Aircraft Avionics	05	U	6,411	3,335		3,335
92	0604270A	Electronic Warfare Development	05	U	29,683	4,140		4,140
93	0604601A	Infantry Support Weapons	05	U	77,027	83,329		83,329
94	0604604A	Medium Tactical Vehicles	05	U	9,177	22,163		22,163
95	0604611A	JAVELIN	05	U	8,202	16,186		16,186

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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79	0604119A	Army Advanced Component Development & Prototyping	04	U	204,914
80	0604120A	Assured Positioning, Navigation and Timing (PNT)	04	U	40,930
81	0604121A	Synthetic Training Environment Refinement & Prototyping	04	U	109,714
82	0604134A	Counter Improvised-Threat Demonstration, Prototype Development, and Testing	04	U	16,426
83	0604135A	Strategic Mid-Range Fires	04	U	31,559
84	0604182A	Hypersonics	04	U	43,435
85	0604403A	Future Interceptor	04	U	8,040
86	0604531A	Counter - Small Unmanned Aircraft Systems Advanced Development	04	U	64,242
87	0604541A	Unified Network Transport	04	U	40,915
88	0604644A	Mobile Medium Range Missile	04	U	
89	0604785A	Integrated Base Defense (Budget Activity 4)	04	U	
90	0305251A	Cyberspace Operations Forces and Force Support	04	U	
999	999999999	Classified Programs	04	U	19,200
		Advanced Component Development & Prototypes			4,420,315
91	0604201A	Aircraft Avionics	05	U	13,673
92	0604270A	Electronic Warfare Development	05	U	12,789
93	0604601A	Infantry Support Weapons	05	U	64,076
94	0604604A	Medium Tactical Vehicles	05	U	28,226
95	0604611A	JAVELIN	05	U	7,827

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96	0604622A	Family of Heavy Tactical Vehicles	05	U	27,406	53,014		53,014
97	0604633A	Air Traffic Control	05	U	4,244	2,623		2,623
98	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05	U		109,849		109,849
99	0604642A	Light Tactical Wheeled Vehicles	05	U	1,980			
100	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05	U	118,296	63,131		63,131
101	0604710A	Night Vision Systems - Eng Dev	05	U	41,831	92,951		92,951
102	0604713A	Combat Feeding, Clothing, and Equipment	05	U	1,598	1,566		1,566
103	0604715A	Non-System Training Devices - Eng Dev	05	U	28,605	18,588		18,588
104	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	U	58,633	55,541		55,541
105	0604742A	Constructive Simulation Systems Development	05	U	21,424	29,481		29,481
106	0604746A	Automatic Test Equipment Development	05	U	8,486	5,178		5,178
107	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	U	12,182	8,189		8,189
108	0604798A	Brigade Analysis, Integration and Evaluation	05	U	20,976	21,086		21,086
109	0604802A	Weapons and Munitions - Eng Dev	05	U	287,787	285,778	600	286,378
110	0604804A	Logistics and Engineer Equipment - Eng Dev	05	U	49,201	75,669		75,669
111	0604805A	Command, Control, Communications Systems - Eng Dev	05	U	19,372	44,993		44,993
112	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	U	43,023	5,513		5,513
113	0604808A	Landmine Warfare/Barrier - Eng Dev	05	U	28,622	37,150		37,150
114	0604818A	Army Tactical Command & Control Hardware & Software	05	U	146,291	131,190		131,190
115	0604820A	Radar Development	05	U	124,832	71,259		71,259

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96	0604622A	Family of Heavy Tactical Vehicles	05	U	44,197
97	0604633A	Air Traffic Control	05	U	1,134
98	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05	U	142,125
99	0604642A	Light Tactical Wheeled Vehicles	05	U	53,564
100	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05	U	102,201
101	0604710A	Night Vision Systems - Eng Dev	05	U	48,720
102	0604713A	Combat Feeding, Clothing, and Equipment	05	U	2,223
103	0604715A	Non-System Training Devices - Eng Dev	05	U	21,441
104	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	U	74,738
105	0604742A	Constructive Simulation Systems Development	05	U	30,985
106	0604746A	Automatic Test Equipment Development	05	U	13,626
107	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	U	8,802
108	0604798A	Brigade Analysis, Integration and Evaluation	05	U	20,828
109	0604802A	Weapons and Munitions - Eng Dev	05	U	243,851
110	0604804A	Logistics and Engineer Equipment - Eng Dev	05	U	37,420
111	0604805A	Command, Control, Communications Systems - Eng Dev	05	U	34,214
112	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	U	6,496
113	0604808A	Landmine Warfare/Barrier - Eng Dev	05	U	13,581
114	0604818A	Army Tactical Command & Control Hardware & Software	05	U	168,574
115	0604820A	Radar Development	05	U	94,944

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116	0604822A	General Fund Enterprise Business System (GFEBs)	05	U	15,395	10,402		10,402
117	0604827A	Soldier Systems - Warrior Dem/Val	05	U	6,219	19,408		19,408
118	0604852A	Suite of Survivability Enhancement Systems - EMD	05	U	93,207	100,384		100,384
119	0604854A	Artillery Systems - EMD	05	U	25,000	48,106		48,106
120	0605013A	Information Technology Development	05	U	125,109	104,134		104,134
121	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	U	65,230	67,519		67,519
122	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	U	34,262			
123	0605030A	Joint Tactical Network Center (JTNC)	05	U	15,752	17,936		17,936
124	0605031A	Joint Tactical Network (JTN)	05	U	27,849	30,150		30,150
125	0605035A	Common Infrared Countermeasures (CIRCM)	05	U	15,982	11,523		11,523
126	0605036A	Combating Weapons of Mass Destruction (CWMD) Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV)	05	U				
127	0605038A	Sensor Suite	05	U	7,340			
128	0605041A	Defensive CYBER Tool Development	05	U	18,811	39,029		39,029
129	0605042A	Tactical Network Radio Systems (Low-Tier)	05	U	27,688	4,426		4,426
130	0605047A	Contract Writing System	05	U	20,195	13,742		13,742
131	0605049A	Missile Warning System Modernization (MWSM)	05	U				
132	0605051A	Aircraft Survivability Development	05	U	60,127	19,123		19,123
133	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05	U	175,604	131,093		131,093
134	0605053A	Ground Robotics	05	U	15,763	26,809		26,809
135	0605054A	Emerging Technology Initiatives	05	U	219,284	244,047		244,047

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116	0604822A	General Fund Enterprise Business System (GFEBs)	05	U	2,965
117	0604827A	Soldier Systems - Warrior Dem/Val	05	U	11,333
118	0604852A	Suite of Survivability Enhancement Systems - EMD	05	U	79,250
119	0604854A	Artillery Systems - EMD	05	U	42,490
120	0605013A	Information Technology Development	05	U	104,024
121	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	U	102,084
122	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	U	
123	0605030A	Joint Tactical Network Center (JTNC)	05	U	18,662
124	0605031A	Joint Tactical Network (JTN)	05	U	30,328
125	0605035A	Common Infrared Countermeasures (CIRCM)	05	U	11,509
126	0605036A	Combating Weapons of Mass Destruction (CWMD) Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV)	05	U	1,050
127	0605038A	Sensor Suite	05	U	
128	0605041A	Defensive CYBER Tool Development	05	U	27,714
129	0605042A	Tactical Network Radio Systems (Low-Tier)	05	U	4,318
130	0605047A	Contract Writing System	05	U	16,355
131	0605049A	Missile Warning System Modernization (MWSM)	05	U	27,571
132	0605051A	Aircraft Survivability Development	05	U	24,900
133	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05	U	196,248
134	0605053A	Ground Robotics	05	U	35,319
135	0605054A	Emerging Technology Initiatives	05	U	201,274

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					Actuals	Supplementals Enactment	Supplementals Enactment ¹	Enactment
136	0605143A	Biometrics Enabling Capability (BEC)	05	U	4,326	11,091		11,091
137	0605144A	Next Generation Load Device - Medium	05	U	14,835	22,439		22,439
138	0605145A	Medical Products and Support Systems Development	05	U	927			
139	0605148A	Tactical Intel Targeting Access Node (TITAN) EMD	05	U	54,972	108,987		108,987
140	0605203A	Army System Development & Demonstration	05	U	122,175	143,616		143,616
141	0605205A	Small Unmanned Aerial Vehicle (SUAV) (6.5)	05	U	2,192	6,530		6,530
142	0605206A	CI and HUMINT Equipment Program-Army (CIHEP-A)	05	U				
143	0605216A	Joint Targeting Integrated Command and Coordination Suite (JTIC2S)	05	U				
144	0605224A	Multi-Domain Intelligence	05	U	9,313	6,008		6,008
145	0605225A	SIO Capability Development	05	U	22,713			
146	0605231A	Precision Strike Missile (PrSM)	05	U	181,574	259,506		259,506
147	0605232A	Hypersonics EMD	05	U	107,404	633,499		633,499
148	0605233A	Accessions Information Environment (AIE)	05	U	16,177	10,088		10,088
149	0605235A	Strategic Mid-Range Capability	05	U		5,016		5,016
150	0605236A	Integrated Tactical Communications	05	U		12,447		12,447
151	0605450A	Joint Air-to-Ground Missile (JAGM)	05	U	2,467	2,366		2,366
152	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05	U	154,257	263,545		263,545
153	0605531A	Counter - Small Unmanned Aircraft Systems Sys Dev & Demonstration	05	U	49,667	14,892		14,892
154	0605625A	Manned Ground Vehicle	05	U	194,936	554,925		554,925
155	0605766A	National Capabilities Integration (MIP)	05	U	13,454	17,030		17,030

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136	0605143A	Biometrics Enabling Capability (BEC)	05	U	
137	0605144A	Next Generation Load Device - Medium	05	U	36,970
138	0605145A	Medical Products and Support Systems Development	05	U	
139	0605148A	Tactical Intel Targeting Access Node (TITAN) EMD	05	U	132,136
140	0605203A	Army System Development & Demonstration	05	U	81,657
141	0605205A	Small Unmanned Aerial Vehicle (SUAV) (6.5)	05	U	31,284
142	0605206A	CI and HUMINT Equipment Program-Army (CIHEP-A)	05	U	2,170
143	0605216A	Joint Targeting Integrated Command and Coordination Suite (JTIC2S)	05	U	9,290
144	0605224A	Multi-Domain Intelligence	05	U	41,003
145	0605225A	SIO Capability Development	05	U	
146	0605231A	Precision Strike Missile (PrSM)	05	U	272,786
147	0605232A	Hypersonics EMD	05	U	900,920
148	0605233A	Accessions Information Environment (AIE)	05	U	27,361
149	0605235A	Strategic Mid-Range Capability	05	U	348,855
150	0605236A	Integrated Tactical Communications	05	U	22,901
151	0605450A	Joint Air-to-Ground Missile (JAGM)	05	U	3,014
152	0605457A	Army Integrated Air and Missile Defense (AIAMD) Counter - Small Unmanned Aircraft Systems Sys Dev & Demonstration	05	U	284,095
153	0605531A		05	U	36,016
154	0605625A	Manned Ground Vehicle	05	U	996,653
155	0605766A	National Capabilities Integration (MIP)	05	U	15,129

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					Actuals	Supplementals Enactment	Supplementals Enactment	Enactment
156	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	U	05	2,470	9,376		9,376
157	0605830A	Aviation Ground Support Equipment	U	05	1,158	2,959		2,959
158	0303032A	TROJAN - RH12	U	05	3,362	3,761		3,761
159	0304270A	Electronic Warfare Development	U	05	75,520	99,938		99,938
System Development & Demonstration					3,178,005	4,317,752	600	4,318,352
160	0604256A	Threat Simulator Development	U	06	60,749	138,937		138,937
161	0604258A	Target Systems Development	U	06	41,769	64,132		64,132
162	0604759A	Major T&E Investment	U	06	91,130	142,031		142,031
163	0605103A	Rand Arroyo Center	U	06	31,087	33,631		33,631
164	0605301A	Army Kwajalein Atoll	U	06	242,279	309,005		309,005
165	0605326A	Concepts Experimentation Program	U	06	80,386	86,824		86,824
166	0605502A	Small Business Innovative Research	U	06	374,118			
167	0605601A	Army Test Ranges and Facilities	U	06	362,223	417,567		417,567
168	0605602A	Army Technical Test Instrumentation and Targets	U	06	57,584	67,962		67,962
169	0605604A	Survivability/Lethality Analysis	U	06	35,042	36,500		36,500
170	0605606A	Aircraft Certification	U	06	2,398	4,777		4,777
171	0605702A	Meteorological Support to RDT&E Activities	U	06	6,389	6,958		6,958
172	0605706A	Materiel Systems Analysis	U	06	20,771	22,004		22,004
173	0605709A	Exploitation of Foreign Items	U	06	13,631	6,186		6,186
174	0605712A	Support of Operational Testing	U	06	54,797	70,718		70,718

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 (Dollars in Thousands)

Mar 2023

Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Se c	FY 2024 Request
156	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05	U	27,243
157	0605830A	Aviation Ground Support Equipment	05	U	1,167
158	0303032A	TROJAN - RH12	05	U	3,879
159	0304270A	Electronic Warfare Development	05	U	137,186
System Development & Demonstration					5,639,364
160	0604256A	Threat Simulator Development	06	U	38,492
161	0604258A	Target Systems Development	06	U	11,873
162	0604759A	Major T&E Investment	06	U	76,167
163	0605103A	Rand Arroyo Center	06	U	37,078
164	0605301A	Army Kwajalein Atoll	06	U	314,872
165	0605326A	Concepts Experimentation Program	06	U	95,551
166	0605502A	Small Business Innovative Research	06	U	
167	0605601A	Army Test Ranges and Facilities	06	U	439,118
168	0605602A	Army Technical Test Instrumentation and Targets	06	U	42,220
169	0605604A	Survivability/Lethality Analysis	06	U	37,518
170	0605606A	Aircraft Certification	06	U	2,718
171	0605702A	Meteorological Support to RDT&E Activities	06	U	
172	0605706A	Materiel Systems Analysis	06	U	26,902
173	0605709A	Exploitation of Foreign Items	06	U	7,805
174	0605712A	Support of Operational Testing	06	U	75,133

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Se c	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
175	0605716A	Army Evaluation Center	06	U	65,693	67,058		67,058
176	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	U	2,537	6,097		6,097
177	0605801A	Programwide Activities	06	U	90,443	89,793		89,793
178	0605803A	Technical Information Activities	06	U	31,174	37,652		37,652
179	0605805A	Munitions Standardization, Effectiveness and Safety	06	U	54,922	60,645		60,645
180	0605857A	Environmental Quality Technology Mgmt Support	06	U	1,724	1,912		1,912
181	0605898A	Army Direct Report Headquarters - R&D - MHA	06	U	48,798	53,271		53,271
182	0606002A	Ronald Reagan Ballistic Missile Defense Test Site	06	U	78,187	89,602		89,602
183	0606003A	CounterIntel and Human Intel Modernization	06	U	10,641	1,424		1,424
184	0606105A	Medical Program-Wide Activities	06	U	37,616			
185	0606942A	Assessments and Evaluations Cyber Vulnerabilities	06	U	5,466	5,816		5,816
186	0909999A	Financing for Cancelled Account Adjustments	06	U	101			
		Management Support			1,901,655	1,820,502		1,820,502
187	0603778A	MLRS Product Improvement Program	07	U	11,865	18,463		18,463
188	0605024A	Anti-Tamper Technology Support	07	U	8,544	9,284		9,284
189	0607131A	Weapons and Munitions Product Improvement Programs	07	U	39,994	54,674	2,500	57,174
190	0607136A	Blackhawk Product Improvement Program	07	U	14,599			
191	0607137A	Chinook Product Improvement Program	07	U	65,960	67,513		67,513
192	0607139A	Improved Turbine Engine Program	07	U	250,533	228,036		228,036
193	0607142A	Aviation Rocket System Product Improvement and Development	07	U	8,831	11,312		11,312

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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175	0605716A	Army Evaluation Center	06	U	71,118
176	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	U	11,204
177	0605801A	Programwide Activities	06	U	93,895
178	0605803A	Technical Information Activities	06	U	31,327
179	0605805A	Munitions Standardization, Effectiveness and Safety	06	U	50,409
180	0605857A	Environmental Quality Technology Mgmt Support	06	U	1,629
181	0605898A	Army Direct Report Headquarters - R&D - MHA	06	U	55,843
182	0606002A	Ronald Reagan Ballistic Missile Defense Test Site	06	U	91,340
183	0606003A	CounterIntel and Human Intel Modernization	06	U	6,348
184	0606105A	Medical Program-Wide Activities	06	U	
185	0606942A	Assessments and Evaluations Cyber Vulnerabilities	06	U	6,025
186	0909999A	Financing for Cancelled Account Adjustments	06	U	
	Management Support				1,624,585
187	0603778A	MLRS Product Improvement Program	07	U	14,465
188	0605024A	Anti-Tamper Technology Support	07	U	7,472
189	0607131A	Weapons and Munitions Product Improvement Programs	07	U	8,425
190	0607136A	Blackhawk Product Improvement Program	07	U	1,507
191	0607137A	Chinook Product Improvement Program	07	U	9,265
192	0607139A	Improved Turbine Engine Program	07	U	201,247
193	0607142A	Aviation Rocket System Product Improvement and Development	07	U	3,014

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Se c	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment*	FY 2023 Total Enactment
194	0607143A	Unmanned Aircraft System Universal Products	07	U	4,426	10,512		10,512
195	0607145A	Apache Future Development	07	U	9,700	25,074		25,074
196	0607148A	AN/TPQ-53 Counterfire Target Acquisition Radar System	07	U	46,009	61,559		61,559
197	0607150A	Intel Cyber Development	07	U	3,611	13,343		13,343
198	0607312A	Army Operational Systems Development	07	U	28,029	26,131		26,131
199	0607313A	Electronic Warfare Development	07	U	5,673	6,432		6,432
200	0607315A	Enduring Turbine Engines and Power Systems	07	U				
201	0607665A	Family of Biometrics	07	U	1,101	1,114		1,114
202	0607865A	Patriot Product Improvement	07	U	125,851	152,312		152,312
203	0203728A	Joint Automated Deep Operation Coordination System (JADOCs)	07	U	24,556	19,311		19,311
204	0203735A	Combat Vehicle Improvement Programs	07	U	272,438	194,229		194,229
205	0203743A	155mm Self-Propelled Howitzer Improvements	07	U	168,683	116,510		116,510
206	0203744A	Aircraft Modifications/Product Improvement Programs	07	U	10,000			
207	0203752A	Aircraft Engine Component Improvement Program	07	U	127	148		148
208	0203758A	Digitization	07	U	3,759			
209	0203801A	Missile/Air Defense Product Improvement Program	07	U	122	3,109		3,109
210	0203802A	Other Missile Product Improvement Programs	07	U	9,956	9,027		9,027
211	0205412A	Environmental Quality Technology - Operational System Dev	07	U	253	793		793
212	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	U	58,516	20,180		20,180
213	0208053A	Joint Tactical Ground System	07	U	11,379	8,813		8,813

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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194	0607143A	Unmanned Aircraft System Universal Products	07	U	25,393
195	0607145A	Apache Future Development	07	U	10,547
196	0607148A	AN/TPQ-53 Counterfire Target Acquisition Radar System	07	U	54,167
197	0607150A	Intel Cyber Development	07	U	4,345
198	0607312A	Army Operational Systems Development	07	U	19,000
199	0607313A	Electronic Warfare Development	07	U	6,389
200	0607315A	Enduring Turbine Engines and Power Systems	07	U	2,411
201	0607665A	Family of Biometrics	07	U	797
202	0607865A	Patriot Product Improvement	07	U	177,197
203	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07	U	42,177
204	0203735A	Combat Vehicle Improvement Programs	07	U	146,635
205	0203743A	155mm Self-Propelled Howitzer Improvements	07	U	122,902
206	0203744A	Aircraft Modifications/Product Improvement Programs	07	U	
207	0203752A	Aircraft Engine Component Improvement Program	07	U	146
208	0203758A	Digitization	07	U	1,515
209	0203801A	Missile/Air Defense Product Improvement Program	07	U	4,520
210	0203802A	Other Missile Product Improvement Programs	07	U	10,044
211	0205412A	Environmental Quality Technology - Operational System Dev	07	U	281
212	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	U	75,952
213	0208053A	Joint Tactical Ground System	07	U	203

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Se c	FY 2022 Actuals	FY 2023 Less Supplementals Enactment	FY 2023 Supplementals Enactment	FY 2023 Total Enactment
216	0303028A	Security and Intelligence Activities	07	U	24,506			
217	0303140A	Information Systems Security Program	07	U	15,680	17,209		17,209
218	0303141A	Global Combat Support System	07	U	43,643	22,600		22,600
219	0303142A	SATCOM Ground Environment (SPACE)	07	U	16,186	18,297		18,297
222	0305179A	Integrated Broadcast Service (IBS)	07	U	5,430	9,926		9,926
223	0305204A	Tactical Unmanned Aerial Vehicles	07	U	8,410	4,500		4,500
224	0305206A	Airborne Reconnaissance Systems	07	U	11,782	17,165		17,165
225	0305219A	MQ-1C Gray Eagle UAS	07	U				
226	0307665A	Biometrics Enabled Intelligence	07	U	2,066			
227	0708045A	End Item Industrial Preparedness Activities	07	U	101,466	132,270		132,270
999	999999999	Classified Programs	07	U	2,993	6,664		6,664
	Operational Systems Development				1,416,677	1,286,510	2,500	1,289,010
228	0608041A	Defensive CYBER - Software Prototype Development	08	U	108,041	94,831		94,831
	Software And Digital Technology Pilot Programs				108,041	94,831		94,831
Total Research, Development, Test and Evaluation, Army					14,660,654	17,142,121	9,100	17,151,221

*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Line No	Program Element Number	Item	Act	Se c	FY 2024 Request
216	0303028A	Security and Intelligence Activities	07	U	301
217	0303140A	Information Systems Security Program	07	U	15,323
218	0303141A	Global Combat Support System	07	U	13,082
219	0303142A	SATCOM Ground Environment (SPACE)	07	U	26,838
222	0305179A	Integrated Broadcast Service (IBS)	07	U	9,456
223	0305204A	Tactical Unmanned Aerial Vehicles	07	U	
224	0305206A	Airborne Reconnaissance Systems	07	U	
225	0305219A	MQ-1C Gray Eagle UAS	07	U	6,629
226	0307665A	Biometrics Enabled Intelligence	07	U	
227	0708045A	End Item Industrial Preparedness Activities	07	U	75,317
999	999999999	Classified Programs	07	U	8,786
	Operational Systems Development				1,105,748
228	0608041A	Defensive CYBER - Software Prototype Development	08	U	83,570
	Software And Digital Technology Pilot Programs				83,570
Total Research, Development, Test and Evaluation, Army					15,775,381

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Logistics and Engineer Equipment - Eng Dev	0604804A	109	05.....	Volume 3b - 190
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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	20.976	21.086	20.828	-	20.828	21.303	21.011	21.115	21.317	0.000	147.636
DY7: <i>Army Systems Engineering, Architecture & Analysis</i>	-	20.976	21.086	20.828	-	20.828	21.303	21.011	21.115	21.317	0.000	147.636

A. Mission Description and Budget Item Justification

This program element is comprised of three projects: Army Systems Engineering, Architecture & Analysis; Army Integration Management & Coordination; and Emerging Technology Initiatives. The specific evaluation requirements will support Mission Command Network (MCN) 2020, the Force 2025 objectives, and emerging technology insertion.

Project DY7: Provides the Army's leadership and materiel developers with the necessary software modernization planning, System of Systems (SoS) engineering and analysis, technical risk analysis, architectural products, critical path analysis, cybersecurity and interoperability risk analysis and the associated mitigation planning for the Army's materiel portfolio. This project develops process, products, and policies that ensure a solid Army Systems Engineering construct across Army Program Executive and Management Offices. This includes efforts in support of Common Operating Environment (COE) governance, implementation of Continuous Integration/Continuous Delivery (CI/CD) to modernize, and streamline and accelerate the software acquisition process, the Army Futures Command's emerging development of concepts, requirements generation, resource allocation, experimentation, acquisition, logistics, and technology components of the Army Future Force Modernization Enterprise (FFME). Focus areas includes the integration of key elements of a system into one overall system engineering construct and managing it through major system engineering activities to include implementing a CI/CD model for software to ensure the fielding of integrated capabilities meet the mission needs of the force against any potential adversaries. Key system engineering functions include, engineering and technical analysis, integrated System of Systems (SoS) architecture products, SoS risk analysis and mitigation planning to influence the Army's materiel portfolio. This project also includes the establishment of Army systems engineering policy and implementation standards, requirements decomposition and alignment to a CI/CD model, and resource and acquisition synchronization to address cross-portfolio issues. Key CI/CD functions include digital transformation functions include using a unified data reference architecture to enable decision dominance, analysis and mitigation planning to remove institutional barriers preventing CI/CD and delivering software that is flexible and secure by design using modern software practices. Key tasks are the development of integrated Architecture products; Engineering Analysis and Design; Portfolio Analysis; Systems Security Engineering process, interoperability assessments, independent technical risk assessments, Cybersecurity requirements analysis, compliance, Cyber policy assessments, and coordinates the ASA(ALT) community's Data activities including Data Steward and Functional Data Manager in Army Data Governance Forums.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>
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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	21.423	21.228	21.464	-	21.464
Current President's Budget	20.976	21.086	20.828	-	20.828
Total Adjustments	-0.447	-0.142	-0.636	-	-0.636
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.447	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.636	-	-0.636
• FFRDC Transfer	-	-0.142	-	-	-

Change Summary Explanation

Decreased funding to support higher Army priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>				Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
DY7: <i>Army Systems Engineering, Architecture & Analysis</i>	-	20.976	21.086	20.828	-	20.828	21.303	21.011	21.115	21.317	0.000	147.636
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Synthesizing Systems Engineering Governance across the Program Executive Offices (PEOs) in support of the Assistant Secretary of the Army (Acquisition, Logistics and Technology)'s (ASA(ALT)) Mission.

The Army has been evolving the need for integrated Data, Engineering, and Software focused on the adjustment of modernization planning by implementing a CI/CD model, System of Systems (SoS) engineering and analysis, technical risk analysis, architectural products, critical path analysis, cybersecurity and interoperability risk analysis and the associated mitigation planning for the Army's materiel portfolio. This includes efforts in support of Common Operating Environment (COE) governance, support of digital transformation considerations in the area of digital engineering, data architecture and modern software practices, the integration of key elements of a system into one overall system engineering construct and managing it through major system engineering activities to ensure the fielding of integrated capabilities meet the mission needs of the force against any potential adversaries. Key system engineering functions include, engineering and technical analysis, integrated System of Systems (SoS) architecture products, SoS risk analysis and mitigation planning to influence the Army's materiel portfolio. This also includes the establishment of Army systems engineering policy and implementation standards, requirements decomposition and alignment to a CI/CD model, and resource and acquisition synchronization to address cross-portfolio issues. Key CI/CD functions include digital transformation functions include using a unified data reference architecture to enable decision dominance, analysis and mitigation planning to remove institutional barriers preventing CI/CD and delivering software that is flexible and secure by design using modern software practices. Key tasks are the development of integrated Architecture products; Engineering Analysis and Design; Portfolio Analysis; Systems Security Engineering process, interoperability assessments, independent technical risk assessments, Cybersecurity requirements analysis, Cyber policy assessments, and coordinates the ASA(ALT) community's Data activities including Data Steward and Functional Data Manager in Army Data Governance Forums.

As the Army undergoes digital transformation, data-centricity through data mesh becomes the backbone of communication on the battlefield; modernized software practices enables, accelerates, and streamlines all battlefield capabilities; and digital engineering ensures integration across products and ease of updates as requirements and technologies change. The Office of the Chief Systems Engineer (OCSE), newly known as the Deputy Assistant Secretary of the Army - Data, Engineering and Software DASA(DES) has begun to transform and will lead development of unified, government-owned data architectures that will govern acquisition of data centric capabilities to enable Commanders with the data they need, when they need it, enabling decision dominance and prevent vendor lock. These programs to implement modern software techniques, such as agile software development and Development, Security, and Operations (DevSecOps), resulting in better, faster, more cyber secure capability. ASA(ALT) will also lead Digital Engineering, a holistic approach to complex system design that leverages models, data, and modern software practices for Army acquisition programs to revamp how ASA(ALT) approaches software, data architecture, and product development.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>
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This Project catalyzes, coordinates and integrates data, engineering, and modern software practices throughout a program's life cycle during the acquisition process. This Project will ensure data, engineering, and modern software practices is prioritized and properly implemented by ASA(ALT) Programs of Record. Implementation utilizes modern techniques and leverages open systems architectures concepts in order to ensure rapid, optimal, and secure product delivery into the hands of users.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Systems Engineering Governance</p> <p>FY 2023 Plans: Integration activities as required. CS and other large scale Army equipment fielding activities occur every year, with biannual baseline updates, and provide modernization upgrades to entire formations (e.g. CS fields to brigade elements) in a single event. These supporting architecture products enable the ASA(ALT) community to determine integrated Basis of Issue planning, subnet design, spectrum allocation, network initialization, logistics planning for fielding activity, and non-recurring engineering planning and design as part of the overall ASA(ALT) engineering design, integration and fielding of the Army equipment.</p> <p>OCSE will deliver and maintain a fully capable Architecture Development Kit (ADK) to the ASA(ALT) systems engineering and architecture community for use. Using a Model Based Systems Engineering (MBSE) data-driven approach to Digital Engineering (DE) inside the ADK Environment, architects capture system data in the system of systems integrated architecture to include systems' unique requirements, capabilities, performance, interfaces, standards, dependences, and data flows, within the context of their operational employment and provide visual representation of key systems from an operational, functional and network perspective. This modeling allows for requirements traceability, reporting, analysis, and visualization. The ADK will be expanded to include the breadth of architecture being developed by ASA(ALT), allow other Army organizations a means to access and utilize the latest systems architecture data created by system owners, and ingest other Army architectures for use in the environment. The expanded toolsets will provide a standardized virtual interface for improved usability and increased commonality so that all users will have the same access to libraries, lexicon, nomenclature and style guides. User will be able to develop architecture products useful for their own acquisition process while being able to access other system data to improve their understanding of interoperability OCSE will develop reference architecture products to support Capability Set (CS) 23 Integrated Tactical Network fielding, the CS 25 Integrated Tactical Network engineering design and fielding planning, and other fielding and inwith external systems. User requested and/or developed analysis tools will be shared and leveraged across the environment; suggestion and feedback paths will be implemented to continuously improve available tools and data. Data from all systems will be easily aggregated to develop and analyze system of systems architecture. The resultant fully integrated systems of systems model, maintained with up-to-date system data, will allow leadership to quickly answer 'what if' system of systems architecture questions and improve the efficiency of the Request for Information (RFI) processes.</p> <p>OCSE supports COE Systems Engineering Governance by continuing to host ASA(ALT) monthly governance forums to promote convergence of legacy combat systems towards a common software and hardware infrastructure, effective migration of Army sensing capabilities towards common data sharing interface standards, and alignment of enterprise capabilities with tactical level services. This includes continuing to host a bi-weekly ASA(ALT) Configuration Control Board to optimize SoS risk reduction</p>	-	5.818	6.108

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>and preparatory actions prior to execution of Headquarters, Department of the Army (HQDA) G-6 independent Title 40 Army Interoperability Certification (AIC) test events. Secondly, OCSE will continue hosting the Standards IPT, DE IPT, Software Baseline IPT, and the Technical Advisory Board (TAB) to create and maintain ASA(ALT) SoS technical baseline artifacts in support of achieving COE Full Operational Capability (FOC) projected for 2025, as well as, continuing curation of the enterprise level Fielded Software Tracker Database, user requested functionality enhancements, systems administration, and help desk support.</p> <p>OCSE represents and coordinates Acquisition Integrated Data Engineering Governance for the ASA(ALT) community's in the area of data standards, priorities and activities in support of the Army's Data Plan Implementation. OSCE supports the ASA(ALT) Data Steward and performs the duties as the Functional Data Manager in Army Data Governance Forums including the Army Data Board (ADB), Army Analytics Board (AAB) and JADC2 Working Groups. In addition to representing the ASA(ALT) in Army data forums the OCSE is actively improving the ASA(ALT) data environment through the establishment of governance forums, standards, policies and implementation guides in order to facilitate rapid and relevant acquisition, logistics and technology decisions. Continuous maturation of Acquisition, Logistics and Technology Domain data ensures that data is available for successful integration and support of product and program life-cycle requirements, additive and advanced manufacturing, DE, product/technical data, intellectual property management, modular open systems approach and other DoD and Army initiatives. OCSE has developed a roadmap for the digital transformation of the ASA(ALT) and has begun executing against that plan through the execution of data analytic use cases which delivers incremental value to the ASA(ALT) and the Army at large. OCSE will continue to transform the ASA(ALT)'s business processes in support of its digital and data centric transformation.</p> <p>OCSE serves as the primary ASA(ALT) staff point of contact for acquisition concerns related to cyberspace through the Chief Cyber Acquisition Officer. OCSE leads ASA(ALT) response to major cyberspace incidents requiring ASA(ALT) Principal leader awareness. This includes but is not limited to coordinating with PEO staffs at all levels in order to analyze requirements/ orders, facilitate guidance, present findings/status, and interface with Army Cyber Command (ARCYBER) and/or other HQDA organizations. In accordance with AR 70-75, coordinate Army survivability policy and guidance in Army acquisition efforts related to cyberspace. Represent HQDA on boards and committees concerning materiel survivability matters related to cyberspace. Coordinate and lead an assessment of the ASA(ALT) portfolio to apply a rigorous, systems engineering approach to consider cyber resilience within the Acquisition trade-space (e.g. performance attribute). Identify systemic vulnerabilities and coordinate the development and implementation of enterprise solutions to mitigate those vulnerabilities. Develop and implement a risk-based process to assess the impact of vulnerabilities and assist with prioritization of funding for corrective actions for high-risk vulnerabilities. Coordinate with PEO Simulation, Training and Instrumentation (STRI) regarding the certification and implementation of cyber acquisition assessment teams in order to facilitate the reduction of risk across the ASA(ALT) portfolio. Coordinate with PEO staffs on the integration of traditional cybersecurity (risk management framework) and cyber resilience survivability. Coordinate the Cyber Acquisition Task Force to unify strategy and execution of cyber resilience efforts across Army.</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Synchronize ASA(ALT) cyber resilience strategies with OSD, United States Cyber Command (USCYBERCOM), and joint Service counterparts.</p> <p>OCSE has drafted and is staffing the Army Priority Vulnerability Management Directive as directed by the Under Secretary of the Army to establish an enduring program (non-acquisition) to identify and manage cyberspace risks and maximize the survivability of tactical-strategic kill chains and enabling systems, and improve Total Force Readiness. Synchronize and integrate priority cyberspace assessments across National Security Systems' lifecycles including the Strategic Cybersecurity Program, Cyberspace Operational Resilience Assessment - Platform (CORA-P), and cyberspace red team activities.</p> <p>OCSE leads the CORA-P effort as the supported organization to oversee the planning, execution, and reporting of all key tasks, in accordance with HQDA EXORD 123-20. CORA-P is an enduring effort to maintain the readiness, survivability, and cyber resilience of Army and Joint Forces, capabilities, and systems by identifying and mitigation cyberspace vulnerabilities in critical systems including relevant portions of the DOD Information Network. Present overall status to the Army Cyberspace Council. Plan/program funding over the Future Year Defense Program and oversee distributed execution by stakeholders. Update, maintain, and publish the Terms of Reference to all stakeholders. Coordinate all reporting to Army, Joint, and DOD forums. Ensure the on-time completion of Cyber Vulnerability Assessments and reports. Pilot emerging cyber resilience efforts (e.g. Cyber Readiness Framework, mitigation mapping techniques, resilience metrics) in future assessments and extrapolate findings and best practices across ASA(ALT) portfolio.</p> <p>FY 2024 Plans: This Project leads critical resources, tools, and solutions for ASA(ALT) to modernize software acquisition, lead digital engineering, provide oversight of Title X systems engineering functions, and implement software, data, cyber, and engineering governance to improve product delivery and cyber operational readiness for fielded systems. Additionally, has influence over program budgets for acquisition programs of record. General Officer (GO) / SES collaboration is required with key stakeholders across the Army, OSD, and other services, including the U.S. Army Training and Doctrine Command (TRADOC); U.S. Army Futures Command(AFC); Chief Information Officer (CIO); U.S. Army Test and Evaluation Command (ATEC); Deputy Chief of Staff, G-3; Deputy Chief of Staff, G-6; Deputy Chief of Staff, G-2; Army Cyber Command; and U.S. Army Program Executive Officers. The execution of these duties will ultimately change the way the Army delivers capabilities to Soldiers. This Project as full line authority from the Assistant Secretary of the Army (Acquisition, Logistics and Technology). This Project also provides for systems engineering efforts that enable the Army's leadership and materiel developers with the necessary modernization planning, System of Systems (SoS) engineering and analysis, technical risk analysis, architectural products, critical path analysis, cybersecurity and interoperability risk analysis and the associated mitigation planning for the Army's materiel portfolio. This Project develops process, products, and policies that ensure a solid Army Systems Engineering construct across Army Program Executive and Management Offices.</p>				

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

This Project includes specific efforts in support of the Army's Data plan that has lines of effort working towards the Joint All Domain Command and Control (JADC2) concept via Data, Systems Engineering, and Software governance, emerging Multi-Domain Operations (MDO) concepts requirements generation, resource allocation, experimentation, acquisition, logistics, and technology components of the Army's Modernization Strategy. Focus areas includes the integration of key elements of a system into one overall system engineering construct and managing it through major system engineering activities to ensure the fielding of integrated capabilities meet the mission needs of the force against any potential adversaries. Key system engineering functions include, engineering and technical risk analysis, establishment of Army Data, systems engineering, and software policy and implementation standards, requirements decomposition and alignment, and resource and acquisition synchronization to address cross-portfolio issues. Key tasks are t to enable the adoption of modern software practices (i.e. DevSecOps, Agile software development...), perform Portfolio Analysis and Software support; execute Systems Security Engineering processes, perform interoperability assessments, perform independent risk assessments, perform Cybersecurity requirements analysis, compliance, Cyber policy assessments, and coordinates the ASA(ALT) community's Data activities including Data Steward and Functional Data Manager in Army Data Governance Forums.

The effort includes costs for labor (Government and contractor), support services, travel, training, supplies, facilities, and Information Technology (IT) support for the DASA(DES) Data, Engineering, and Software. This Project also includes support to other Department of Defense (DOD) and international agencies for joint programs and collaboration effort.

Major Responsibilities

This Project is responsible for ensuring that digital transformation program support considerations, , including digital engineering, data architecture and modern software practices, are integrated into all Army acquisition programs throughout their lifecycle. Specifically, areas that fall fall under this responsibility for the following areas of concentration.

Data Architecture Development, Implementation and Integration - Ensure programs develop data architectures, and that they integrate resulting in a holistic data solution within and across tactical and enterprise domains. This data architecture will govern acquisition of data-centric capabilities and reduce the current complexity. It will flatten the Army's data architecture across its echelons for effective and efficient data-driven decision-making as envisioned by Joint All Domain Command and Control (JADC2) and the Army's multi-domain operations (MDO) concept and supporting doctrine. Software Development Acquisition Support and Oversight - Ensure programs implement agile software development and DevSecOps to deliver better capability faster. These modern practices will increase speed, quality, and security of software, while ensuring stakeholder transparency and involvement throughout the development process to deliver the best capability incrementally with rapid feedback from the field. ASA(ALT) is leading the shift to Agile and DevSecOps across the PEOs, as well as, coordinating across the operational, test, and requirements communities to drive culture changes to achieve the goal of Agile and DevSecOps by influencing organizational changes, transformation to a digital workforce, a shift to soldier-centricity in the requirements & development processes, reimagining of

FY 2022	FY 2023	FY 2024

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>current testing & cybersecurity constructs, updating contracting & funding strategies and focus on the intersection of software and data via data centrality.</p> <p>Digital Engineering Policy and Implementation Guidance - Ensure programs implement sound digital engineering practices that enable sharing of data across the Acquisition enterprise. This will be achieved by establishing foundational capabilities and support mechanisms for programs who need a starting point, building on foundations with uniform guidance about how to perform a model-based acquisition, and reaching a state where all our programs are implementing a model-based acquisition and we're assessing program performance using the modeling environment.</p> <p>Independent Technical Risk Assessments (ITRA) - Conduct ITRAs for Major Defense Acquisition Programs (MDAPs).</p> <p>Modular Open Systems Approach (MOSA). Ensure MOSA is implemented in Army Acquisition programs to maximize interoperability, simplify technology refresh, and eliminate vendor lock.</p> <p>Systems Engineering and Program Support - Advise programs on statutory and regulatory requirements in support of acquisition milestone decisions.</p> <p>Cyber Policy and Oversight - Ensure threat-informed cyber hardening of programs to prevent compromise of critical, sensitive data.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Reallocation of available labor category resources.</p>				
<p>Title: Engineering Support & Services</p> <p>FY 2023 Plans: OCSE leads the Army's development of policy and best practices to ensure systems engineering rigor in Army Acquisition. OCSE is the primary advisor to the Chief Systems Engineer and Army Acquisition Executive (AAE) regarding the sufficiency of systems engineering rigor in programs. The OCSE team collaborates with the Army's systems engineering community to identify systemic systems engineering challenges and issues and their solutions, as well as identifying and sharing best practices. OCSE leads the immediate Army response to National Defense Authorization Act (NDAA) statutory requirements that involve systems engineering, as well as identifying and facilitating the best means to institutionalize those requirements. Additionally, OCSE collaborates with the OSD, Industry and the Joint community in developing synchronized approaches to NDAA Systems Engineering related statutes.</p>		-	6.265	6.497

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

	FY 2022	FY 2023	FY 2024
<p>In order to promote program success, OCSE will continue to assist programs in the identification and mitigation of risk (i.e. Independent Technical Risk Assessment (ITRA), Preliminary and Critical Design Review (PDR/CDR) sufficiency assessments, Systems Engineering Plan (SEP), Life-Cycle Sustainment Plan (LCSP), and Systems Engineering Technical Reviews (SETR), etc.) and develop processes to support the necessary rigor and consistency across the Army, in support of any/all key milestone events. For Acquisition Category (ACAT) 1B/1C programs the Army will lead these efforts, and support the Deputy Under Secretary of Defense for Research and Engineering (USD(R&E)) for ACAT 1D programs.</p> <p>OCSE provides guidance and support to programs for development of systems engineering documentation required for milestone decisions and certification. Serves as the Army level concurrence authority on System Engineering Plans and provides systems engineering expertise for Program Protection Plans (PPPs) for all Army Major Defense Acquisition Programs (MDAPs). OCSE will also provide the AAE with an assessment of the MOSA implementation for ACAT 1B/1C programs and will review and recommend approval for the PEO's approach to implementing MOSA across their responsible portfolio.</p> <p>OCSE will serve as the Army focal point for matters of hardware and software assurance, microelectronics, planning and countermeasures, and systems engineering focal point for program protection, anti-tamper, and PPPs. OCSE is the Army representative for the FY 2014 NDAA Section 937 Congressional requirement to stand up a Joint Federated Assurance Center (JFAC) to develop work plans, manage funding, track progress and report regular status to Army Leadership and OSD Leadership. In addition, also maintains direct collaboration and communication with Development Commands (DEVCOMs), Army Research Labs, and specifically the Software, Hardware and Cyber Subject Matter Experts and Communities of Practice, to define, federate, maintain and evolve, Army Cyber, System Security Engineering, and allow access to available Hardware/ Software Assurance (HwA/SwA) capabilities to meet today's threats and emerging threats. OCSE provides systems engineering expertise, oversight, review, and development assistance for PPPs to determine/review risks/identify vulnerabilities associated with Security and assess the planned countermeasures to mitigate issues. OCSE provides advice and experience to influence system design considerations in support of developing effective and resilient program protection strategies. Conducts client advocacy and education forums (Road Show presentations/Army Systems Engineering Forums) amongst Army PEOs/Chief Systems Engineers and other agencies and joint service stakeholders, to promulgate best practices to the acquisition community. Coordinates as an executive agent on matters of Anti-Tamper with program personnel, systems security engineers and service providers. OCSE serves as the primary responsibility for Software Assurance and Anti-Tamper. Provides alternate assurance options for critical DoD unique parts as part of the US Microelectronic Strategy. Provides advice, influence, and support to the Army's Supply Chain Risk Management (SCRM) forums and Integrated Product Team (IPT), leveraging tools and expertise from the HwA and SwA communities. Advance the Army's capability to perform hardware analysis of critical components and transition to a new microelectronics trust model that leverages commercial state of the art practices. Provide systems engineering advice on Critical Intelligence Parameter Breach recommendations as described in Army regulations. In accordance with (IAW) FY 2017 NDAA Sec 807 Responsible for the conduct and execution of Post-PDR/CDR and ITRA for all Army ACAT 1/2 programs where</p>			

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

	FY 2022	FY 2023	FY 2024
<p>the AAE serves as the Milestone Decision Authority (MDA). The reviews will provide recommendations on Technical Risk and PDR/CDR sufficiency, and both will be included in the MDA package for the Milestone Review, approval, and certification.</p> <p>A key element of OCSE support and services will be advancing the state of practice of DE across the ASA(ALT) community. This work will also seek to streamline communications between Government and Industry by identification of technical data and emphasis of appropriate implementation of technical data rights. Through the implementation of DE, OCSE will work with the PMs to institutionalize modern engineering processes and integrate those processes through the engineering data they produce in order to establish and maintain traceability from the activities that drive system concept development through system acquisition, fielding, and sustainment to the decision to divest. The Army's DE implementation will establish a workforce equipped with the necessary skills and infrastructure to achieve this goal. To further the Army's modernization efforts, OCSE synchronizes the Army's Modeling and Simulation (M&S) Strategy with OSD's DE Strategy to focus current and emerging efforts on the efficient development and use of M&S and MBSE capabilities in order to advance the Army's system development efforts.</p> <p>OCSE will continue in the development of MOSA policy and implementation guidance, in accordance with NDAA FY 2017 2466a/b/c, that leads to the certification of MOSA in MDAPs. Other responsibilities include confirming that Army programs proceeding to Milestone B have incorporated clearly defined major subsystem interfaces between the major system platform and major system components, between major system components, and between major system platforms, and that these major system interfaces are consistent with the widely supported and consensus-based standards.</p> <p>OCSE will continue primary responsibility for the overall Reliability, Availability, and Maintainability (RAM) program pertaining to materiel. Leads the assessment of RAM efforts of Army programs of record through a cross functional IPT that emphasizes lessons learned and best practices for RAM. Assist programs in the research for root causes of reliability issues and provide detailed assessment along with recommendation to senior leadership. OCSE will supervise the major RAM program elements to ensure that operationally focused, achievable, affordable, and testable RAM requirements are included in the requirements documentation and the Department of the Army (DA) decision-making process. Assist in Army staff evaluation of proposed changes to operational systems' RAM characteristics in product improvement programs.</p> <p>OCSE will serve as the ASA(ALT) staff lead for JADC2 / Multi Partner Environment (MPE) Technical Standards by providing ASA(ALT) technical representation on Joint Staff J6 and Army JADC2 technical governance forums. Additionally, OCSE will continue ASA(ALT) technical representation on the DoD Chief Information Officer (CIO) Technical Working Groups (TWGs) and Joint Enterprise Standards Committee (JESC) and conduct Service level review of Interoperability Standards Technical Packages (ITSP) in support of Change Requests (CRs) to the DoD Information Technology Standards Repository (DISR) baseline IAW DoDI 8310.01.</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>OCSE will continue to provide ASA(ALT) technical representation for Army pre-ratification review and staffing of American, British, Canadian, Australian, and New Zealand (ABCANZ) Technical Statement of Requirements (TSOR) in support of the Army Interoperability Campaign Plan and Mission Partner Environment (MPE) Concept of Operations (CONOPS). OCSE will serve as the lead to ensure ASA(ALT) complies with statutory and regulatory guidance, focused on increasing the use of commercial and non-governmental standards and specifications in Army acquisition programs. Additionally, the effort includes developing support tools and publishing a common desktop reference for ASA(ALT) PMs and Chief Engineers detailing statutory and regulatory mandates, best practices, tools, and training.</p> <p>OCSE will continue to provide overarching governance, promulgation, and integration of the Positioning, Navigation, and Timing (PNT) Reference Architecture (RA) with the COE technical baseline, review PM compliance strategies for technical risks, and provide endorsement recommendations to the ASA(ALT) Chief Systems Engineer (CSE). OCSE serves as the Program Information System Security Manager (ISSM) for ASA(ALT) HQ. OCSE supports the CSE as Authorizing Official (AO) for ASA(ALT) HQ in order to establish and monitor the HQ cybersecurity program that includes cybersecurity objectives and policies, cybersecurity personnel, and cybersecurity processes and procedures. Function as the primary cybersecurity technical advisor to the AO and managerial lead for RMF throughout the command. Ensure cybersecurity-related events or configuration changes that may impact authorizations or security postures are formally reported to the AO and other stakeholders such as information owners and AOs of interconnected systems. Monitor compliance with cybersecurity policies, as appropriate, and review the results of such monitoring.</p> <p>FY 2024 Plans: This Project supports the ASA(ALT) Data Steward and performs the duties as the Functional Data Manager in Army Data Environment</p> <p>Governance Forums including the Army Data Board (ADB), Army Analytics Board (AAB) and JADC2 Working Groups. In addition to representing the ASA(ALT) in Army data forums improving the ASA(ALT) data environment through the establishment of governance forums, standards, policies and implementation guides in order to facilitate rapid and relevant acquisition, logistics and technology decisions. Continuous maturation of Acquisition, Logistics and Technology Domain data ensures that data is available for successful integration and support of product and program life-cycle requirements, additive and advanced manufacturing, DE, product/technical data, intellectual property management, modular open systems approach and other DoD and Army initiatives.</p> <p>This Project will advance the state of practice of DE across the ASA(ALT) community. This work will also seek to streamline communications between Government and Industry by identification of technical data and emphasis of appropriate implementation</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>of technical data rights. Through the implementation of DE, coordination with Program Office are underway to institutionalize modern engineering processes and integrate those processes through the engineering data they produce in order to establish and maintain traceability from the activities that drive system concept development through system acquisition, fielding, and sustainment to the decision to divest. The Army's DE implementation will establish a workforce equipped with the necessary skills and infrastructure to achieve this goal. To further the Army's modernization efforts, synchronization with the Army's Modeling and Simulation (M&S) Strategy with OSD's DE Strategy will focus current and emerging efforts on the efficient development and use of M&S and MBSE capabilities in order to advance the Army's system development efforts.</p> <p>This Project has developed a roadmap for the digital transformation of the ASA(ALT) and has begun executing against that plan through the execution of data analytic use cases which delivers incremental value to the ASA(ALT) and the Army at large. To enable digital transformation, this project will develop playbooks for ASA(ALT) programs to leverage as they digitally transform. These playbooks will provide practical examples of how to plan, execute, monitor, and report on programs using modern practices to be applied to existing and future program. This will lower the barrier to entry for those whom are not experienced in modern practices. This project will provide and execute a framework to effectivity digitally transform programs and provide expertise to help with the transformation in the areas of requirements, contracting, testing, cybersecurity and fielding & operations. THIS PROJECT will continue to transform the ASA(ALT)'s business processes in support of its digital and data centric transformation.</p> <p>This Project will enable the Acquisition lead for the implementation of Digital Engineering. ASA (ALT) has developed a Vision for DE and initiated the development and publication of a DE Policy and DE Implementation Guidance that is aligned with the DoD DE Strategy. This Project will enable representation Army Acquisition in OSD DE forums and is the point of contact within the Army for the governance and processes required for the execution of NDAA, DoD, and Army mandates that involve systems and DE. Army collaboration with OSD for systems and DE issues and identifies and advocates for Army equities during the establishment and implementation of DoD policy involving systems engineering.</p> <p>This Project will execute the responsibility for leading a Digital Thread Operational Integrated Product Team (OIPT) with members from across the Army in order to develop the requirement for the Digital Thread in support of the Army modernization. The Digital Thread is a framework that will provide a means to integrate digital artifacts across organizational boundaries and establishes traceability from initial concept through a fielded and supported piece of equipment and system. This Project enables representation by the Acquisition Community at the Army M&S General Officer Steering Committee (GOSC), Council of Colonels (CoC), and other M&S forums. THIS PROJECT provides guidance to PEOs and PMs to plan for the integrated use of M&S throughout the acquisition lifecycle and coordinates M&S activities within the Army Acquisition Community.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>				

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Reallocation of available labor category resources.				
<p>Title: Strategic Engineering Guidance</p> <p>FY 2023 Plans: ies, guidelines, practices, and toolsets. OCSE's engagement in the Mission Engineering CoP will encourage the use of Mission Engineering within the Army community. This will be accomplished by updating the Mission Engineering Guide, maturing the Mission Engineering state of practice, and communicating governance to the Army engineering community. OCSE will support responsible organizations within the Army and foster Mission Engineering expertise and workforce development. Provide continued Mission Engineering, JADC2, and MDO analysis as it pertains to system development and ASA(ALT) equities. Continue to analyze JADC2 impact on Army modernization strategy and the Army's role in MDO supporting ASA(ALT) with quick turn, independent, first-order engineering analysis to support leadership decision making to enable the Army Modernization Strategy. Continue to support Project Convergence 23 and 24 planning, design, and execution, JADC2 planning and design, DE efforts at the Office of the Secretary of Defense, (OSD), Army, and ASA(ALT) levels, and Army architecture governance efforts.OSCE will serve as the Army focal in the Office of the Under Secretary of Defense for Research and Engineering (OUSD (R&E)) Mission Engineering Community of Practice (CoP) to facilitate the development of recommendations, polic</p> <p>OCSE will continue to expand Critical Criteria and Convergence Learning (C3L) tool use at the PEO and PM level. C3L is designed to enhance system of systems engineering rigor for MDO designated capabilities. The C3L provides a set of criteria categories that, when provided with some basic inputs on system type, intended purpose, and intended environment, provide feedback to the system owner in terms of considerations needed or identify gaps not address that are required to support an MDO scenario. These considerations can also be leveraged to begin to determine if a system meets the overmatch, Operational Environment 2040, and procurement outcomes outlined by the Vice Chief of Staff of the Army (VCSA). The tool is designed to be tailorable, flexible, reusable, and intuitive for a user to navigate with the possibility for automated aspects. Further integrate C3L into the ADK tool set such that system owners leveraging the ADK to build out their system architecture can also leverage an automated C3L tool to provide a cursory look at their system's integration within an MDO construct.</p> <p>As the National Defense Strategy and Army Senior Leadership have emphasized increased speed of delivery of capabilities to the Warfighter, OCSE works with PEOs/Program Managers (PMs), along with other Army Commands on enabling processes and tools in order to accelerate the Army's acquisition process, from requirements development through delivery of capability to the field and rapid technology insertion or upgrades. OCSE will continue to implement and assess the Modular Open System Approaches (MOSA) by refining and developing implementation guidance and supporting PM development of MOSA architectures. Elements will include identifying and prioritizing key system attributes into functional, modular components that provide the greatest operational effects on the battlefield, and support the fielding of a MDO-capable force by 2028 and an MDO-ready force by 2035. These efforts will encompass the development planning process to rapidly identify and refine requirements</p>		-	7.810	8.223

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

	FY 2022	FY 2023	FY 2024
<p>and speed development from concept to solution. OCSE will continue to assist the Army by assessing whether emerging capabilities should be transitioned into programs of record, by means of a Systems Engineering Assessment Review (SEAR) and/or ITRA process. Further support is provided by the OCSE role in facilitating the rapid integration of emerging technology through MOSA. Amplify the impact and benefits of MOSA with the use of Common Modular Open Architectures (CMOA) that enable faster, more efficient capability upgrades and technology insertion.</p> <p>OCSE hosts the Product Data and Engineering Working Group (PEWG) which provides a collaboration forum focused on product and technical data with representatives from across the Army who perform activities throughout the system development and acquisition lifecycle. This includes product and technical data SMEs that collaborate and synchronize responses to questions related to the technical and product data needs that support modernization requirements across these organizations. PEWG members collaborate to work through details of strategic Army initiatives, and facilitate the transition of technical data throughout the product development lifecycle.</p> <p>OCSE is the Army's lead for the implementation of DE. OCSE has developed a Vision for DE and initiated the development and publication of a DE Policy and DE Implementation Guidance that is aligned with the DoD DE Strategy. The OCSE represents the Army in OSD DE forums and is the point of contact within the Army for the governance and processes required for the execution of NDAA, DoD, and Army mandates that involve systems and DE. OCSE leads Army collaboration with OSD for systems and DE issues, and identifies and advocates for Army equities during the establishment and implementation of DoD policy involving systems engineering.</p> <p>OCSE has been assigned the responsibility for leading a Digital Thread Operational Integrated Product Team (OIPT) with members from across the Army in order to develop the requirement for the Digital Thread in support of the Army modernization. The Digital Thread is a framework that will provide a means to integrate digital artifacts across organizational boundaries and establishes traceability from initial concept through a fielded and supported piece of equipment and system.</p> <p>OCSE is the lead for the Acquisition Community at the Army M&S General Officer Steering Committee (GOSC), Council of Colonels (CoC), and other M&S forums. OCSE provides guidance to PEOs and PMs to plan for the integrated use of M&S throughout the acquisition lifecycle and coordinates M&S activities within the Army Acquisition Community.</p> <p>OCSE provides notifications and updates to the ASA(ALT) Deputy Assistant Secretaries of the Army (DASAs) in ASA(ALT) and PEO CIOs points of contact to alert them of the proposed requirements and migration schedule to the Microsoft (MS) Teams Impact Level 5 (IL5) environment. OCSE will continue to update the ASA(ALT) portion of the Army 365 Migration Hub in order to better coordinate the required migration tasks.</p>			

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

	FY 2022	FY 2023	FY 2024
<p>OCSE will establish strategic engineering guidance for cyberspace by developing and overseeing the implementation of technical processes and tools. Develop objective architecture (e.g. data structures, warehouses, interactions, products) and drive implementation of Information Security Architectures from a SoS perspective. As needed, coordinate engineering change request to federate existing Army business processes and systems. Synchronize with Army policy/strategy and with mission system owners. As needed, conduct engineering-assessments of crosscutting cyber focused architectures, solutions, and capabilities proposed by Programs of Record, Cross Functional Teams, and Rapid Capabilities and Critical Technologies Office. Increase engineering rigor through policies, processes, tools, and technical oversight across systems and systems-of-systems in order to maximize the cyberspace survivability of the Army Acquisition portfolio. Define, publish, and revise as needed a standardized Cyber Acquisition Discipline Artifact for PMs to demonstrate the repeatable implementation of cyber survivability attributes during decision point reviews. Develop and maintain an Implementation Guidebook to improve awareness and consistency of related planning and execution. Support the AAE in reviewing the Cyber Acquisition Discipline Implementation Assessment during decision reviews for all Acquisition Category 1 and 2 programs, as well as MDAs/DAs for other systems as requested. Lead the development of cyberspace contract language requirements and templates, and publish in policy for the acquisition workforce. IAW AR-70-75, represent HQDA on boards and committees concerning materiel survivability matters related to cyberspace resilience. Serve as HQDA lead responsible for tracking and monitoring cyberspace remediation (find-fix-verify) as recommended by the Department of Defense Office of Inspector General (DODIG). Provide engineering governance for emerging cyberspace-related capabilities and advances to include artificial intelligence, cloud-computing governance, Development, Security and Operations (DevSecOps), supply chain risk management, zero trust, etc. Ensure ASA(ALT)'s cyber-related roadmaps align with Army/DoD CIO regarding data, cloud migration, data centers, etc. Analyze requirements and opportunities, and publish ASA(ALT) internal Technical Bulletins and other information papers to inform PMs. Coordinate with capability developers to establish systems engineering criteria in order to ensure new requirements documents address cyber resilience. Coordinate with Army Materiel Command to establish policy and processes that shall maintain cybersecurity and survivability for programs transitioning to sustainment. Lead, in coordination with HQDA G-3/5/7, the establishment of the materiel component of the cyber readiness framework as an interface between systems and operations, which requires authoritative and accessible data from the acquisition and sustainment communities to reduce operational risk.</p> <p>OCSE will lead, plan, integrate and synchronize information cybersecurity efforts across ASA(ALT) including PEOs and headquarters. Identify crosscutting issues and opportunities from across the PEOs requiring ASA(ALT) senior leader attention. Represent ASA(ALT) cybersecurity equities in external stakeholder forums (e.g. Army Cyberspace Council, CIO Executive Board). Review and shape all cyberspace related strategies, policies, and orders affecting ASA(ALT) from OSD, HQDA, and ARCYBER; and elevate issues to the Chief Systems Engineer as needed. Synchronize architectures between enterprise and acquisition systems. Support critical modernization of unsupported software for secure operations. Assist and respond with data call requests, synchronization efforts, and IPRs with DoD CIO and the HQDA G-6, ARCYBER, and the VCSA. Leverage cybersecurity policy as a technology enabler. Fulfill cybersecurity functions mandated by public law, federal directives, and</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>DoD/Army policy. Coordinate, optimize, and monitor Risk Management Framework (RMF) execution among PEOs, assist with common issues requiring senior leader attention, and liaise with CIO and the HQDA G-6. Ensure appropriate transfer of Enterprise Mission Assurance Support Service (eMASS) records for systems that transitioned to sustainment. Serve as approval authority for ASA(ALT) HQ eMASS accounts and Army Training & Certification Tracking System (ATCTS) records, as well as for reviewing and approving system transfers to sustainment in the Army Program Management System (APMS).</p> <p>As the Army implements the Army's People Strategy, OCSE supports the functional lead for Engineering by identifying skills gaps and recommending the needed training. OCSE will also promotes workforce development efforts to improve the level of systems engineering competency through credentials that provide focused enhanced skills in DE, Cyber, and Data engineering. This will include engineering support to OSD and the Army to oversee the growth of civilian talent to support ASA(ALT) Systems Engineering requirements. This includes recommending improvements in Training, Education, Rotational Assignments, and Mentoring for a Systems Engineering (SE) work force across the Army. OCSE will support ASA(ALT) in the development of the Human Capital Strategic Plan (HCSP) and refinement of the System Engineering Functions with OSD.</p> <p>OCSE will serve as the ASA(ALT) lead for System Security Engineering (SSE). Army requires a professional and effective SSE workforce, which is separate from information system security management (ISSM) or network defense functions. SSE contributes to a broad-based, holistic security perspective and focus within the systems engineering (SE) discipline. SSE ensures stakeholder protection needs and security concerns are properly identified and addressed in all engineering stages of the system life cycle. Coordinate with OUSD to define the DoD body of knowledge for SSE. Ensure duties align with prescribed training, experience, and certification. Coordinate appointment and implementation, and facilitate collaboration across PEOs through meetings and publications.</p> <p>FY 2024 Plans: This Project will continue in the development of MOSA policy and implementation guidance, in accordance with NDAA FY 2017 2466a/ b/c, that leads to the certification of MOSA in MDAPs. Other responsibilities include confirming that Army programs proceeding to Milestone B have incorporated clearly defined major subsystem interfaces between the major system platform and major system components, between major system components, and between major system platforms, and that these major system interfaces are consistent with the widely supported and consensus-based standards. This Project will continue to provide overarching governance, promulgation, and integration of the programs of record through a cross functional IPT that emphasizes lessons learned and best practices for RAM. Assist programs in the research for root causes of reliability issues and provide detailed assessment along with recommendation to senior leadership. This Project will supervise the major RAM program elements to ensure that operationally focused, achievable, affordable, and testable RAM requirements are included in the requirements documentation and the Department of the Army (DA) decision-making process. Assist in Army staff evaluation of proposed changes to operational systems' RAM characteristics in product improvement programs.</p>				

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>As the Army implements the Army's People Strategy, this Project supports the functional lead for Engineering by identifying skills gaps and recommending the needed training. This Project will also promote workforce development efforts to improve the level of systems engineering competency through credentials that provide focused enhanced skills in Digital, Data and Systems engineering, modern agile software development, and Cybersecurity, by developing persona based curriculum that will focus on providing PEOs the ability to effectively manage digitally transformed programs. This Project will include engineering support to OSD and the Army to oversee the growth of civilian talent to support ASA(ALT) Systems Engineering requirements. This includes recommending improvements in Training, Education, Rotational Assignments, and Mentoring for a Systems Engineering (SE) work force across the Army. This office will support ASA(ALT) in the development of the Human Capital Strategic Plan (HCSP) and refinement of the System Engineering Functions with OSD.</p> <p>This Project will lead, plan, integrate and synchronize information cybersecurity efforts across ASA(ALT) including PEOs and headquarters. Identify crosscutting issues and opportunities from across the PEOs requiring ASA(ALT) senior leader attention. Represent ASA(ALT) cybersecurity equities in external stakeholder forums (e.g. Army Cyberspace Council, CIO Executive Board).</p> <p>Review and shape all cyberspace related strategies, policies, and orders affecting ASA(ALT) from OSD, HQDA, and ARCYBER; and elevate issues to the Chief Systems Engineer as needed. Synchronize architectures between enterprise and acquisition systems. Support critical modernization of unsupported software for secure operations. Assist and respond with data call requests, synchronization efforts, and IPRs with DoD CIO and the HQDA G-6, ARCYBER, and the VCSA. Leverage cybersecurity policy as a technology enabler. Fulfill cybersecurity functions mandated by public law, federal directives, and DoD/Army policy. Coordinate, optimize, and monitor Risk Management Framework (RMF) execution among PEOs, assist with common issues requiring senior leader attention, and liaise with CIO and the HQDA G-6. Ensure appropriate transfer of Enterprise Mission Assurance Support Service (eMASS) records for systems that transitioned to sustainment. Serve as approval authority for ASA(ALT) HQ eMASS accounts and Army Training & Certification Tracking System (ATCTS) records, as well as for reviewing and approving system transfers to sustainment in the Army Program Management System (APMS).</p> <p>ASA(ALT) staff point of contact for acquisition concerns related to cyberspace through the Chief Cyber Acquisition Officer. This Project provides ASA(ALT) response to major cyberspace incidents requiring ASA(ALT) Principal leader awareness. This includes but is not limited to coordinating with PEO staffs at all levels in order to analyze requirements/orders, facilitate guidance, present findings/status, and interface with Army Cyber Command (ARCYBER) and/or other HQDA organizations. In accordance with AR 70-75, coordinate Army survivability policy and guidance in Army acquisition efforts related to cyberspace. Represent HQDA on boards and committees concerning materiel survivability matters related to cyberspace. Coordinate and lead an assessment of the ASA(ALT) portfolio to apply a rigorous, systems engineering approach to consider cyber resilience within the Acquisition trade-space (e.g. performance attribute). Identify systemic vulnerabilities and coordinate the development and implementation</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>of enterprise solutions to mitigate those vulnerabilities. Develop and implement a risk-based process to assess the impact of vulnerabilities and assist with prioritization of funding for corrective actions for high risk vulnerabilities. Coordinate with PEO Simulation, Training and Instrumentation (STRI) regarding the certification and implementation of cyber acquisition assessment teams in order to facilitate the reduction of risk across the ASA(ALT) portfolio. Coordinate with PEO staffs on the integration of traditional cybersecurity (risk management framework) and cyber resilience survivability. Coordinate the Cyber Acquisition Task Force to unify strategy and execution of cyber resilience efforts across Army. Synchronize ASA(ALT) cyber resilience strategies with OSD, United States Cyber Command (USCYBERCOM), and joint Service counterparts. NDAA Sec 807 Responsible for the conduct and execution of Post-PDR/CDR and ITRA for all Army ACAT 1/2 programs where the AAE serves as the Milestone Decision Authority (MDA). The reviews will provide recommendations on Technical Risk and PDR/CDR sufficiency, and both will be included in the MDA package for the Milestone Review, approval, and certification.</p> <p>This Project will establish strategic engineering guidance for cyberspace by developing and overseeing the implementation of technical processes and tools. Develop objective architecture (e.g. data structures, warehouses, interactions, products) and drive implementation of Information Security Architectures from a SoS perspective. As needed, coordinate engineering change request to federate existing Army business processes and systems. Synchronize with Army policy/strategy and with mission system owners. As needed, conduct engineering-assessments of crosscutting cyber focused architectures, solutions, and capabilities proposed by Programs of Record, Cross Functional Teams, and Rapid Capabilities and Critical Technologies Office. Increase engineering rigor through policies, processes, tools, and technical oversight across systems and systems-of-systems in order to maximize the cyberspace survivability of the Army Acquisition portfolio. Define, publish, and revise as needed a standardized Cyber Acquisition Discipline Artifact for PMs to demonstrate the repeatable implementation of cyber survivability attributes during decision point reviews. Develop and maintain an Implementation Guidebook to improve awareness and consistency of related planning and execution. Support the AAE in reviewing the Cyber Acquisition Discipline Implementation Assessment during decision reviews for all Acquisition Category 1 and 2 programs, as well as MDAs/DAs for other systems as requested. Lead the development of cyberspace contract language requirements and templates, and publish in policy for the acquisition workforce.</p> <p>IAW AR-70-75, represent HQDA on boards and committees concerning materiel survivability matters related to cyberspace resilience. Serve as HQDA lead responsible for tracking and monitoring cyberspace remediation (find-fix-verify) as recommended by the Department of Defense Office of Inspector General (DODIG). Provide engineering governance for emerging cyberspace related capabilities and advances to include artificial intelligence, cloud-computing governance, Development, Security and Operations (DevSecOps), supply chain risk management, zero trust, etc. Ensure ASA(ALT)'s cyber-related roadmaps align with Army/DoD CIO regarding data, cloud migration, data centers, etc. Analyze requirements and opportunities as well as publish ASA(ALT) internal Technical Bulletins and other information papers to inform PMs. Coordinate with capability developers to establish systems engineering criteria in order to ensure new requirements documents address cyber resilience. Coordinate with Army Materiel Command to establish policy and processes that shall maintain cybersecurity and survivability for programs</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>transitioning to sustainment. Lead, in coordination with HQDA G-3/5/7, the establishment of the materiel component of the cyber readiness framework as an interface between systems and operations, which requires authoritative and accessible data from the acquisition and sustainment communities to reduce operational risk.</p> <p>This Project will serve as the ASA(ALT) lead for System Security Engineering (SSE). Army requires a professional and effective SSE workforce, which is separate from information system security management (ISSM) or network defense functions. SSE contributes to a broad-based, holistic security perspective and focus within the systems engineering (SE) discipline. SSE ensures stakeholder protection needs and security concerns are properly identified and addressed in all engineering stages of the system life cycle. Coordinate with OUSD to define the DoD body of knowledge for SSE. Ensure duties align with prescribed training, experience, and certification. Coordinate appointment and implementation and facilitate collaboration across PEOs through meetings and publications.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Reallocation of available labor category resources.</p>				
<p>Title: Facilities and IT Support</p> <p>Description: Provides funding for infrastructure/facilities and IT support.</p> <p>FY 2023 Plans: Provides funding for infrastructure and facilities, including the costs for purchasing and leasing hardware, software, computers, communications equipment and services.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Facility/IT Support Operating Costs moved to FY24 OCSE OMA line APE 432612 per Army Directive.</p>		0.233	0.423	-
<p>Title: Army System of Systems Engineering and Analysis</p> <p>Description: Provided coordinated SoS engineering, architectures, and analysis products for integrating new technologies with existing capabilities to stakeholders (e.g. materiel developers, TRADOC Capability Manager (TCM), Army Capabilities Integration Center (ARCIC), etc.) to deliver integrated solutions to Army formations.</p>		14.844	-	-
<p>Title: Cyber</p> <p>Description: This project funds cyber support to PEOs/PMs to include cybersecurity support to risk management framework, cyber engineering and architecture development, industry cybersecurity engagement, and cyber program oversight and governance, which ensures the secure, affordable, and effective delivery of Army materiel solutions that address critical Army modernization objectives, as well as the delivery of agile and advanced cyber solutions to equip the Army's offensive and</p>		3.733	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
defensive forces in the cyberspace domain. These funds support synchronization, analysis and integration of Cyber functions and products.				
<p>Title: Data</p> <p>Description: OCSE represents and coordinates the ASA(ALT) community's data activities across the Army Modernization Enterprise (AME). OCSE supports the ASA(ALT) Data Steward and performs the duties as the Functional Data Manager in Army Data Governance Forums including the Army Data Board (ADB), Army Analytics Board (AAB) and Joint All Domain Command and Control (JADC2) Working Groups. In addition to representing the ASA(ALT) in Army data forums the OCSE is actively improving the ASA(ALT) data environment through the establishment of governance forums, standards, policies and implementation guides in order to facilitate rapid and relevant acquisition decisions. Continuous maturation of the Acquisition Data Domain (ADD) ensures that technical data is available for successful integration and support of product and program life-cycle requirements, additive and advanced manufacturing, digital engineering, product/technical data, intellectual property management, modular open systems approach and other AME initiatives. OCSE has developed a roadmap for the digital transformation of the ASA(ALT) and has begun executing against that plan through the execution of data analytic use cases which provide minimum viable products (MVP) and delivers incremental value to the AME. OCSE will continue to deliver MVPs for data analytic use cases and as appropriate scale these MVPs across the enterprise in order to transform the ASA(ALT)'s business processes in support of its digital and data centric transformation.</p> <p>OCSE hosts the Product Data and Engineering Working Group (PEWG) which provides a collaboration forum focused on product and technical data with representatives from the ASA(ALT), Army Futures Command (AFC), and Army Materiel Command (AMC). This group includes a collection of product and technical data SMEs that collaborate and synchronize responses to questions related to the technical and product data needs that support modernization requirements across these organizations. PEWG members collaborate to work through details of strategic Army initiatives, and facilitate the transition of technical data throughout the product development lifecycle.</p>		2.166	-	-
<p>Title: SBIR/STTR Transfer</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC 638.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638.</p>		-	0.770	-
Accomplishments/Planned Programs Subtotals		20.976	21.086	20.828

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>

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

N/A

Remarks

D. Acquisition Strategy

This project does not have any requirement for direct procurement of hardware or software.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : None	0.339	-		0.770		-		-		-	Continuing	Continuing	-
Subtotal			0.339	-		0.770		-		-		-	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Army System of System Engineering and Analysis Core Labor	Allot	Office of the Chief Systems Engineer (OCSE) : Various	21.203	6.454	Nov 2019	-		-		-		-	Continuing	Continuing	-
Army System of System Engineering and Analysis Matrix Labor	MIPR	Various : Various	4.988	1.400	Nov 2019	-		-		-		-	Continuing	Continuing	-
Army System of System Engineering and Analysis SETA Labor	C/CPFF	TBD : Various	13.154	4.354	Nov 2019	-		-		-		-	Continuing	Continuing	-
Army System of System Engineering and Analysis FFRDC Labor	FFRDC	MITRE : Various	12.582	2.475	Nov 2019	-		-		-		-	Continuing	Continuing	-
Common Operating Environment (COE) Core Labor	Allot	SoSE&I : Various	1.603	0.161	Nov 2019	-		-		-		-	Continuing	Continuing	-
Cyber Core Labor	Allot	Office of the Chief Systems Engineer (OCSE) : Various	6.499	1.772	Nov 2019	-		-		-		-	Continuing	Continuing	-
Cyber Matrix Labor	MIPR	Various : Various	1.645	0.584	Nov 2019	-		-		-		-	Continuing	Continuing	-
Cyber SETA Labor	C/CPFF	TBD : Various	1.203	0.727	Nov 2019	-		-		-		-	Continuing	Continuing	-
Cyber FFRDC Labor	FFRDC	MITRE : Various	2.777	0.650	Nov 2019	-		-		-		-	Continuing	Continuing	-
Data Core Labor	Allot	Office of the Chief Systems Engineer (OCSE) : Various	-	0.801	Nov 2019	-		-		-		-	Continuing	Continuing	-
Data Matrix Labor	MIPR	Various : Various	-	0.400	Nov 2019	-		-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Data SETA Labor	C/CPFF	TBD : Various	-	0.640	Nov 2019	-		-		-		-	Continuing	Continuing	-
Data FFRDC Labor	FFRDC	MITRE : Various	-	0.325	Nov 2019	-		-		-		-	Continuing	Continuing	-
Systems Engineering Governance Core Labor	TBD	Office of the Chief Systems Engineer (OCSE) : Various	-	-		1.905	Nov 2019	2.020	Oct 2022	-		2.020	Continuing	Continuing	-
Systems Engineering Governance Matrix Labor	TBD	Various : Various	-	-		0.822	Nov 2019	0.373	Oct 2022	-		0.373	Continuing	Continuing	-
Systems Engineering Governance SETA Labor	TBD	TBD : Various	-	-		2.159	Nov 2022	2.576	Dec 2023	-		2.576	Continuing	Continuing	-
Systems Engineering Governance FFRDC Labor	TBD	MITRE : Various	-	-		0.933	Nov 2019	1.139	Oct 2022	-		1.139	Continuing	Continuing	-
Engineering Support and Services Core Labor	TBD	Office of the Chief Systems Engineer (OCSE) : Various	-	-		2.177	Nov 2019	2.305	Oct 2022	-		2.305	Continuing	Continuing	-
Engineering Support and Services Matrix Labor	TBD	Various : Various	-	-		0.940	Nov 2019	0.426	Oct 2022	-		0.426	Continuing	Continuing	-
Engineering Support and Services SETA Labor	TBD	TBD : Various	-	-		2.467	Nov 2022	2.938	Dec 2023	-		2.938	Continuing	Continuing	-
Engineering Support and Services FFRDC Labor	TBD	MITRE : Various	-	-		0.680	Nov 2019	0.828	Oct 2022	-		0.828	Continuing	Continuing	-
Strategic Engineering Guidance Core Labor	TBD	Office of the Chief Systems Engineer (OCSE) : Various	-	-		2.801	Nov 2019	2.968	Oct 2022	-		2.968	Continuing	Continuing	-
Strategic Engineering Guidance Matrix Labor	TBD	Various : Various	-	-		1.208	Nov 2019	0.549	Oct 2022	-		0.549	Continuing	Continuing	-
Strategic Engineering Guidance SETA Labor	TBD	TBD : Various	-	-		3.037	Nov 2022	3.774	Dec 2023	-		3.774	Continuing	Continuing	-
Strategic Engineering Guidance FFRDC Labor	TBD	MITRE : Various	-	-		0.764	Nov 2019	0.932	Oct 2022	-		0.932	Continuing	Continuing	-
Subtotal			65.654	20.743		19.893		20.828		-		20.828	Continuing	Continuing	N/A

Remarks
Note: 1

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Activities performed at Aberdeen Proving Ground (MD), Taylor Bldg, (Crystal City, VA), Pentagon, (Washington DC), TACOM (Warren, MI)															

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Facilities and IT Support	Option/ Various	Various: Note: 1 : National Capital Region	4.702	0.233	Nov 2019	0.423	Nov 2019	-		-		-	0.423	5.781	-
Subtotal			4.702	0.233		0.423		-		-		-	0.423	5.781	N/A

Remarks
Note:1
- Program Activities performed at Aberdeen Proving Ground (MD), Taylor Bldg, (Crystal City, VA), Pentagon, (Washington DC), TACOM (Warren, MI)

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	70.695	20.976	21.086	20.828	-	20.828	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DASA(DES) Mission Support																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604798A / <i>Brigade Analysis, Integration and Evaluation</i>	Project (Number/Name) DY7 / <i>Army Systems Engineering, Architecture & Analysis</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DASA(DES) Mission Support	1	2024	4	2028

Note

Capability Set (CS)

Common Operating Environment (COE):
 Army Interoperability Certification (AIC), Command Post Computing Environment (CPCE), Critical Design Review (CDR), Mounted Computing Environment (MCE),
 Network Integration Evaluation (NIE), Operational Test (OT)

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	287.787	286.378	243.851	-	243.851	144.098	84.487	77.266	77.427	0.000	1,201.294
613: <i>MORTAR SYSTEMS</i>	-	-	1.036	-	-	-	-	-	-	-	0.000	1.036
BQ3: <i>155mm Artillery Propulsion XM654</i>	-	28.715	23.485	16.497	-	16.497	-	-	-	-	0.000	68.697
BY1: <i>Next Generation Combat Vehicle Ammunition</i>	-	32.631	33.778	34.028	-	34.028	6.419	-	-	-	0.000	106.856
CE3: <i>Precision Munition (Sniper)</i>	-	8.936	5.182	-	-	-	-	-	-	-	0.000	14.118
DC9: <i>30mm MMPA M-SHORAD INC 3</i>	-	-	-	18.936	-	18.936	11.280	7.831	5.118	4.475	0.000	47.640
EC4: <i>Non-Standard Simulator Munitions</i>	-	2.038	2.182	2.188	-	2.188	0.410	0.412	0.416	0.420	0.000	8.066
EL9: <i>Ammunitions Logistics Prototyping</i>	-	0.671	1.022	1.052	-	1.052	1.072	1.074	1.085	1.097	0.000	7.073
EP2: <i>Shoulder-Launched Munitions</i>	-	2.021	0.600	2.551	-	2.551	-	-	-	-	0.000	5.172
EP3: <i>Reduced Range Ammunition - Small Caliber</i>	-	8.639	5.214	-	-	-	-	-	-	-	0.000	13.853
EP4: <i>One-Way Luminescence for Small Caliber Ammo</i>	-	4.717	7.565	3.093	-	3.093	-	-	-	-	0.000	15.375
EP7: <i>Aviation Airborne Expendable Countermeasures</i>	-	7.251	6.363	3.194	-	3.194	3.208	0.932	-	-	0.000	20.948
EU4: <i>40mm HV Improved High Explosive Dual Purpose</i>	-	4.618	2.073	-	-	-	-	-	-	-	0.000	6.691
EU6: <i>155mm HE Rocket Assist Project Extended Range</i>	-	26.646	14.382	28.772	-	28.772	15.600	2.650	-	-	0.000	88.050
EU8: <i>Improved Multi-Option Fuze</i>	-	4.395	-	-	-	-	-	-	-	-	0.000	4.395

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
<i>2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>					<i>PE 0604802A / Weapons and Munitions - Eng Dev</i>							
<i>EW1: 40mm Low Velocity Ammunition</i>	-	3.508	2.045	0.082	-	0.082	0.110	-	-	-	0.000	5.745
<i>FA6: 30mm Lethality</i>	-	8.613	8.653	3.014	-	3.014	-	-	-	-	0.000	20.280
<i>FJ4: Cannon-Delivered Area Effects Munitions (C-DAEM)</i>	-	82.855	92.402	85.071	-	85.071	68.986	54.606	55.187	55.803	0.000	494.910
<i>FL4: Small Caliber Ammo for Next Gen Squad Weapons</i>	-	27.336	25.558	11.809	-	11.809	11.931	11.945	12.073	12.208	0.000	112.860
<i>S36: Precision Guidance Kit</i>	-	34.197	54.838	33.564	-	33.564	25.082	5.037	3.387	3.424	0.000	159.529

Note

30mm MMPA M-SHORAD INC 3 is a new start within the Weapons and Munitions - Eng Dev program in FY 2024

A. Mission Description and Budget Item Justification

Multiple Projects within this funding line are key enablers of the Army's Long Range Precision Fires Modernization Priorities: 155mm Artillery Propulsion (Project BQ3), 155mm High Explosive Rocket Assisted Projectile (Project EU6), Extended Range and Precision Guidance Kit (Project S36).

Project 613, Mortar Systems: The Mortar System and Fire Control Modernization Project funds engineering development and demonstration of new technologies that will support modernized mortar weapon and mortar fire control systems. This includes capabilities that provide commonality between current and future weapon and fire control systems to help mitigate technology shortfalls and critical capability gaps. Future mortar systems that address these gaps include remote mortar turrets for mounted mortar systems, future cannon design study and improvements, round counter design effort, high-pressure capable cannons/components, tactical vehicle integration and composite/lightweight components for mounted/dismounted systems as well any future mortar modernization efforts to improve system capability and performance to meet future capability gaps. Mortar Fire Control Systems capabilities include lightweight inertial measurement and navigation (IMU/INU) units for weapon pointing, simplified Ethernet/wireless-based digital communications interfaces, development of updated fire control software to enable commonality and modularity (plug and play capability), integration with existing/future platform interfaces to meet Modular Open Architecture Standard (MOSA), and support for commercial off-the-shelf (COTS)/modified commercial off-the-shelf (MCOTS) fire control components. This Project does not have a Fiscal Year (FY) 2024 budget request.

Project BQ3, Supercharge is a stand-alone top-zone 155 millimeter (mm) propelling charge required to achieve maximum range requirements from the Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH). Supercharge will achieve lethality overmatch out to 70 kilometers (km) with developmental extended range projectiles and will potentially increase range with compatible legacy projectiles up to thirty percent. Supercharge is composed of an earlier bag variant and later combustible cartridge case, integral metal stub case, electrically initiated primer, and advanced artillery propellant. This Project supports the accelerated Urgent Materiel Release (UMR) Supercharge (bag configuration) qualification required for Safety Release for First Unit Issued (FUI) of ERCA to perform Operational Assessment, and also supports the development of the Full Materiel Release (FMR) Supercharge that will address high technology and integration risks unique to achieving extended range to include improved design opportunities for pressure temperature curve, cannon tube wear and ensure fielding robustness. FY 2024 funding will continue to support efforts to improve propellant for longer cannon life, conduct risk reduction activities, as well as FMR Supercharge component development and testing. FY

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army Date: March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>
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2024 funding will also support the initiation of Extended Range Cannon Artillery System of Systems (ERCA SoS) integration activities. These efforts directly support the Army's Long Range Precision Fires Cross Functional Team (LRPF CFT) priorities in support of the National Defense Strategy.

Project BY1, Next Generation Combat Vehicle Ammunition: A. Mission Description and Budget Item Justification 50x228 millimeter (mm) family of ammunition is a critical technology development in response to the Next Generation Combat Vehicle (NGCV) Abbreviated Capability Development Document for weapon qualification, platform integration, and fielding of the Optionally Manned Fighting Vehicle (OMFV) primary weapon system (XM913). This effort includes the development of three capabilities: The XM1202 Target Practice with Trace (TP-T); the XM1203 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T); and the XM1204 High Explosive Airburst with Trace (HEAB-T). The training cartridge will allow the Warfighter to train in a cost effective manner and the tactical cartridges will provide enhanced lethality at increased ranges when engaging personnel threats in the open, defilade, and under the cover of urban structures, Anti-Tank Guided Missiles (ATGM) teams, and current and projected future peer armored materiel threats. This effort is operating under Middle Tier Acquisition authority for rapid prototyping to qualify the three munitions in order to support the NGCV Cross Functional Team (CFT) timeline for First Unit Equipped (FUE). Fiscal Year (FY) 2024 funds support preparation activities for prototype fielding / materiel release on the XM1202 TP-T variant. In addition, FY 2024 funds supports conducting Developmental Test & Evaluation (DT&E), building tests assets for Live Fire Test & Evaluation (LFT&E) and preparing for prototype fielding on the XM1203 APFSDS-T variant. FY 2024 funds also supports building test assets and conducting DT&E on the XM1204 HEAB-T variant.

Project CE3, Precision Munition (Sniper): The Precision Munition (Sniper) project is a critical technology development in response to the Precision Munition Capabilities Development Documents (CDD) for the ammunition required to support the Precision Sniper Rifle (PSR) / sniper weapons systems. The objective is to transfer the latest lethality technology into the suite of ammunition used by snipers. The Precision Munition improvement is split into three capability areas: Anti-Materiel (AM), Improved Performance Round (IPR), and Subsonic. The AM and IPR capabilities will enhance lethal effects at greater distances. The Subsonic capability will increase soldier survivability at close range by providing a low-sound signature munition that is undetectable to the enemy. There is no Fiscal Year 2024 budget request.

Project DC9, 30mm MMPA M-SHORAD INC 3: The 30mm Multi-Mode Proximity Airburst (MMPA) Maneuver Short Range Air Defense Increment 3 (M-SHORAD INC 3) project funds the development of the XM1223 30x113mm MMPA munition. The objective is to enhance the operational effectiveness of the M-SHORAD Inc 3 platform, and any other Joint Force Fighting Vehicle that is equipped with a 30x113mm weapon system. The programmable fuze modes in the munition include proximity airburst to defeat personnel in the open and small Unmanned Aerial System (UAS) targets, proximity delay to defeat personnel in defilade, gated proximity airburst for cluttered environments, mechanical point detonate to defeat light materiel targets, and self destruct to minimize collateral damage. The XM1223 will allow the M-SHORAD Inc 3 to conduct counter-UAS missions while retaining the ability to quickly transition to ground targets. Fiscal Year (FY) 2024 funding supports XM1223 Engineering Manufacturing and Development (EMD) contract awards, development, Preliminary Design Review (PDR), and building prototypes for Design Engineering Testing (DET).

Project EC4, Non-Standard Simulator Munitions will standardize various pyrotechnics that simulate battlefield effects. The Army's Combat Training Centers (CTCs) are currently using non-standard munitions to replicate both conventional and asymmetric warfare battlefield effects. These modified commercial-off-the-shelf products have not been type classified or material released and are not safe or sustainable for use by Soldiers. This effort will develop and demonstrate various pyrotechnics/ simulators to replicate both conventional and asymmetric warfare battlefield affects such as: Black smoke signature (burning vehicles, buildings, and equipment); Yellow smoke signature (chemical, biological or nuclear effects); Mini Blast to simulate hostile fire and small Improvised Explosive Devices (IEDs) during mounted operations

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army		Date: March 2023
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<p>in urban terrain; Micro pyrotechnics to simulate indoor hostile fire and IED effects that are capable of being integrated into existing facilities; Rocket Propelled Grenade (RPG) simulators to replicate the flight of a Rocket Propelled Grenade; Macro Pyro to simulate hostile fire, booby trap and IED Simulations indoor and outdoors; High Order Blast Effect (HiOBE) used to replicate a Vehicle Borne Improvised Explosive Device (VBIED), building explosions, and other significant explosive events; Artillery airburst simulator to replicate indirect fire; Antitank Guided Missile and Rocket (AGMR) simulator to replicate surface to air missile or shoulder launched rocket; Tracer Fire-back simulator to replicate enemy small arms fire and anti-aircraft fire. Standardization will reduce training costs, eliminate redundancies between systems and mitigate environmental concerns and safety risks associated with realistic scenario based training.</p> <p>Project EL9, Ammunition Logistics Prototyping: This Project supports the future force by improving the distribution, management, reliability and survivability of ammunition through the advanced development, integration, and demonstration of logistics system enablers. These enablers will improve the efficiency and effectiveness of ammunition operations, to include retrograde, while reducing the logistics footprint on the battlefield. Technology areas addressed include handling, distribution, and management (strategic and tactical), prognostics, diagnostics, and asset visibility, explosives safety, and adaptive and environmentally friendly packaging and palletization. The efficient deployment and sustainment of reliable ammunition is vital to success on the battlefield. This project enhances the operational effectiveness of the ammunition logistics system to ensure the distribution of reliable ammunition to the warfighter. Fiscal Year (FY) 2023 funding will be focused on integrating commercial off the shelf and/or relatively mature technologies into ammunition resupply enablers required by the Long Range Precision Fire (LRPF) Cross Functional Team (CFT). They will be focused on ensuring that a low risk resupply process solution exists to support the success of the Extended Range Canon Artillery (ERCA).</p> <p>Project EP2, Shoulder-Launched Munitions: The Individual Assault Munition (IAM) system consists of the tactical XM919 and training devices including the XM922 sub-caliber trainer. The XM919 IAM will be a lightweight Shoulder Launched Munition (SLM) capability for combat units at the individual Soldier level. The IAM training devices including the XM922 sub-caliber trainer provide training capability that will increase the Soldier's proficiency and integration of the XM919 tactical system into combat operations. As the next generation SLM, the solution will fit within the Soldier Lethality Modernization Priority, by reducing Soldier load, while providing tactical innovation capable of extending overmatch against near-peer adversaries in a joint, multi-domain, high-intensity conflict. The tactical XM919 IAM will allow Soldiers to conduct Urban Operations and will allow Soldiers to defeat adversaries protected by field expedient structures and light armored vehicles while providing behind the wall lethality effects. This solution will be effective day or night with the ability to safely engage targets from within enclosures, increasing Soldier survivability. This solution will combine the capabilities of the existing Bunker Defeat Munition (BDM) and the AT4 Confined Space - Reduced Sensitivity (AT4CS-RS), which will reduce the logistics burden of having to maintain and train multiple systems. The Individual Assault Munition Capabilities Development Document (CDD) was approved on 11 March 2016.</p> <p>Project EP3, Reduced Range Ammunition - Small Caliber: The small caliber Reduced Range Ammunition (RRA) Project is a critical technology development in response to the 7.62 millimeter (mm) and .50 caliber Capabilities Development Documents (CDD). The overall objective of RRA is to provide training ammunition suitable for use on military installations with Surface Danger Zone (SDZ) restrictions. The relatively long maximum range of the 7.62mm and .50 caliber service ammunition poses challenges on training ranges in range restricted areas. RRA will mitigate a training gap on installations by providing a materiel solution that meets training needs while shortening and condensing the SDZ. This will allow soldiers to train with 7.62mm and .50 caliber weapons on restricted ranges. The RRA cartridge design will be compatible with all Army 7.62mm and .50 caliber weapons, but specifically optimized to work in the M240 and M2 Machine Guns. There is no Fiscal Year (FY) 2024 request.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	
<p>Project EP4, One-Way Luminescence for Small Caliber Ammo: The One Way Luminescence (OWL) project is a critical technology development in response to the 7.62 millimeter (mm) and 5.56mm Families of Ammunition Capabilities Development Documents (CDD) and .50 Caliber Munitions CDD. Current small caliber ammunition tracer rounds are a pyrotechnic tracer mix which allows enemy forces to see the trace round and track its trajectory back to the shooter. The OWL projects objective is to develop and field a full tracer round, replace the current pyrotechnic cartridges with trace cartridges that are only visible to the shooter and soldiers in close proximity, increasing soldier survivability, and increasing lethality by incorporating Enhanced Performance Round (EPR) technology into the new tracer ammunition. 7.62mm and 5.56mm are the immediate focus; later followed by .50 Caliber cartridges and Next Generation Squad Weapons (NGSW) ammunition. Fiscal Year (FY) 2024 funding supports continuing Engineering and Manufacturing Development (EMD) and performing preparation activities for Materiel Release (MR) for the 7.62mm variant. FY 2024 funding will also support EMD efforts, performing Production Qualification Testing (PQT), and a Soldier Touch Point (STP) / User Evaluation for the 5.56mm variant.</p> <p>Project EP7, Aviation Airborne Expendable Countermeasures (AAECM) will support Integrated System Design (ISD), System Capability (SC) and Manufacturing Process Demonstrations (MPD) on expendable countermeasure flares and decoys to include the XM215 Infrared (IR) countermeasure Flare and XM20 Radio Frequency (RF) expendables. These expendable countermeasures systems are an essential part of survivability equipment for Army aircraft. Army Research Development Technology & Evaluation (RDT&E) efforts are coordinated with Program Executive Office (PEO) Aviation to address the AAECM capability, a critical enabler for enduring aircraft and the Future Vertical Lift (FVL) - Aircraft Survivability Equipment (ASE) Cross Functional Team (CFT) within Army's Top modernization priorities.</p> <p>These advanced decoys will address deficiencies in Army aircraft protection and the safety of its aircrews against advanced Man-Portable Air Defense Systems (MANPADS) and Surface-to-Air Missiles (SAM) systems. The project will also support ISD, SC and MPD on new expendable countermeasure munitions that will protect Army aircraft from advanced and proliferated current guided missile threats. Activities include modeling and simulation, flight testing, qualification testing, environmental considerations, safety enhancements, manufacturing enhancements, qualification of other service and foreign munitions that could meet current requirements, product improvements, insertion of new technologies to increase performance, and enhancement of current flare solutions for new and existing aircraft. Systems include impulse cartridges and aircraft expendables (to include RF expendables).</p> <p>Project EU4, 40 millimeter (mm) High Velocity (HV) High Explosive Dual Purpose - Air burst (HEDP-AB) is a new capability identified as a Warfighter counter-defilade requirement in the 40mm High Velocity Improved High Explosive Dual Purpose Cartridge Capability Development Document (CDD) and will provide the Mk19 Mod 3 Grenade Machine Gun (GMG) an airburst capable cartridge with the ability of achieving required lethal effects against enemy targets in the open and in defilade while maintaining the capability to defeat unarmored and lightly armored vehicles. XM1176 HEDP-AB cartridges are manufactured by de-fuzing legacy M430A1 cartridges and installing a new airburst capable fuze onto the M430A1 warhead. In FY 2024 there is no funding request.</p> <p>Project EU6, The 155 millimeter (mm) High Explosive (HE) Rocket Assisted Projectile, Extended Range Project supports projectile development efforts to achieve ranges of 40km in current 39 caliber artillery weapon systems and longer ranges in future 58 caliber Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH) to achieve the Army's requirement of extended range lethality. The Project is executing an evolutionary approach to meet the objectives of extended range and precision. The XM1113 will replace the obsolete M549A1 in 39 caliber weapon systems and increase range from 30km to 40km. The XM1210 will be optimized for 58</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	
<p>caliber guns and allow commanders to provide accurate cannon artillery fires at ranges of 70km and greater with ERCA. The XM1113 will not have a FY 2024 budget request. FY 2024 funding will continue to support XM1210 development and qualification activities for the Full Materiel Release (FMR) configuration.</p> <p>Project EU7, Enhanced Lethality Cannon Munitions: The Enhanced Lethality Cannon Munitions (ELCM) Project will evaluate, develop, and qualify new lethality technologies for 155mm cannon artillery munitions and evaluate their effectiveness in mitigating evolving and derived capability gaps, and support transition to production. The ELCM Project supports testing and assessment of the Israeli Military Industries (IMI) Systems M999 advanced anti-personnel munition in support the Army Directed Requirement for a Rapid Bridging Solution for the replacement of the 155mm Dual Purpose Improved Conventional Munition (DPICM). This Project also accelerates the qualification of the 155mm XM1128 High Explosive Projectile, which will replace the M795 Critical Munition once qualified. Engineering efforts are ongoing and will support the evaluation of the XM1128 test data to determine that the Program is safe, suitable and operationally effective, as well as the gathering of all statutory and regulatory requirements in support of a Milestone C in FY 2021. This Project does not have a Fiscal Year (FY) 2024 budget request.</p> <p>Project EU8, Improved Multi-Option Fuze: The Improved Multi-Option Fuze Project is a technology refresh and modernization effort that provides an incremental capability with technology advancements and performance improvements on the current non-precision artillery and mortar ammunition proximity multi-option fuze that will increase robustness to electronic countermeasures (ECM), eliminates the susceptibility of reverse engineering (RE), incorporates power source advancements, improves delay mode reliability, and integrates safe & arm improvements. This Project will develop and qualify safe, affordable, reliable, Proximity Height of Burst fuzing solutions with robust Defense Exportability Features (DEF) for non-precision conventional cannon artillery and mortar munitions that are resistant to adversary exploitation via ECM and RE threats. This Project does not have a Fiscal Year (FY) 2024 budget request.</p> <p>Project EW1, The 40 millimeter (mm) Low Velocity High Explosive Air Burst (HEAB) is a new capability identified as a Warfighter counter-defilade requirement in the Capability Development Document (CDD), 40mm Low Velocity (LV) Family of Ammunition Annex. The HEAB tactical cartridge allows the Warfighter to engage targets at increased effective ranges using the 40mm M320 Grenade Launcher. The HEAB cartridge provides the grenadier with a higher probability of achieving a first shot kill against enemy personnel, coupled with the ability to defeat personnel targets in defilade positions. When deployed against point and area targets, the cartridge inflicts incapacitating effects against personnel beyond those offered by the current M433 High Explosive Dual Purpose (HEDP) cartridge. The cartridge provides lethal effects against targets with improved accuracy and greater standoff ranges resulting in increased soldier survivability. FY 2024 funds support test reports and close-out activities following Developmental Test and Evaluation (DT&E) and Soldier Touch Point (STP).</p> <p>Project FA6, 30mm Lethality: The 30 millimeter (mm) Lethality project funds the development of a suite of 30x173mm caliber cartridges, which includes a XM1182 High Explosive Airburst with Trace (HEAB-T) cartridge for increased anti-personnel effects, XM1170 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) cartridge for anti-materiel, and ballistically matched training cartridges; XM1173 Target Practice with Trace (TP-T) cartridge and XM1172 Target Practice Discarding Sabot with Trace (TPDS-T) cartridge. The objective is to enhance the operational effectiveness and lethality of the Stryker Infantry Carrier Vehicle (ICV), Next Generation Combat Vehicle (NGCV), and any Army Fighting Vehicles that are equipped with a 30x173mm weapon system. The tactical APFSDS-T cartridge will provide an organic direct fire capability to support infantry at a greater range and will improve lethality when engaging light-to-medium armored vehicles. The HEAB-T cartridge will provide the Warfighter with increased lethality against troops in the open, counter defilade, Anti-Tank Guided Missile (ATGM) teams, and troops behind urban structures. The training cartridges will be ballistically matched to the tactical cartridges, allowing the Warfighter to train in a cost effective manner. This project is a follow-on of the earlier efforts in support of the United States Army Europe (USAREUR) Operational Needs Statement (ONS) #15-20590 Stryker Increased Lethality for</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>
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the 2nd Cavalry Regiment (2CR). Fiscal Year (FY) 2024 funding will support execution of Live Fire Test & Evaluation (LFT&E) and Initial Operational Test & Evaluation (IOT&E).

Project FJ4, Cannon-Delivered Area Effects Munitions (C-DAEM): The Cannon-Delivered Area Effects Munitions (C-DAEM) Project will provide United States (U.S.) ground forces with the capability to engage area personnel through armored targets, while denying threat forces full operational freedom within the targeted area. An Analysis of Alternatives (AoA) was completed in January 2018 to inform Army acquisition and investment decisions regarding replacement of the current stockpile of 155 millimeter (mm) Dual Purpose Improved Conventional Munitions (DPICM) with Department of Defense (DoD) policy compliant munitions and address anti-armor and extended range capability requirements. The Army validated two materiel solutions for C-DAEM to be pursued in parallel to support the Army's modernization priorities; C-DAEM Armor and C-DAEM DPICM Replacement. C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks. Fiscal Year (FY) 2024 funding will continue to support C-DAEM Armor development and testing activities as well as engineering efforts required to integrate the Military-Code (M-Code) Global Positioning System (GPS) Receiver into the selected C-DAEM Armor objective materiel solution(s).

Project FL4, Small Caliber Ammo for Next Gen Squad Weapons: The Small Caliber Ammo for Next Gen Squad Weapons project is a critical technology development in response to the Soldier Lethality Cross Functional Team (SL CFT) Initial Capability Document (ICD) for the ammunition required to support the rapid prototyping, development, and fielding of the Next Generation Squad Weapons (NGSW) under the Middle Tier of Acquisition (MTA) authority for rapid prototyping/rapid fielding. The objective is to develop and Full Materiel Release (FMR) the new ammunition in parallel with the NGSW rifle and automatic rifle. The NGSW ammunition is split into multiple ammunition variants, the General Purpose (GP), the Special Purpose (SP), the Reduced Range Ammunition (RRA), Tracer Ammunition, Blank Ammunition, the Close Combat Mission Capability Kit (CCMCK) training ammunition, Drill Dummy Inert (DDI) cartridge, and High-Pressure Test (HPT) cartridge. Fiscal Year (FY) 2024 funding supports Urgent Materiel Release (UMR) preparation efforts for the GP, SP, RRA, Blank, DDI, and HPT variants. FY 2024 funds also support Live-Fire Testing and Evaluation (LFT&E) on the GP and Tracer variants. FY 2024 funds support Soldier Touch Points (STP) / User Evaluations and performing Production Qualification Testing (PQT) on the SP, RRA, and Tracer variants. Also, FY 2024 funds support design optimization efforts on the GP, Blank, DDI, and HPT variants. And, FY 2024 supports continuing the refinement, development, and maturation of the CCMCK, Blank, DDI, and HPT cartridges.

Project S36, Precision Guidance Kit: The Long Range-Precision Guidance Kit (LR-PGK) development effort will qualify state of the art technologies for a course correcting fuze that provides precision accuracy at extended ranges for current and future 155 millimeter (mm) High Explosive (HE) projectiles by eliminating a portion of the inherent errors associated with ballistic firing solutions, which effectively reduces the number of projectiles required to execute fire missions.??LR-PGK will support projectile operation in Global Positioning System (GPS) degraded environments and compatibility with Army Modernization objectives under the Long Range Precision Fires Cross Functional Team's (LRPF CFT) new long range cannon, Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH).??The ERCA and its new long range projectiles require the LR-PGK to meet lethality requirements.??Fiscal Year (FY) 2024 funding will continue to support the fabrication of LR-PGK hardware, safety and development testing, and accomplishes a Preliminary Design Review (PDR).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	297.086	263.778	194.941	-	194.941
Current President's Budget	287.787	286.378	243.851	-	243.851
Total Adjustments	-9.299	22.600	48.910	-	48.910
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	25.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-9.299	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	48.910	-	48.910
• Ukraine Supplemental	-	0.600	-	-	-

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

Project: S36: *Precision Guidance Kit*

Congressional Add: *Anti-Jam Precision Guidance Kit*

Congressional Add Subtotals for Project: S36

Congressional Add Totals for all Projects

	FY 2022	FY 2023
	-	25.000
Congressional Add Subtotals for Project: S36	-	25.000
Congressional Add Totals for all Projects	-	25.000

Change Summary Explanation

The change for this portfolio is made up of both increases and decreases for the following programs:

Increases are: \$28.285M Precision Guidance Kit, Increase in funding in FY 2024 is to resource additional LR-PGK development and qualification activities in support of the Army's modernization priorities. \$18.8M New Start for 30mm MMPA M-SHORAD INC 3 Funding that was realigned from the platform from ROC 5L0 to us (JPEO/1B0). \$3.180M for Aviation Airborne Expendable Countermeasures to support countermeasure pattern development. \$2.540M for XM919 Shoulder Launched Munitions to complete the operational assessment. \$1.207M 155mm Artillery Propulsion to support efforts to FMR Supercharge component development, improve propellant for longer cannon life, conduct risk reduction activities and testing as well as support the initiation of Extended Range Cannon Artillery System of Systems (ERCA SoS) integration activities.

Decreases are: -\$869K for Next Generation Combat Vehicle Ammunition Programs continue Developmental Test & Evaluation efforts and prepare for Low Rate Initial Production (LRIP), -\$735K for 155mm HE Rocket Assist Project Extended Range, -\$2.075M for 40MM Low Velocity Ammunition Decrease in funding due to the program's transition from Low Rate Initial Production (LRIP) to Full Rate Production in FY 2025, -\$77k for 30MM Lethality decreases due to completion of Milestone C and platform integration testing, -\$2.172M for Cannon-Delivered Area Effects Munitions (C-DAEM) Decrease in funding in FY 2024 due to decrease in contract costs associated with C-DAEM Armor development and GPS Receiver integration efforts., and -\$301K for Small Caliber Ammo for Next Gen Squad Weapons Decrease due to planned activities as the program shifts to FMR / production.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) 613 / MORTAR SYSTEMS			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
613: MORTAR SYSTEMS	-	-	1.036	-	-	-	-	-	-	-	0.000	1.036
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Mortar System and Fire Control Modernization Project funds engineering development and demonstration of new technologies that will support modernized mortar weapon and mortar fire control systems. This includes capabilities that provide commonality between current and future weapon and fire control systems to help mitigate technology shortfalls and critical capability gaps. Future mortar systems that address these gaps include remote mortar turrets for mounted mortar systems, future cannon design study and improvements, round counter design effort, high-pressure capable cannons/components, tactical vehicle integration and composite/lightweight components for mounted/dismounted systems as well any future mortar modernization efforts to improve system capability and performance to meet future capability gaps. Mortar Fire Control Systems capabilities include lightweight inertial measurement and navigation (IMU/INU) units for weapon pointing, simplified Ethernet/wireless-based digital communications interfaces, development of updated fire control software to enable commonality and modularity (plug and play capability), integration with existing/future platform interfaces to meet Modular Open Architecture Standard (MOSA), and support for commercial off-the-shelf (COTS)/modified commercial off-the-shelf (MCOTS) fire control components. This Project does not have a Fiscal Year (FY) 2024 budget request.

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

	FY 2022	FY 2023	FY 2024
Title: Mortar System & Fire Control Modernization	-	0.998	-
<p>Description: Mortar Systems and Fire Control Modernization initiatives include development and demonstration of new technologies to validate production potential for future mortar systems; including remote turrets and new weapon system components, modernized lightweight pointing device, updated Line Replaceable Units (LRUs), streamlined digital communications, and updated mortar fire control software.</p> <p>FY 2023 Plans: FY 2023 funding is supporting Infantry Brigade Mortar System (IBMS) development and demonstration of a man-portable system for the Infantry Brigade Combat Teams (IBCTs) with range and lethality equal to or greater than the 120mm battalion mortar weapon system. Efforts include studies of new steel barrel materiel, new barrel design and testing to address current and future IBCT capability gaps. The design will encompass studying of new barrel technology, market surveys of new steel materiel, and prototyping and testing of newly developed barrel design concepts. The objective for the new design will be to provide extended range, reduced pressure, seamless platform integration and reduction in weight. The lightweight design will allow soldiers to perform mounted and dismounted operation seamlessly.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) 613 / MORTAR SYSTEMS

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
There was a reduction in engineering development and demonstration of new technologies that will support modernized mortar weapon and mortar fire control systems. This includes capabilities that provide commonality between current and future weapon and fire control systems to help mitigate technology shortfalls and critical capability gaps			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	-	0.038	-
Description: Funding transferred in accordance with Title 15 USC §638			
FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	-	1.036	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• AD9300: Mortar Fire Control Systems Modifications	2.830	4.370	7.399	-	7.399	6.241	12.431	11.029	4.984	0.000	49.284
• K99200: Computer Ballistics: LHMBBC XM32	2.811	3.038	2.965	-	2.965	3.036	6.640	6.643	6.648	0.000	31.781
• K99300: Mortar Fire Control System	17.236	4.879	8.024	-	8.024	4.770	3.803	3.823	3.825	0.000	46.360
• G02200: Mortar Systems	33.240	8.516	8.013	-	8.013	8.549	14.563	14.218	14.229	Continuing	Continuing

Remarks
Other Procurement, Army (OPA) Funding / Procurement of Weapons & Tracked Combat Vehicle (W&TCV)

D. Acquisition Strategy
The Mortar System and Fire Control Modernization strategy will utilize Government Owned Government Operated (GOGO) Watervliet Arsenal (WVA) facility for cannon barrel prototyping, Combat Capabilities Development Command Armament Center (DEVCOM AC) for studies and competitively awarded Department of Defense Ordnance Technology Consortium (DOTC) and/or Cornerstone Other Transaction Agreement (OTA) initiatives for hardware and software development during Engineering Manufacturing Design Phase. A Federal Acquisition Regulation (FAR) contract will be awarded to complete full rate production.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) 613 / MORTAR SYSTEMS
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mortar System & Fire Control Modernization - Project Manager Office Support	Various	Office of the Project Manager (PM) Combat Ammunition Systems (CAS) : Picatinny Arsenal, NJ	0.212	-		0.025	Mar 2023	-		-		-	0.000	0.237	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.038	Mar 2023	-		-		-	0.000	0.038	-
Subtotal			0.212	-		0.063		-		-		-	0.000	0.275	N/A

Remarks
Program management includes travel and documentation support.

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mortar Stowage Lift System	MIPR	Other Transaction Agreement (OTA) : TBS	-	-		0.386	Mar 2023	-		-		-	0.000	0.386	-
Subtotal			-	-		0.386		-		-		-	0.000	0.386	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mortar System & Fire Control Modernization Engineering Support	MIPR	DEVCOM Armament Center : Picatinny Arsenal, NJ and Watervliet Arsenal, NY	0.497	-		0.587	Mar 2023	-		-		-	0.000	1.084	-
Subtotal			0.497	-		0.587		-		-		-	0.000	1.084	N/A



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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army									Date: March 2023		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev			Project (Number/Name) 613 / MORTAR SYSTEMS				
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	0.709	-	1.036	-	-	-	0.000	1.745	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) 613 / MORTAR SYSTEMS	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Mortar Stowage Lift System					<div style="background-color: #0000ff; color: white; padding: 2px; text-align: center;">EMD Preliminary & Detailed Design</div> <div style="text-align: center; margin-top: 10px;">  SRR </div> <div style="text-align: center; margin-top: 10px;">  PDR </div>																							
Engineering & Manufacturing Development (EMD)																												
System Requirement Review (SRR)																												
Preliminary Design Review (PDR)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) 613 / <i>MORTAR SYSTEMS</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Mortar System Round Counter	1	2021	1	2021
Engineering & Manufacturing Development (EMD)	1	2020	4	2021
LRU Software Development	1	2020	4	2021
Mortar System Round Counter- System Architecture Development (Sys Eng Phase 1)	1	2020	1	2021
Preliminary Design Review (PDR)	1	2021	1	2021
EMD Detailed Design Testing (Sys Eng Phase 2)	2	2021	4	2021
Critical Design Review (CDR)	4	2021	4	2021
Mortar Stowage Lift System	1	2023	1	2023
Engineering & Manufacturing Development (EMD)'	1	2023	4	2023
System Requirement Review (SRR)	2	2023	2	2023
Preliminary Design Review (PDR)'	4	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BQ3: 155mm Artillery Propulsion XM654	-	28.715	23.485	16.497	-	16.497	-	-	-	-	0.000	68.697
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Supercharge is a stand-alone top-zone 155 millimeter (mm) propelling charge required to achieve maximum range requirements from the Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH). Supercharge will achieve lethality overmatch out to 70 kilometers (km) with developmental extended range projectiles and will potentially increase range with compatible legacy projectiles up to thirty percent. Supercharge is composed of an earlier bag variant and later combustible cartridge case, integral metal stub case, electrically initiated primer, and advanced artillery propellant. This Project supports the accelerated Urgent Materiel Release (UMR) Supercharge (bag configuration) qualification required for Safety Release for First Unit Issued (FUI) of ERCA to perform Operational Assessment, and also supports the development of the Full Materiel Release (FMR) Supercharge that will address high technology and integration risks unique to achieving extended range to include improved design opportunities for pressure temperature curve, cannon tube wear and ensure fielding robustness. FY 2024 funding will continue to support efforts to improve propellant for longer cannon life, conduct risk reduction activities, as well as FMR Supercharge component development and testing. FY 2024 funding will also support the initiation of Extended Range Cannon Artillery System of Systems (ERCA SoS) integration activities. These efforts directly support the Army's Long Range Precision Fires Cross Functional Team (LRPF CFT) priorities in support of the National Defense Strategy.

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

	FY 2022	FY 2023	FY 2024
Title: 155mm Artillery Propulsion Supercharge	28.715	22.627	16.497
Description: The top-zone propelling charge for XM907E2 Extended Range Cannon with Slide-block breech for use with Extended Range Cannon Artillery (ERCA) to gain range overmatch for 155mm artillery.			
FY 2023 Plans: FY 2023 funding will conclude safety qualification of the UMR Supercharge, improve propellant for longer cannon life, conduct risk reduction activities and continue component development and testing of the FMR Supercharge.			
FY 2024 Plans: FY 2024 funding will continue to support efforts to FMR Supercharge component development, improve propellant for longer cannon life, conduct testing as well as support the initiation of Extended Range Cannon Artillery System of Systems (ERCA SoS) integration activities. ERCA SoS includes Supercharge and Stub Charge Propulsion System, 155mm XM1210 HE Projectile, Course Correcting Precision Fuze (LR-PGK/PGK-ER) and EPIAFS Fuze Setter.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Decrease in FY 2024 funding due to completion of safety qualification of the UMR Supercharge in FY 2023.			
Title: SBIR/STTR Transfer	-	0.858	-
FY 2023 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	28.715	23.485	16.497

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• E99350: 155MM ARTILLERY SUPERCHARGE	0.010	7.802	16.469	-	16.469	28.604	43.894	62.178	62.178	0.000	221.135

Remarks
A Procurement of Ammunition, Army (PAA) budget line item, Standard Study Number (SSN) E99350, will resource procurement of the Supercharge to deliver Safety Release quantities for First Unit Issued (FUI) to support the Extended Range Cannon Artillery (ERCA) Operational Assessment (OA) as well as future Urgent Materiel Release (UMR) and Full Materiel Release (FMR) quantities.

D. Acquisition Strategy
The Supercharge Project consists of critical technology prototyping, testing, and demonstration of two variants: (1) the UMR Supercharge (2-piece Bag configuration) to support the acceleration of the Extended Range Cannon Artillery (ERCA) to achieve precision lethality at 70km and greater with follow-on UMR, and (2) the FMR Supercharge, which will address high technology and integration risks unique to achieving increased range.

The UMR Supercharge will utilize several competitively awarded Defense Ordnance Technology Consortium (DOTC) Other Transaction Agreement (OTA) Initiatives for the maturation and integration of components. These contracts will execute UMR Supercharge through qualification testing as well as transition to procurement of quantities required for Safety Release for First Unit Issued (FUI) of ERCA to perform Operational Assessment. Federal Acquisition Regulation (FAR) based production contract(s) will be awarded for UMR quantities.

The FMR Supercharge will also utilize several competitively awarded DOTC OTA Initiatives for design risk reduction of the various new and existing Supercharge components, system integration, developmental testing and qualification. Propulsion risk reduction activities will be applied to address UMR Supercharge temperature sensitivity, energy, tube wear, rough handling robustness and muzzle pressure/blast overpressure. FAR based production contract(s) will be awarded.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Office of the Project Manager (PM) Combat Ammunition Systems (CAS) : Picatinny Arsenal, NJ	-	0.300	Oct 2021	0.300	Oct 2022	0.300	Oct 2023	-		0.300	0.000	0.900	-
SBIR/STTR Transfer	Various	Various : N/A	-	-		0.858		-		-		-	0.000	0.858	-
Subtotal			-	0.300		1.158		0.300		-		0.300	0.000	1.758	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Combustible Case Components	MIPR	DoD Ordnance Technology Consortium (DOTC): Armtec : Coachella, CA	-	4.259	Nov 2021	3.000	Nov 2022	1.200	Nov 2023	-		1.200	0.000	8.459	-
Main Charge Propellants	MIPR	DoD Ordnance Technology Consortium (DOTC): General Dynamics Ordnance and Tactical Systems - Valleyfield : Salaberry-de-Valleyfield, Quebec, Canada	-	3.434	Oct 2021	1.368	Nov 2022	4.493	Nov 2023	-		4.493	0.000	9.295	-
Electric Primers	MIPR	Day & Zimmermann Lone Star LLC : Texarkana, TX	-	0.425	Apr 2022	0.225	Mar 2023	0.200	Mar 2024	-		0.200	0.000	0.850	-
Packaging	MIPR	DoD Ordnance Technology Consortium (DOTC):	-	0.522	Apr 2022	0.550	Mar 2023	0.250	Mar 2024	-		0.250	0.000	1.322	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Savit Corporation : Rockaway, NJ													
Main Load Assemble & Pack	MIPR	DoD Ordnance Technology Consortium (DOTC): General Dynamics Ordnance and Tactical Systems - Marion, IL : Marion, IL	-	1.650	Nov 2021	2.500	Nov 2022	0.417	Nov 2023	-		0.417	0.000	4.567	-
Supercharge FMR Risk Reduction	TBD	Various/ TBS : TBS	-	4.700	Mar 2022	3.934	Mar 2023	0.424	Mar 2024	-		0.424	0.000	9.058	-
Projectile and Fuze Hardware	Various	Various : Various	-	5.818	Nov 2021	3.800	Mar 2023	1.069	Mar 2024	-		1.069	0.000	10.687	-
Software Engineering	Reqn	Leidos, Inc. : Reston, Virginia	-	1.350	Aug 2022	1.200	Aug 2023	0.500	Aug 2024	-		0.500	0.000	3.050	-
Subtotal			-	22.158		16.577		8.553		-		8.553	0.000	47.288	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	-	4.210	Nov 2021	3.750	Nov 2022	2.654	Nov 2023	-		2.654	0.000	10.614	-
Subtotal			-	4.210		3.750		2.654		-		2.654	0.000	10.614	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Supercharge UMR Qualification	MIPR	Army Test & Evaluation	-	1.647	Nov 2021	1.000	Nov 2022	-		-		-	0.000	2.647	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost				
		Command (ATEC): Yuma Proving Ground : Yuma, AZ														
Supercharge FMR Testing	MIPR	Army Test & Evaluation Command (ATEC): Yuma Proving Ground : Yuma, AZ	-	0.400	May 2022	1.000	Nov 2022	1.990	Nov 2023	-		1.990	0.000	3.390	-	
Supercharge FMR Qualification	MIPR	Various : Various	-	-		-		3.000	Nov 2023	-		3.000	0.000	3.000	-	
Subtotal			-	2.047		2.000		4.990		-		4.990	0.000	9.037	N/A	
			Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			-	28.715		23.485		16.497		-		16.497	0.000	68.697	N/A	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Urgent Materiel Release (UMR) Supercharge																													
Qualification Testing for Safety Release	[Blue Bar]																												
ERCA System of Systems (SoS) Developmental Testing (DT) ...									[Blue Bar]																				
Critical Design Review (CDR)	3 CDR																												
Safety Release Decision Point (DP) / Contract Award									4 Safety Release DP / Award																				
EMD / Qualification / SR / OA Deliveries	[Blue Bar]																												
Safety Release for ERCA FUI																	7 Safety Release for ERCA FUI												
ERCA FUI																	10 ERCA FUI												
UMR Award																	6 UMR Award												
Full Materiel Release (FMR) Supercharge																													
Engineering Manufacturing & Development (EMD)	[Blue Bar]																												
Propellant Optimization	[Blue Bar]																												
Propellant PDR									5 PDR																				

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Propellant CDR												8 CDR																
Charge Design																												
Charge Design PDR												9 PDR																
Charge Design CDR															11 CDR													
Qualification Testing																												
FMR																											12 FMR	

Note
 UMR Supercharge is pursuing a Safety Release to support ERCA System of Systems Operational Assessment. All Safety Release, UMR and FMR quantities will be procured with the associated Procurement of Ammunition, Army (PAA) funding.

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) BQ3 / <i>155mm Artillery Propulsion XM654</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Urgent Materiel Release (UMR) Supercharge	1	2022	1	2022
Preliminary Design Review (PDR)	1	2021	1	2021
Prototype Development & Testing	1	2021	4	2021
Qualification Testing for Safety Release	1	2022	2	2023
ERCA System of Systems (SoS) Developmental Testing (DT) / Operational Assessment (OA)	3	2023	1	2026
Critical Design Review (CDR)	2	2022	2	2022
Safety Release Decision Point (DP) / Contract Award	3	2023	3	2023
EMD / Qualification / SR / OA Deliveries	3	2022	4	2024
Safety Release for ERCA FUI	4	2024	4	2024
ERCA FUI	1	2025	1	2025
UMR Award	1	2024	1	2024
Full Materiel Release (FMR) Supercharge	1	2022	1	2022
Engineering Manufacturing & Development (EMD)	2	2022	4	2027
Propellant Optimization	2	2022	4	2025
Propellant PDR	3	2023	3	2023
Propellant CDR	4	2024	4	2024
Charge Design	2	2022	3	2025
Charge Design PDR	4	2024	4	2024
Charge Design CDR	3	2025	3	2025
Qualification Testing	1	2026	1	2028
FMR	1	2028	1	2028

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BY1: Next Generation Combat Vehicle Ammunition	-	32.631	33.778	34.028	-	34.028	6.419	-	-	-	0.000	106.856
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

50x228 millimeter (mm) family of ammunition is a critical technology development in response to the Next Generation Combat Vehicle (NGCV) Abbreviated Capability Development Document for weapon qualification, platform integration, and fielding of the Optionally Manned Fighting Vehicle (OMFV) primary weapon system (XM913). This effort includes the development of three capabilities: The XM1202 Target Practice with Trace (TP-T); the XM1203 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T); and the XM1204 High Explosive Airburst with Trace (HEAB-T). The training cartridge will allow the Warfighter to train in a cost effective manner and the tactical cartridges will provide enhanced lethality at increased ranges when engaging personnel threats in the open, defilade, and under the cover of urban structures, Anti-Tank Guided Missiles (ATGM) teams, and current and projected future peer armored materiel threats. This effort is operating under Middle Tier Acquisition authority for rapid prototyping to qualify the three munitions in order to support the NGCV Cross Functional Team (CFT) timeline for First Unit Equipped (FUE). Fiscal Year (FY) 2024 funds support preparation activities for prototype fielding / materiel release on the XM1202 TP-T variant. In addition, FY 2024 funds supports conducting Developmental Test & Evaluation (DT&E), building tests assets for Live Fire Test & Evaluation (LFT&E) and preparing for prototype fielding on the XM1203 APFSDS-T variant. FY 2024 funds also supports building test assets and conducting DT&E on the XM1204 HEAB-T variant.

The total cost of the Next Generation Combat Vehicle Ammunition (NGCV) Middle Tier of Acquisition effort is \$310.9 million from FY2020 to FY2028, including RDT&E (\$128.804M) and Procurement (\$182.182M). NGCV RDT&E and Procurement are fully funded across the Future Years Defense Program (FY2024-2028).

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

	FY 2022	FY 2023	FY 2024
Title: 50x228mm Ammunition Development	32.631	32.545	34.028
Description: Qualify 50mm Target Practice with Trace (TP-T), Armor Piercing Fin-Stabilized Discarding Sabot with Trace (APFSDS-T), and High Explosive Airburst with Trace (HEAB-T) ammunition through the rapid prototyping phase.			
FY 2023 Plans: Funding will support DET2 for the APFSDS-T and HEAB-T cartridges for performance testing for support of CDR. Funding will also support the Developmental Test and Evaluation (DT&E) for the TP-T and APFSDS-T cartridges in support of Milestone C.			
FY 2024 Plans: Fiscal Year (FY) 2024 funds support preparation activities for prototype fielding / materiel release on the XM1202 TP-T variant. In addition, FY 2024 funds supports conducting Developmental Test & Evaluation (DT&E), building tests assets for Live Fire Test &			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Evaluation (LFT&E) and preparing for prototype fielding on the XM1203 APFSDS-T variant. FY 2024 funds also supports building test assets and initiating DT&E on the XM1204 HEAB-T variant. FY 2023 to FY 2024 Increase/Decrease Statement: Programs continue Developmental Test & Evaluation efforts and prepare for Low Rate Initial Production (LRIP).			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638 FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638	-	1.233	-
Accomplishments/Planned Programs Subtotals	32.631	33.778	34.028

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• E80011: Next Generation Combat Vehicle Ammunition	-	-	28.000	-	28.000	19.967	42.177	46.019	46.019	0.000	182.182

Remarks

D. Acquisition Strategy
Department of Defense Ordnance and Technology Consortium (DOTC) Other Transaction Agreements (OTAs) will be used for rapid prototyping on the three 50 x 228mm ammunition variants: TP-T, APFSDS-T, and HEAB-T. This will consist of Design Engineering Testing (DET), technical reviews, and Developmental Test and Evaluation (DT&E). For APFSDS-T, one contractor was awarded and will complete the rapid prototyping process. For TP-T two contractors were awarded and will complete rapid prototyping process. For HEAB-T, two contractors were awarded rapid prototyping agreements and a down selection decision will be made in FY 2023; then one HEAB-T contractor will complete the rapid prototyping process. The DOTC agreements will conclude upon achieving Milestone C for each cartridge: TP-T and APFSDS-T in FY 2024; and HEAB-T in FY 2025.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		1.233		-		-		-	0.000	1.233	-
Subtotal			-	-		1.233		-		-		-	0.000	1.233	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
50x228mm APFSDS-T Ammunition Development & Test Evaluation Hardware Contract	C/CPFF	General Dynamics Ordnance and Tactical Systems (GDOTS) : Marion, Illinois	2.000	1.929	May 2022	0.412	Mar 2023	1.800	Jan 2024	-		1.800	Continuing	Continuing	Continuing
50x228mm TP-T Ammunition Development & Test Evaluation Hardware Contract	C/CPFF	General Dynamics Ordnance and Tactical Systems : Marion, Illinois	1.000	1.480	Mar 2022	0.092	Mar 2023	-		-		-	Continuing	Continuing	Continuing
50x228mm TP-T Ammunition Development & Test Evaluation Hardware Contract	C/CPFF	Northrop Grumman Innovation Systems (NGIS) : Plymouth, MN	1.000	1.333	Mar 2022	0.240	Mar 2023	-		-		-	Continuing	Continuing	Continuing
50x228mm HEAB-T Ammunition Design Engineering Test Hardware Contract	C/CPFF	General Dynamics Ordnance and Tactical Systems : Marion, Illinois	5.989	5.989	Jan 2022	11.388	Mar 2023	9.750	Jan 2024	-		9.750	Continuing	Continuing	Continuing
50x228mm HEAB-T Ammunition Design Engineering Test Hardware Contract	C/CPFF	Northrop Grumman Innovation Systems (NGIS) : Plymouth, MN	5.989	5.976	Jan 2022	11.389	Mar 2023	9.750	Jan 2024	-		9.750	Continuing	Continuing	Continuing
50X228 HEAB-T Warhead Fabrication Optimization	Option/CPFF	Combat Capabilities Development Command - Chemical Biological Center (CCDC-	-	1.751		-		4.250	Jan 2024	-		4.250	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				BY1 / Next Generation Combat Vehicle Ammunition								
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
		CBC) : Rock Island, II														
Subtotal			15.978	18.458		23.521		25.550		-		25.550	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
50x228mm Ammo Engineering Support	MIPR	Development Command - Armaments Center (DEVCOM - AC) : Picatinny Arsenal, NJ	2.498	3.369	Dec 2021	2.840	Dec 2022	3.190	Nov 2023	-		3.190	Continuing	Continuing	Continuing	
Subtotal			2.498	3.369		2.840		3.190		-		3.190	Continuing	Continuing	N/A	
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
50x228mm Design Engineering Testing	MIPR	Aberdeen Proving Ground (APG) : Aberdeen, MD	3.700	5.258	Dec 2021	2.000	Dec 2022	-		-		-	Continuing	Continuing	Continuing	
50x228mm Design Engineering Testing	MIPR	Yuma Proving Ground (YPG) : Yuma, AZ	-	2.337	Feb 2022	1.184	Feb 2023	-		-		-	Continuing	Continuing	Continuing	
50x228mm Developmental Test and Evaluation (DT&E)	MIPR	Aberdeen Proving Ground (APG) : Aberdeen, MD	-	3.209	Aug 2022	3.000	Apr 2023	5.288	Nov 2023	-		5.288	Continuing	Continuing	Continuing	
Subtotal			3.700	10.804		6.184		5.288		-		5.288	Continuing	Continuing	N/A	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition			
	Prior Years	FY 2022		FY 2023		FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	22.176	32.631		33.778		34.028	-	34.028	Continuing	Continuing	N/A

Remarks

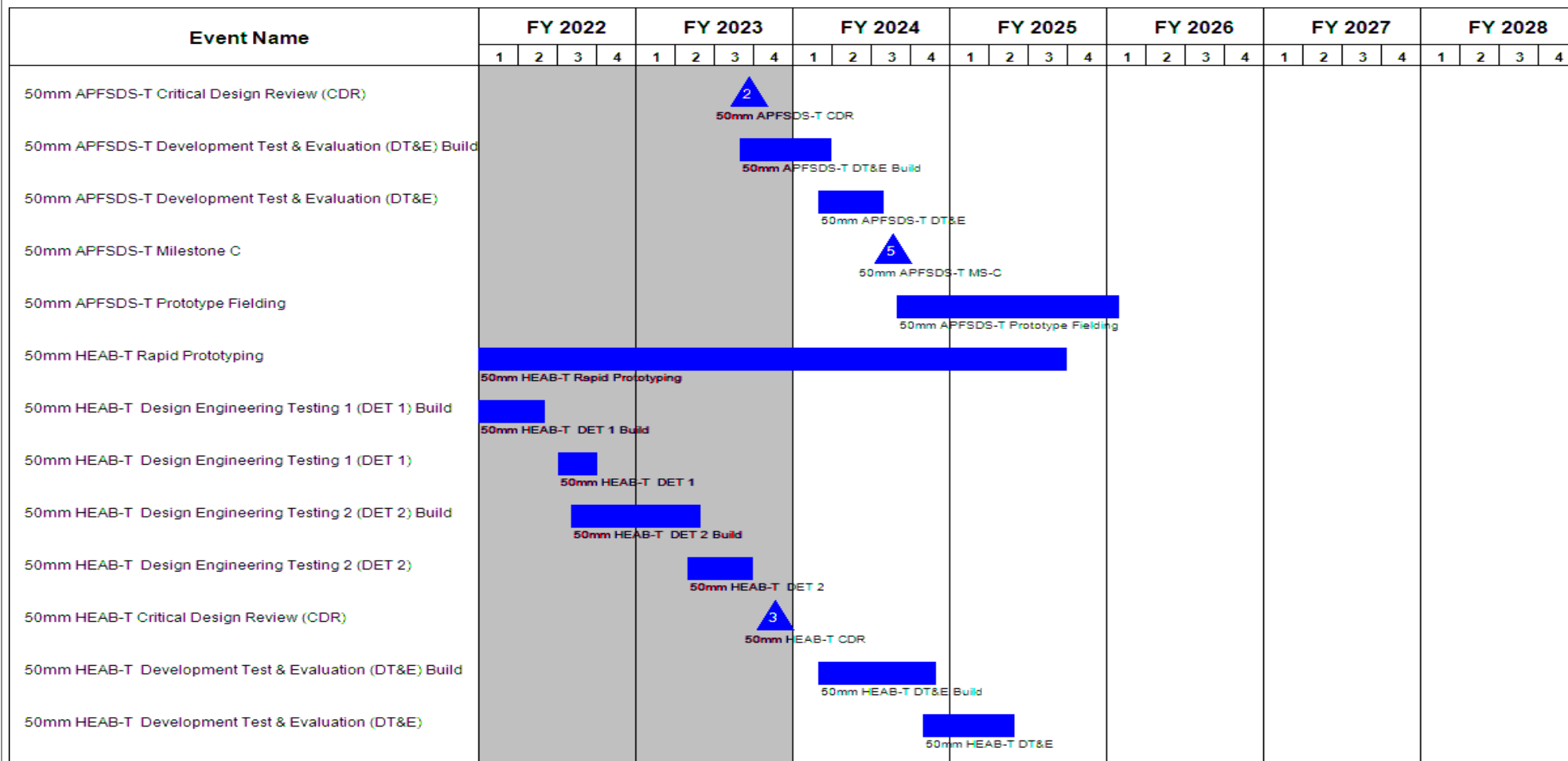
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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
50mm TP-T Rapid Prototyping	[Redacted]																											
	<i>50mm TP-T Rapid Prototyping</i>																											
50mm TP-T Design Engineering Test (DET) Build	[Redacted]																											
	<i>50mm TP-T DET Build</i>																											
50mm TP-T Design Engineering Test (DET)	[Redacted]																											
	<i>50mm TP-T DET</i>																											
50mm TP-T Critical Design Review (CDR)	[Redacted]																											
	<i>50mm TP-T CDR</i>																											
50mm TP-T Development Test & Evaluation (DT&E) Build	[Redacted]																											
	<i>50mm TP-T DT&E Build</i>																											
50mm TP-T Development Test & Evaluation (DT&E)	[Redacted]																											
	<i>50mm TP-T DT&E</i>																											
50mm TP-T Milestone C	[Redacted]																											
	<i>50mm TP-T MS-C</i>																											
50mm TP-T Prototype Fielding	[Redacted]																											
	<i>50mm TP-T Prototype Fielding</i>																											
50mm APFSDS-T Rapid Prototyping	[Redacted]																											
	<i>50mm APFSDS-T Rapid Prototyping</i>																											
50mm APFSDS-T Design Engineering Test 1 (DET 1) Build	[Redacted]																											
	<i>50mm APFSDS-T DET Build</i>																											
50mm APFSDS-T Design Engineering Testing 1 (DET 1)	[Redacted]																											
	<i>50mm APFSDS-T DET 1</i>																											
50mm APFSDS-T Design Engineering Test 2 (DET 2) Build	[Redacted]																											
	<i>50mm APFSDS-T DET 2 Build</i>																											
50mm APFSDS-T Design Engineering Testing 2 (DET 2)	[Redacted]																											
	<i>50mm APFSDS-T DET 2</i>																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition



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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) BY1 / <i>Next Generation Combat Vehicle Ammunition</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
50mm HEAB-T Milestone C													6															
50mm HEAB-T Prototype Fielding													50mm HEAB-T MS-C				50mm HEAB-T Prototype Fielding											

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) BY1 / <i>Next Generation Combat Vehicle Ammunition</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
50mm TP-T Rapid Prototyping Award	1	2021	1	2021
50mm TP-T Rapid Prototyping	1	2021	2	2024
50mm TP-T Design Engineering Test (DET) Build	3	2021	1	2022
50mm TP-T Design Engineering Test (DET)	1	2022	2	2022
50mm TP-T Critical Design Review (CDR)	2	2022	2	2022
50mm TP-T Development Test & Evaluation (DT&E) Build	2	2022	1	2023
50mm TP-T Development Test & Evaluation (DT&E)	2	2023	3	2023
50mm TP-T Milestone C	2	2024	2	2024
50mm TP-T Prototype Fielding	2	2024	4	2025
50mm APFSDS-T Rapid Prototyping Award	2	2021	2	2021
50mm APFSDS-T Rapid Prototyping	2	2021	3	2024
50mm APFSDS-T Design Engineering Test 1 (DET 1) Build	3	2021	2	2022
50mm APFSDS-T Design Engineering Testing 1 (DET 1)	3	2022	4	2022
50mm APFSDS-T Design Engineering Test 2 (DET 2) Build	4	2022	2	2023
50mm APFSDS-T Design Engineering Testing 2 (DET 2)	2	2023	3	2023
50mm APFSDS-T Critical Design Review (CDR)	3	2023	3	2023
50mm APFSDS-T Development Test & Evaluation (DT&E) Build	3	2023	1	2024
50mm APFSDS-T Development Test & Evaluation (DT&E)	1	2024	3	2024
50mm APFSDS-T Milestone C	3	2024	3	2024
50mm APFSDS-T Prototype Fielding	3	2024	1	2026
50mm HEAB-T Rapid Prototyping Award	4	2020	4	2020
50mm HEAB-T Rapid Prototyping	4	2020	3	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) BY1 / <i>Next Generation Combat Vehicle Ammunition</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
50mm HEAB-T Design Engineering Testing 1 (DET 1) Build	4	2021	2	2022
50mm HEAB-T Design Engineering Testing 1 (DET 1)	3	2022	3	2022
50mm HEAB-T Design Engineering Testing 2 (DET 2) Build	3	2022	2	2023
50mm HEAB-T Design Engineering Testing 2 (DET 2)	2	2023	3	2023
50mm HEAB-T Critical Design Review (CDR)	4	2023	4	2023
50mm HEAB-T Development Test & Evaluation (DT&E) Build	1	2024	4	2024
50mm HEAB-T Development Test & Evaluation (DT&E)	4	2024	2	2025
50mm HEAB-T Milestone C	4	2025	4	2025
50mm HEAB-T Prototype Fielding	4	2025	1	2027

Note

- Notes:
- Target Practice with Trace (TP-T)
 - Armor-Piercing Fin-Stabilized Discarding Sabot with Trace (APFSDS-T)
 - High Explosive Airburst with trace (HEAB-T)

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) CE3 / Precision Munition (Sniper)
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
CE3: Precision Munition (Sniper)	-	8.936	5.182	-	-	-	-	-	-	-	0.000	14.118
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Precision Munition (Sniper) project is a critical technology development in response to the Precision Munition Capabilities Development Documents (CDD) for the ammunition required to support the Precision Sniper Rifle (PSR) / sniper weapons systems. The objective is to transfer the latest lethality technology into the suite of ammunition used by snipers. The Precision Munition improvement is split into three capability areas: Anti-Materiel (AM), Improved Performance Round (IPR), and Subsonic. The AM and IPR capabilities will enhance lethal effects at greater distances. The Subsonic capability will increase soldier survivability at close range by providing a low-sound signature munition that is undetectable to the enemy. There is no Fiscal Year 2024 budget request.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Develop and Improve Ammunition for Sniper Weapons Systems.</p> <p>Description: Develop, demonstrate, and qualify new sniper ammunition to defeat hard targets for the Precision Sniper Rifle (PSR) and other sniper weapons systems. Integrate latest lethality technology into the current suite of sniper ammunition for the Precision Sniper Rifle (PSR) and other sniper weapons systems. Integrate latest lethality technology into the current subsonic ammunition for the Precision Sniper Rifle (PSR) and other sniper weapons systems.</p> <p>FY 2023 Plans: Continue development of the Anti-Materiel (AM) munitions; manufacture and evaluate prototype AM concepts. Continue evaluating and maturing industry and/or Government Subsonic Munitions and IPR prototype solutions.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There is no FY 2024 budget request.</p>	8.936	4.993	-
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.189	-
Accomplishments/Planned Programs Subtotals	8.936	5.182	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) CE3 / <i>Precision Muniton (Sniper)</i>

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

N/A

Remarks

D. Acquisition Strategy

The Precision Muniton (Sniper) utilizes Other Transaction Authority (OTA) to acquire and/or mature US Government design. Contracts to acquire parts and raw materials are competitive. The Government is prototyping and testing projectiles.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) CE3 / Precision Munition (Sniper)
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		0.189		-		-		-	0.000	0.189	-
Subtotal			-	-		0.189		-		-		-	0.000	0.189	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Anti-Materiel Development Contracts	C/FFP	Vista : Anoka, Minnesota	-	3.146	Sep 2022	2.193	Feb 2023	-		-		-	Continuing	Continuing	Continuing
Improved Performance Round Development Contracts	C/FFP	Vista : Anoka, Minnesota	-	0.500	Sep 2022	-		-		-		-	Continuing	Continuing	Continuing
Subsonic Development Contracts	C/FFP	Vista : Anoka, Minnesota	-	0.500	Sep 2022	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			-	4.146		2.193		-		-		-	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Anti-Materiel Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	-	1.600	Apr 2022	2.100	Oct 2022	-		-		-	Continuing	Continuing	Continuing
Improved Performance Round Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	-	0.500	Apr 2022	0.100	Oct 2022	-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) CE3 / Precision Munition (Sniper)
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subsonic Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	-	0.500	Apr 2022	0.100	Oct 2022	-		-		-	Continuing	Continuing	Continuing
Subtotal			-	2.600		2.300		-		-		-	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Lethality Testing and Analysis	MIPR	US Army Research Lab (ARL) : Aberdeen, Maryland	-	1.900	Apr 2022	0.500	Oct 2022	-		-		-	Continuing	Continuing	Continuing
Cartridge Case Analysis and Testing	MIPR	Naval Surface Warfare Crane : Crane, Indiana	-	0.290		-		-		-		-	0.000	0.290	-
Subtotal			-	2.190		0.500		-		-		-	Continuing	Continuing	N/A

			Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	8.936	5.182	-	-	-	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) CE3 / Precision Munition (Sniper)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Matériel Development Decision	1 MDD																											
Anti-Matériel (AM) Munitions Rapid Development and Fielding																												
Anti-Matériel (AM) Munitions Prototype Build and Test																												
Improved Performance Round (IPR) Design Evaluations																												
Subsonic Engineering Study																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) CE3 / <i>Precision Munition (Sniper)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Matériel Development Decision	2	2022	2	2022
Anti-Matériel (AM) Munitions Rapid Development and Fielding	2	2022	2	2023
Anti-Matériel (AM) Munitions Prototype Build and Test	2	2023	4	2023
Improved Performance Round (IPR) Design Evaluations	2	2022	4	2023
Subsonic Engineering Study	2	2022	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
DC9: 30mm MMPA M-SHORAD INC 3	-	-	-	18.936	-	18.936	11.280	7.831	5.118	4.475	0.000	47.640
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

30mm MMPA M-SHORAD INC 3 is a new start within the Weapons and Munitions - Eng Dev program in FY 2024.

A. Mission Description and Budget Item Justification

30mm Multi-Mode Proximity Airburst (MMPA) Maneuver Short Range Air Defense Increment 3 (M-SHORAD INC 3): The 30mm MMPA M-SHORAD INC 3 / Project DC9 funds the development of the XM1223 30x113mm MMPA munition. The objective is to enhance the operational effectiveness of the M-SHORAD Inc 3 platform, and any other Joint Force Fighting Vehicle that is equipped with a 30x113mm weapon system. The programmable fuze modes in the munition include proximity airburst to defeat personnel in the open and small Unmanned Aerial System (UAS) targets, proximity delay to defeat personnel in defilade, gated proximity airburst for cluttered environments, mechanical point detonate to defeat light materiel targets, and self destruct to minimize collateral damage. The XM1223 will allow the M-SHORAD Inc 3 to conduct counter-UAS missions while retaining the ability to quickly transition to ground targets. Fiscal Year (FY) 2024 funding supports XM1223 Engineering Manufacturing and Development (EMD) contract awards, development, Preliminary Design Review (PDR), and building prototypes for Design Engineering Testing (DET).

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

	FY 2022	FY 2023	FY 2024
Title: EMD 30x113mm MMPA Munition	-	-	18.936
Description: Develop, demonstrate, and qualify a new munition for the M-SHORAD and other Joint Force Fighting Vehicles equipped with a XM914 weapon system.			
FY 2024 Plans: Achieve Milestone B (MS-B), contract award up to two contractors, conduct Preliminary Design Review (PDR), and develop prototypes for Design Engineering Tests.			
FY 2023 to FY 2024 Increase/Decrease Statement: Project DC9 is a New Start in FY 2024.			
Accomplishments/Planned Programs Subtotals	-	-	18.936

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3

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

Remarks

D. Acquisition Strategy

Proposals will be requested from Industry to develop a 30x113mm Multi-Mode Proximity Airburst (MMPA) tactical cartridge that will meet Army Performance Specifications and Maneuver Short Range Air Defense Increment 3 (M-SHORAD Inc 3) Lethality Annex Requirements. The Government will award up to two contracts using either an Other Transaction Agreement (OTA) or a Federal Acquisition Regulation (FAR)-based contract to support development for Design Engineering Tests (DET) and Developmental Test & Evaluation (DT&E) prior to Milestone C in FY 2027. The government will have the option to award contracts for production.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MMPA EMD Contract 1	C/CPFF	To Be Selected : To Be Determined	-	-		-		8.114	Jan 2024	-		8.114	Continuing	Continuing	Continuing
MMPA EMD Contract 2	C/CPFF	To Be Selected : To Be Determined	-	-		-		8.114	Jan 2024	-		8.114	Continuing	Continuing	Continuing
MMPA Fuze Setter Development	C/CPFF	To Be Selected : To Be Determined	-	-		-		1.000	Feb 2024	-		1.000	0.000	1.000	-
Subtotal			-	-		-		17.228		-		17.228	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support DEVCOM AC	MIPR	Development Command - Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	-	-		-		1.446	Jan 2024	-		1.446	Continuing	Continuing	Continuing
Subtotal			-	-		-		1.446		-		1.446	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Fuze Setter Testing	MIPR	Aberdeen Test Center (Aberdeen Proving Grounds) : Aberdeen, MD	-	-		-		0.262	Jan 2024	-		0.262	Continuing	Continuing	Continuing
Subtotal			-	-		-		0.262		-		0.262	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army							Date: March 2023				
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev			Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3					
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	-	-	18.936	-	18.936	Continuing	Continuing	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MMPA Milestone B (MS-B)									1 ▲ MS-B																			
Contract Awards									2 ▲ Contract Awards																			
Engineering Manufacturing and Development (EMD)																												
Ammo Design Engineering Testing (DET)																												
Design Down-Select																	3 ▲ Design Down-Select											
Critical Design Review (CDR)																	4 ▲ CDR											
Developmental Test & Evaluation (DT&E)																												
Soldier Touch Point (STP)																	5 ▲ STP											
Milestone C (MS-C)																	6 ▲ MS-C											
Low Rate Initial Production (LRIP) Contract Award																	7 ▲ LRIP Contract Award											
Low Rate Initial Production (LRIP)																												
Live Fire Test & Evaluation (LFT&E)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MMPA Milestone B (MS-B)	2	2024	2	2024
Contract Awards	2	2024	2	2024
Engineering Manufacturing and Development (EMD)	2	2024	4	2027
Ammo Design Engineering Testing (DET)	3	2025	4	2025
Design Down-Select	1	2026	1	2026
Critical Design Review (CDR)	1	2026	1	2026
Developmental Test & Evaluation (DT&E)	4	2026	2	2027
Soldier Touch Point (STP)	1	2027	1	2027
Milestone C (MS-C)	4	2027	4	2027
Low Rate Initial Production (LRIP) Contract Award	1	2028	1	2028
Low Rate Initial Production (LRIP)	1	2028	1	2030
Live Fire Test & Evaluation (LFT&E)	3	2028	1	2029

Note

MMPA - Multi-Mode Proximity Airburst

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EC4 / Non-Standard Simulator Munitions			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EC4: Non-Standard Simulator Munitions	-	2.038	2.182	2.188	-	2.188	0.410	0.412	0.416	0.420	0.000	8.066
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project EC4 Non-Standard Simulator Munitions will standardize various pyrotechnics that simulate battlefield effects. The Army's Combat Training Centers (CTCs) are currently using non-standard munitions to replicate both conventional and asymmetric warfare battlefield effects. These modified commercial-off-the-shelf products have not been type classified or material released and are not safe or sustainable for use by Soldiers. This effort will develop and demonstrate various pyrotechnics/simulators to replicate both conventional and asymmetric warfare battlefield effects such as:

- Black smoke signature (burning vehicles, buildings, and equipment);
- Yellow smoke signature (chemical, biological or nuclear effects);
- Mini Blast to simulate hostile fire and small Improvised Explosive Devices (IEDs) during mounted operations in urban terrain; Micro pyrotechnics to simulate indoor hostile fire and IED effects that are capable of being integrated into existing facilities;
- Rocket Propelled Grenade (RPG) simulators to replicate the flight of a Rocket Propelled Grenade;
- Macro Pyro to simulate hostile fire, booby trap and IED Simulations indoor and outdoors;
- High Order Blast Effect (HiOBE) used to replicate a Vehicle Borne Improvised Explosive Device (VBIED), building explosions, and other significant explosive events;
- Artillery airburst simulator to replicate indirect fire;
- Antitank Guided Missile and Rocket (AGMR) simulator to replicate surface to air missile or shoulder launched rocket;
- Tracer Fire-back simulator to replicate enemy small arms fire and anti-aircraft fire.

Standardization will reduce training costs, eliminate redundancies between systems and mitigate environmental concerns and safety risks associated with realistic scenario-based training. FY 2024 funding will support the development of RPG on a wire, Mini Blast, Tracer, and HiOBE.

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

	FY 2022	FY 2023	FY 2024
Title: Standardize Special Use Ammunition	2.038	2.102	2.188
Description: Standardize non-standard pyrotechnic battlefield effects currently used by CTCs.			
FY 2023 Plans: FY 2023 supports Yellow Smoke, Black Smoke, and Mini Blast preparations to release the TC and FMR package. RPG will conduct qualification testing. The Tracer will be undergoing testing support activities and the HiOBE will continue Engineering and Manufacturing Development (EMD) activities.			
FY 2024 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
FY 2024 will support the completion of RPG and Mini Blast EMD and prepare Milestone C documentation. Tracer fire back and HiOBE EMD will continue.			
FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding required for continued development of the suite of non standard simulator ammunition.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	-	0.080	-
FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	2.038	2.182	2.188

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• E88404: SIMULATORS, Non-Standard, Special Effects, f/CTCs	-	0.296	0.296	-	0.296	0.297	0.296	0.297	0.297	0.000	1.779
• E48417: SIMULATOR, TARGET KILL, XM175	-	-	0.652	-	0.652	0.520	0.464	0.424	0.204	0.000	2.264
• E91114: SIMULATOR, LAUNCHING, ANTITANK GUIDED MISSILE AND	-	-	0.476	-	0.476	0.425	0.405	0.391	0.305	0.000	2.002
• E91116: SIMULATOR, PROJECTILE AIR BURST, EXPLOSIVE: XM181	-	-	0.473	-	0.473	0.164	0.405	0.391	0.305	0.000	1.738
• E50311: SIMULATOR, CHEM ATTACK, YELLOW SMOKE	-	-	0.056	-	0.056	0.048	0.045	0.043	0.029	0.000	0.221
• E48413: SIMULATOR, INDOOR WEAPONS FIRE	-	-	0.000	-	0.000	0.133	0.128	0.124	0.100	Continuing	Continuing
• E48416: SIMULATOR, HIGH ORDER BLAST EFFECT (HIOBE)	-	-	0.000	-	0.000	-	0.389	0.392	0.382	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	
			Base	OCO	Total					Complete	Total Cost
• E48415: SIMULATOR, INCOMING ROCKET PROPELLED GRENADE (RPG)	-	-	0.000	-	0.000	-	0.177	0.201	0.159	Continuing	Continuing
• E48418: SIMULATOR, SMALL ARMS TRACER FIRE-BACK	-	-	0.000	-	0.000	-	-	0.200	0.203	Continuing	Continuing
• E48414: SIMULATOR, OUTDOOR WEAPONS FIRE	-	-	0.000	-	0.000	-	-	0.157	0.133	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Acquisition strategy is to incrementally develop and field a family of special use ammunition. Initial special use ammunition to be fielded will be the Artillery Airburst/Antitank Guided Missile and Rocket (AGMR), and Black Smoke simulators followed by additional training simulators as required in the Future Army System of Integrated Targets (FASIT) Capability Production Document (CPD).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EC4 / Non-Standard Simulator Munitions							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-	-		0.080		-		-		-	0.000	0.080	-
Subtotal			-	-		0.080		-		-		-	0.000	0.080	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HiOBE Developmental Hardware	C/CPFF	TBD : TBD	-	-		-		0.602	May 2024	-		0.602	0.000	0.602	-
Tracer Developmental Hardware	C/FFP	SAIC : Reston, VA	-	0.408	May 2022	0.591	Dec 2022	-		-		-	0.000	0.999	-
RPG on a Wire Hardware	C/FFP	SAIC : Reston, VA	-	0.437	Nov 2022	-		-		-		-	0.000	0.437	-
Subtotal			-	0.845		0.591		0.602		-		0.602	0.000	2.038	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	4.195	1.093	Apr 2022	1.154	Jan 2023	1.229	Oct 2023	-		1.229	Continuing	Continuing	-
Human Systems Integration (HSI) Support	MIPR	Combat Capabilities Development Command Analysis Center (DAC) : Aberdeen Proving Grounds, MD	-	0.098	May 2022	-		-		-		-	0.000	0.098	-
Mini Blast Test Hardware Shipping	C/FFP	Shipping : Picatinny Arsenal, NJ	-	0.002	Sep 2022	-		-		-		-	0.000	0.002	-
Subtotal			4.195	1.193		1.154		1.229		-		1.229	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army													Date: March 2023			
Appropriation/Budget Activity							R-1 Program Element (Number/Name)				Project (Number/Name)					
2040 / 5							PE 0604802A / Weapons and Munitions - Eng Dev				EC4 / Non-Standard Simulator Munitions					
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
RPG on a Wire & Tracer Fireback Qualification Testing	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	-	-		-		0.300	May 2024	-		0.300	0.000	0.300	-	
HIOBE EMQ Qualification	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	-	-		-		0.057	Jul 2024	-		0.057	0.000	0.057	-	
Tracer EMQ Qualification	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	-	-		0.057	Mar 2023	-		-		-	0.000	0.057	-	
Mini Blast & Yellow Smoke Qualification Testing	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	-	-		0.300	Mar 2023	-		-		-	0.000	0.300	-	
Subtotal			-	-		0.357		0.357		-		0.357	0.000	0.714	N/A	
Project Cost Totals			4.195	2.038		2.182		2.188		-		2.188	Continuing	Continuing	N/A	
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Artillery Airburst and Antitank Guided Missile and Rocket	[Redacted]				[Redacted]																							
Artillery and AGMR Type Classification									[Redacted]				[Redacted]															
Artillery and AGMR Production									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Black Smoke																												
Black Smoke Technology Development and Maturation	[Redacted]				[Redacted]																							
Black Smoke Milestone C									9	[Redacted]																		
Black Smoke Production									[Redacted]				[Redacted]				[Redacted]				[Redacted]							
Yellow Smoke																												
Yellow Smoke Technology Development	[Redacted]				[Redacted]																							
Yellow Smoke Engineering and Manufacturing Development	[Redacted]				[Redacted]																							
Yellow Smoke Milestone C									10	[Redacted]																		
Yellow Smoke Production									[Redacted]				[Redacted]				[Redacted]				[Redacted]							
RPG																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
RPG Technology Development	[Redacted]																											
	<small>RPG Tech Development</small>																											
RPG Engineering and Manufacturing Development	[Redacted]																											
																									<small>RPG EMD</small>			
RPG Milestone C									▲ 11 <small>RPG MS-C</small>																			
RPG Production													[Redacted]															
																	<small>RPG Production</small>											
Mini Blast																												
Mini Blast Technology Development	[Redacted]																											
	<small>Mini Blast Tech Development</small>																											
Mini Blast Engineering and Manufacturing Development	[Redacted]																											
																									<small>Mini Blast EMD</small>			
Mini Blast Milestone C									▲ 12 <small>Mini Blast MS-C</small>																			
Mini Blast Production													[Redacted]															
																	<small>Mini Blast Production</small>											
Tracer																												
Tracer Technology Development	[Redacted]																											
	<small>Tracer Tech Development</small>																											
Tracer Engineering and Manufacturing Development	[Redacted]																											
																									<small>Tracer EMD</small>			
Tracer Milestone C													▲ 13 <small>Tracer MS-C</small>															

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Tracer Production																												
																					Tracer Production							
High Order Blast Effect (HiOBE)																												
HiOBE Technology Development																									HiOBE Tech Development			
HiOBE Engineering and Manufacturing Development																												
																									HiOBE EMD			
HiOBE Milestone C																												
																									14			
HiOBE Production																												
																					HiOBE Production							
Micro Pyro																												
Micro Pyro Technology Development																									Micro Pyro Tech Development			
Micro Pyro Engineering and Manufacturing Development																												
																									Micro Pyro EMD			
Micro Pyro Milestone C																												
																									16			
Micro Pyro Production																												
																					Micro Pyro Production							
Macro Pyro																												
Macro Pyro Technology Development																									Macro Pyro Tech Development			

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Macro Pyro Engineering and Manufacturing Development																												
Macro Pyro Milestone C																												
Macro Pyro Production																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Artillery Airburst and Antitank Guided Missile and Rocket (AGMR)	4	2022	4	2022
Artillery and AGMR Type Classification	4	2021	4	2022
Artillery and AGMR Production	1	2024	4	2028
Black Smoke	4	2022	4	2022
Black Smoke Technology Development and Maturation	4	2019	2	2023
Black Smoke Milestone C	4	2023	4	2023
Black Smoke Production	1	2024	4	2028
Yellow Smoke	4	2022	4	2022
Yellow Smoke Technology Development	2	2020	2	2022
Yellow Smoke Engineering and Manufacturing Development	2	2022	2	2023
Yellow Smoke Milestone C	4	2023	4	2023
Yellow Smoke Production	1	2024	4	2028
RPG	4	2022	4	2022
RPG Technology Development	2	2020	2	2022
RPG Engineering and Manufacturing Development	2	2022	2	2024
RPG Milestone C	4	2024	4	2024
RPG Production	1	2026	4	2028
Mini Blast	4	2022	4	2022
Mini Blast Technology Development	2	2020	2	2022
Mini Blast Engineering and Manufacturing Development	2	2022	2	2024
Mini Blast Milestone C	4	2024	4	2024
Mini Blast Production	2	2026	4	2028

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EC4 / Non-Standard Simulator Munitions
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Events	Start		End	
	Quarter	Year	Quarter	Year
Tracer	4	2022	4	2022
Tracer Technology Development	2	2022	1	2023
Tracer Engineering and Manufacturing Development	2	2023	1	2025
Tracer Milestone C	2	2025	2	2025
Tracer Production	1	2027	1	2032
High Order Blast Effect (HiOBE)	4	2022	4	2022
HiOBE Technology Development	2	2022	1	2023
HiOBE Engineering and Manufacturing Development	2	2023	3	2025
HiOBE Milestone C	4	2025	4	2025
HiOBE Production	1	2026	4	2030
Micro Pyro	1	2026	1	2026
Micro Pyro Technology Development	3	2025	1	2026
Micro Pyro Engineering and Manufacturing Development	1	2026	4	2027
Micro Pyro Milestone C	4	2027	4	2027
Micro Pyro Production	1	2028	4	2034
Macro Pyro	4	2022	4	2022
Macro Pyro Technology Development	3	2026	1	2027
Macro Pyro Engineering and Manufacturing Development	1	2027	4	2028
Macro Pyro Milestone C	4	2028	4	2028
Macro Pyro Production	1	2029	1	2034

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EL9 / Ammunitions Logistics Prototyping			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EL9: Ammunitions Logistics Prototyping	-	0.671	1.022	1.052	-	1.052	1.072	1.074	1.085	1.097	0.000	7.073
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project EL9 Ammunitions Logistics Prototyping supports the future force by improving the distribution, management, reliability and survivability of ammunition through the advanced development, integration, and demonstration of logistics system enablers. These enablers will improve the efficiency and effectiveness of ammunition operations, to include retrograde, while reducing the logistics footprint on the battlefield. Technology areas addressed include handling, distribution, and management (strategic and tactical), prognostics, diagnostics, and asset visibility, explosives safety, and adaptive and environmentally friendly packaging and palletization. The efficient deployment and sustainment of reliable ammunition is vital to success on the battlefield. This project enhances the operational effectiveness of the ammunition logistics system to ensure the distribution of reliable ammunition to the warfighter. Fiscal Year (FY) 2024 funding will be focused on integrating commercial off the shelf and/or relatively mature technologies into ammunition resupply enablers required by the Long Range Precision Fire (LRPF) Cross Functional Team (CFT). They will be focused on ensuring that a low risk resupply process solution exists to support the success of the Extended Range Canon Artillery (ERCA).

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

	FY 2022	FY 2023	FY 2024
Title: Munitions Survivability and Logistics Enablers	0.671	0.985	1.052
Description: This program will develop ammunition logistics systems that improve munitions survivability and logistics			
FY 2023 Plans: Assess the JPEO A&A portfolio for transition opportunities for munitions health monitoring prototypes that have been validated to a Technical Readiness Level (TRL) 6 maturity. Mature and/or develop previously investigated prototype systems focused on tactical Cannon Artillery operations that will improve the operational availability of ammunition and associated components at the tactical edge. The systems will ensure artillery ammunition is prepared, protected, and monitored prior to use to improve the security and survivability of the ammunition supply chain.			
FY 2024 Plans: Integrate mature commercial off the shelf environmental sensors to provide a capability for munitions health monitoring during tactical transportation and distribution in formations forward of the Ammunition Support Areas (ASA). Leverage recently completed JPEO A&A RDT&E system engineering studies/analysis to inform operational temperature exposure thresholds as critical selection criteria of commercial technologies. Integration efforts will primarily focus on tactical Cannon Artillery operations to improve operational availability of ammunition and associated components at the tactical edge. The surveillance system to be			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EL9 / Ammunitions Logistics Prototyping

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>transitioned to PM SPHS will ensure artillery ammunition is prepared, protected, and monitored prior to use to improve the security and survivability of the ammunition supply chain within the formation.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There was a slight increase in program funding due to increased contractor support to Integrate mature commercial off the shelf environmental sensors to provide a capability for munitions health monitoring during tactical transportation and distribution in formations forward of the Ammunition Support Areas (ASA).</p>			
<p>Title: SBIR/STTR Transfer</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.037	-
Accomplishments/Planned Programs Subtotals	0.671	1.022	1.052

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

Remarks

D. Acquisition Strategy
The acquisition strategy is to work directly with the relevant PMs (Combat Ammunition Systems (CAS) & Self Propelled Howitzer (SPH)) to support the development of a resupply system/process to meet the needs of the Extended Range Canon Artillery (ERCA) system. The resultant capabilities will then be transitioned to the appropriate PM for further maturation and/or fielding.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EL9 / Ammunitions Logistics Prototyping
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		0.037		-		-		-	0.000	0.037	-
Subtotal			-	-		0.037		-		-		-	0.000	0.037	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	C/TBD	TBD : TBD	-	0.475	Jan 2022	0.785	Jan 2023	-		-		-	0.000	1.260	-
Contractor	TBD	CR Tactical : Pittsburgh, PA	-	-		-		0.447	Jan 2024	-		0.447	0.000	0.447	-
Contractor	TBD	Cybernet : Ann Arbor, MI	-	-		-		0.400	Nov 2023	-		0.400	0.000	0.400	-
Subtotal			-	0.475		0.785		0.847		-		0.847	0.000	2.107	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEVCOM, Armaments Center	MIPR	Picatinny Arsenal : NJ	1.521	0.196	Oct 2021	0.200	Mar 2023	0.205	Mar 2023	-		0.205	0.000	2.122	-
Subtotal			1.521	0.196		0.200		0.205		-		0.205	0.000	2.122	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		1.521	0.671	1.022	1.052	1.052	0.000	4.266	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EL9 / Ammunitions Logistics Prototyping

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
System Development - Tactical Munitions Monitoring																												
System Development - Instrumented Ammo Stowage (CAT)																												
System Development - Instrumenting Distribution Enablers...																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EL9 / Ammunitions Logistics Prototyping

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System Development - Munitions Health Monitoring System (RRAPDS)	2	2018	4	2021
System Development - Next Generation Temperature/Humidity Sensor	3	2020	4	2021
System Development - Tactical Munitions Monitoring	1	2022	4	2023
System Development - Instrumented Ammo Stowage (CAT)	1	2024	1	2026
System Development - Instrumenting Distribution Enablers (PLS)	2	2024	2	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP2 / Shoulder-Launched Munitions			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EP2: <i>Shoulder-Launched Munitions</i>	-	2.021	0.600	2.551	-	2.551	-	-	-	-	0.000	5.172
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This development effort will combine the capabilities of the existing M141 Bunker Defeat Munition (BDM) and the 84MM Anti-Tank 4 Confined Space - Reduced Sensitivity (AT4CS-RS), eliminating the mission risk associated with having to choose between two different capability SLMs, reducing the logistics and training burdens associated with multiple systems. The Individual Assault Munition (IAM) system consists of the tactical XM919 IAM munition and training devices including the XM922 sub-caliber trainer, sub-caliber tracer ammunition, Field Handling Trainer (FHT), Field Tactical Trainer (FTT) and Soldier Virtual Trainers (SVT). The tactical XM919 IAM supports the close fight in urban and complex terrain, allowing Soldiers a fire-from-enclosure (FFE) capability to defeat field expedient structures such as earth and timber bunkers, reinforced concrete, adobe and triple brick walls with behind the wall lethality effects as well as defeating light armored vehicles. The IAM training devices provide training capability to increase the Soldier's proficiency and integration of the XM919 tactical system into combat operations. The XM919 IAM enables the Army's Soldier Lethality Modernization Line of Effort (LOE) by reducing Soldier load, while providing tactical innovation capable of extending overmatch against peer/near-peer adversaries in a joint, multi-domain, high-intensity conflict.

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

	FY 2022	FY 2023	FY 2024
Title: XM919 Individual Assault Munition (IAM)	2.021	0.600	2.551
Description: The XM919 IAM program entered the Engineering and Manufacturing Development (EMD) Phase (MDD approved in 3QFY2020) and obtained Shoulder Launched Munition test hardware (production-ready systems) in support of market research (to include live test firings) to inform the CDD-Update. The market research data will also support MS C decision. A competitive 5-year Indefinite Delivery/Indefinite Quantity (ID/IQ) production contract will be awarded following MS C. The XM919 IAM program will conduct a User Excursion (Soldier Touch Point in lieu of Operational Test) prior to Type Classification and Full Materiel Release.			
FY 2023 Plans: FY 2023 funding supports Milestone C package completion, Procurement Package execution, Draft RFP release, Industry Day #3, RFP release, and developing the Life-Cycle Sustainment Plans for the XM919 and training devices.			
FY 2024 Plans: FY 2024 funding is required to procure test hardware and conduct the User Excursion test event (Soldier Touch Point in lieu of an Operational Test (OT)).			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP2 / Shoulder-Launched Munitions

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
FY 2024 funding increase needed to procure test hardware and execute User Excursion.			
Accomplishments/Planned Programs Subtotals	2.021	0.600	2.551

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E36412: <i>SHOULDER LAUNCHED INDIVIDUAL ASSAULT MUNITION(IAM)</i>	-	-	12.051	-	12.051	-	-	-	-	0.000	12.051

Remarks

D. Acquisition Strategy

The Individual Assault Munition (IAM) acquisition strategy is a two phased approach that consists of an accelerated system assessment phase (EMD) and a production phase. The system assessment phase surveyed industry and assessed available mature tactical and training hardware solutions through live test firings and soldier touch points. The data collected from the system assessment phase is informing the IAM CDD-Update and a Milestone C production decision. Upon a successful production decision, the second phase will commence through a competitive 5-year ID/IQ production contract award. The tactical XM919 IAM will replace the AT4CS-RS and BDM shoulder launched munition systems. The IAM training devices including the XM922 sub-caliber trainer, XM922 sub-caliber tracer ammunition, Field Handling Trainer (FHT), Field Tactical Trainer (FTT) and Soldier Virtual Trainers (SVT) will replace AT4CS-RS and BDM training devices.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP2 / Shoulder-Launched Munitions
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Individual Assault Munition (IAM) Test Hardware	C/FFP	TBD : TBD	-	-		-		0.822	Apr 2024	-		0.822	0.000	0.822	-
Subtotal			-	-		-		0.822		-		0.822	0.000	0.822	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Tactical Engineering Support - Gov	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	4.129	1.961	Jul 2022	0.600	Dec 2022	0.866	Oct 2023	-		0.866	0.000	7.556	-
Trainer Engineering Support - Gov	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	0.054	-		-		-		-		-	0.000	0.054	-
Engineering Support - Gov	MIPR	TACOM : Warren, MI	0.036	0.060	Jan 2023	-		-		-		-	0.000	0.096	-
Subtotal			4.219	2.021		0.600		0.866		-		0.866	0.000	7.706	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
User Excursion (in lieu of OT)	MIPR	Various : Various	-	-		-		0.863	Jul 2024	-		0.863	0.000	0.863	-
Subtotal			-	-		-		0.863		-		0.863	0.000	0.863	N/A

			Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			4.219	2.021	0.600	2.551	-	2.551	0.000	9.391	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP2 / Shoulder-Launched Munitions

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Engineering and Manufacturing Development Contract	[Redacted]																											
	EMD Contract																											
Live Test Firing	[Redacted]																											
	Live Test Firing																											
User Jury (Soldier Touch Point)	[Redacted]																											
	User Jury																											
Capability Development Document Update					[Redacted]																							
					CDD-U																							
Environmental Testing					[Redacted]																							
					Environmental Testing																							
Industry Day									1																			
									Industry Day																			
Milestone C													2															
													MS-C															
Contract Award													3															
													Award															
Low Rate Initial Production													[Redacted]															
													LRIP															
User Excursion (in lieu of OT)													[Redacted]															
													User Excursion (in lieu of OT)															
First Article Test/Production Verification Testing													[Redacted]															
													FAT/FVT															
Full Materiel Release																	4											
																	FMR											
Full Rate Production																					[Redacted]							
																					FRP							

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP2 / <i>Shoulder-Launched Munitions</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Individual Assault Munition (IAM) Milestone B	3	2020	3	2020
Engineering and Manufacturing Development Contract	4	2020	3	2022
Live Test Firing	4	2021	3	2022
User Jury (Soldier Touch Point)	4	2021	1	2022
Capability Development Document Update	4	2022	1	2024
Environmental Testing	4	2022	1	2023
Industry Day	1	2024	1	2024
Milestone C	3	2024	3	2024
Contract Award	3	2024	3	2024
Low Rate Initial Production	3	2024	4	2026
User Excursion (in lieu of OT)	3	2024	3	2025
First Article Test/Production Verification Testing	4	2024	3	2025
Full Materiel Release	4	2026	4	2026
Full Rate Production	1	2027	1	2033

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EP3: <i>Reduced Range Ammunition - Small Caliber</i>	-	8.639	5.214	-	-	-	-	-	-	-	0.000	13.853
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The small caliber Reduced Range Ammunition (RRA) Project is a critical technology development in response to the 7.62 millimeter (mm) and .50 caliber Capabilities Development Documents (CDD). The overall objective of RRA is to provide training ammunition suitable for use on military installations with Surface Danger Zone (SDZ) restrictions. The relatively long maximum range of the 7.62mm and .50 caliber service ammunition poses challenges on training ranges in range restricted areas. RRA will mitigate a training gap on installations by providing a materiel solution that meets training needs while shortening and condensing the SDZ. This will allow soldiers to train with 7.62mm and .50 caliber weapons on restricted ranges. The RRA cartridge design will be compatible with all Army 7.62mm and .50 caliber weapons, but specifically optimized to work in the M240 and M2 Machine Guns. There is no Fiscal Year (FY) 2024 request.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Engineering and Manufacturing Development 7.62mm</p> <p>Description: EMD Activities for 7.62mm Reduced Range Ammunition.</p> <p>FY 2023 Plans: Complete EMD, complete PQT, and continue performing activities to prepare for transition of manufacturing to the LCAAP in preparation for Low-Rate Initial Production (LRIP).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There is no FY 2024 request as the technology transitions to production in 2024.</p>	5.014	1.793	-
<p>Title: Engineering and Manufacturing Development .50 Caliber</p> <p>Description: EMD Activities for .50 Cal Reduced Range Ammunition.</p> <p>FY 2023 Plans: Complete EMD effort, complete safety release testing, complete PQT, and conduct a LUA.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There is no FY 2024 request as the technology transitions to production in 2024.</p>	3.625	3.231	-
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p>	-	0.190	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<i>FY 2023 Plans:</i> Funding transferred in accordance with Title 15 USC §638			
<i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	8.639	5.214	-

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• F57515: CTG, 7.62 REDUCED RANGE AMMUNITION	-	-	1.000	-	1.000	-	-	-	-	0.000	1.000
• E07307: 50 Caliber Reduce Range Ammunition (RRA)	-	-	1.000	-	1.000	-	29.907	22.789	40.344	0.000	94.040

Remarks
Procurement of Ammunition, Army F57515 and E07307: These funding lines supports the procurement of Reduced Range Ammunition.

D. Acquisition Strategy
After 7.62mm Milestone (MS) B in FY 2019, the Government awarded competitive Engineering and Manufacturing Development (EMD) contracts. Upon completing Production Qualification Testing (PQT), the government down-selected to a single contractor to complete EMD. The .50 Caliber program followed a similar strategy. The Government awarded multiple competitive contracts for the .50 Caliber EMD.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		0.190		-		-		-	0.000	0.190	-
Subtotal			-	-		0.190		-		-		-	0.000	0.190	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Contract 7.62mm	Option/CPFF	Nammo Tally : Mesa, Arizona	3.013	0.800	Nov 2022	-		-		-		-	Continuing	Continuing	Continuing
Development Contract .50 Cal	Option/CPFF	General Dynamics : St. Petersburg, Florida	1.862	0.600	Dec 2022	0.615	Jan 2023	-		-		-	Continuing	Continuing	Continuing
Subtotal			4.875	1.400		0.615		-		-		-	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEVCOM-AC Engineering Support 7.62mm	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	4.313	0.950	Oct 2021	1.093	Oct 2022	-		-		-	Continuing	Continuing	Continuing
DEVCOM-AC Engineering Support .50 Cal	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	2.690	1.075	Oct 2021	1.100	Oct 2022	-		-		-	Continuing	Continuing	Continuing
US Army Research Lab (ARL) 7.62mm	MIPR	US Army Research Lab (ARL) : Aberdeen, Maryland	0.470	0.614	Mar 2022	0.400	Oct 2022	-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EP3 / Reduced Range Ammunition - Small Caliber							
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
US Army Research Lab (ARL) .50 Cal	MIPR	US Army Research Lab (ARL) : Aberdeen, Maryland	0.400	0.500	Mar 2022	0.301	Oct 2022	-		-		-	Continuing	Continuing	Continuing
Subtotal			7.873	3.139		2.894		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Tests 7.62mm LUA	MIPR	U.S. Army Test Center : Aberdeen, Maryland	0.400	0.600	Jun 2022	-		-		-		-	0.000	1.000	-
Production Qualification Testing (PQT 7.62mm)	MIPR	Aberdeen Test Center : Aberdeen, Maryland	-	1.450	May 2022	0.300	Nov 2022	-		-		-	Continuing	Continuing	Continuing
User Evaluation .50 Cal	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	0.640	0.600	Sep 2022	0.415	Dec 2022	-		-		-	Continuing	Continuing	Continuing
Production Qualification Testing (PQT) .50 Cal	MIPR	Aberdeen Test Center : Aberdeen, Maryland	-	1.450	May 2022	0.800	Nov 2022	-		-		-	Continuing	Continuing	Continuing
Subtotal			1.040	4.100		1.515		-		-		-	Continuing	Continuing	N/A
Project Cost Totals			13.788	8.639		5.214		-		-		-	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
7.62mm Engineering and Manufacturing Development (EMD)	[Blue Bar]				[Blue Bar]																							
	7.62mm EMD																											
7.62mm Pre-Production Qualification Test (PPQT)	[Blue Bar]																											
	7.62mm PPQT																											
7.62mm Developmental Test and Evaluation (DT&E)	[Blue Bar]																											
	7.62mm DT&E																											
7.62mm Soldier Touch Point (STP)	[Blue Bar]																											
	7.62mm STP																											
7.62mm Critical Design Review (CDR)	▲ 2																											
	7.62mm CDR																											
7.62mm Production Qualification Test (PQT)					[Blue Bar]																							
					7.62mm PQT																							
7.62mm Milestone C (MS C)					▲ 3																							
					7.62mm MS C																							
.50 Caliber Engineering and Manufacturing Development (EMD)	[Blue Bar]				[Blue Bar]																							
	.50 Cal EMD																											
.50 Caliber Critical Design Review (CDR)	▲ 1																											
	.50 Cal CDR																											
.50 Caliber Safety Release Testing					[Blue Bar]																							
					.50 Cal Safety Release Testing																							
.50 Caliber Production Qualification Test (PQT)					[Blue Bar]																							
					.50 Cal PQT																							
.50 Caliber Limited User Evaluation (LUA)					[Blue Bar]																							
					.50 Cal LUA																							
.50 Caliber Milestone C (MS C)					▲ 4																							
					.50 Cal MS C																							

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP3 / <i>Reduced Range Ammunition - Small Caliber</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
7.62mm Multiple Concept Design Evaluations	1	2017	4	2018
7.62mm Materiel Development Decision (MDD)	4	2017	4	2017
7.62mm Design Verification Test (DVT)	2	2018	3	2018
7.62mm Milestone B (MS B)	1	2019	1	2019
7.62mm Transitions from BA04 EL7 to BA05 EP3	1	2019	1	2019
7.62mm Engineering and Manufacturing Development (EMD)	1	2019	2	2023
7.62mm Preliminary Design Review (PDR)	2	2020	2	2020
7.62mm Pre-Production Qualification Test (PPQT)	3	2021	1	2022
7.62mm Developmental Test and Evaluation (DT&E)	3	2021	1	2022
7.62mm Soldier Touch Point (STP)	4	2021	1	2022
7.62mm Critical Design Review (CDR)	2	2022	2	2022
7.62mm Production Qualification Test (PQT)	4	2022	2	2023
7.62mm Milestone C (MS C)	2	2023	2	2023
.50 Caliber Project Starts on BA04 EL7	1	2018	1	2018
.50 Caliber Multiple Concept Design Evaluations	1	2018	1	2020
.50 Caliber Materiel Development Decision (MDD)	2	2018	2	2018
.50 Caliber Design Verification Test (DVT)	2	2019	3	2019
.50 Caliber Milestone B (MS B)	1	2020	1	2020
.50 Caliber Transitions from BA04 EL7 to BA05 EP3	1	2020	1	2020
.50 Caliber Engineering and Manufacturing Development (EMD)	1	2020	4	2023
.50 Caliber Preliminary Design Review (PDR)	2	2021	2	2021
.50 Caliber Pre-Production Qualification Test (PPQT)	1	2021	3	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber
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Events	Start		End	
	Quarter	Year	Quarter	Year
.50 Caliber Critical Design Review (CDR)	1	2022	1	2022
.50 Caliber Safety Release Testing	4	2022	3	2023
.50 Caliber Production Qualification Test (PQT)	4	2022	3	2023
.50 Caliber Limited User Evaluation (LUA)	2	2023	2	2023
.50 Caliber Milestone C (MS C)	4	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EP4: One-Way Luminescence for Small Caliber Ammo	-	4.717	7.565	3.093	-	3.093	-	-	-	-	0.000	15.375
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The One Way Luminescence (OWL) project is a critical technology development in response to the 7.62 millimeter (mm) and 5.56mm Families of Ammunition Capabilities Development Documents (CDD) and .50 Caliber Munitions CDD. Current small caliber ammunition tracer rounds are a pyrotechnic tracer mix which allows enemy forces to see the trace round and track its trajectory back to the shooter. The OWL projects objective is to develop and field a full tracer round, replace the current pyrotechnic cartridges with trace cartridges that are only visible to the shooter and soldiers in close proximity, increasing soldier survivability, and increasing lethality by incorporating Enhanced Performance Round (EPR) technology into the new tracer ammunition. 7.62mm and 5.56mm are the immediate focus; later followed by .50 Caliber cartridges and Next Generation Squad Weapons (NGSW) ammunition. Fiscal Year (FY) 2024 funding supports continuing Engineering and Manufacturing Development (EMD) and performing preparation activities for Materiel Release (MR) for the 7.62mm variant. FY 2024 funding will also support EMD efforts, performing Production Qualification Testing (PQT), and a Soldier Touch Point (STP) / User Evaluation for the 5.56mm variant.

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

	FY 2022	FY 2023	FY 2024
<p>Title: EMD 7.62mm</p> <p>Description: EMD efforts for the 7.62mm variant.</p> <p>FY 2023 Plans: Complete EMD efforts, perform PQT, and perform activities to prepare for transition of manufacturing to the LCAAP in preparation for LRIP.</p> <p>FY 2024 Plans: Continue EMD and perform preparation activities for Materiel Release (MR).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Reduction due to less planned activities in 2024 as the program transitions from development to production.</p>	-	1.326	0.614
<p>Title: EMD 5.56mm</p> <p>Description: EMD efforts for the 5.56mm variants.</p> <p>FY 2023 Plans: Continue EMD efforts, conduct PQT, and conduct a STP / User Evaluation.</p> <p>FY 2024 Plans:</p>	4.602	5.963	2.479

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Complete EMD efforts, perform PQT, and execute a STP / User Evaluation. FY 2023 to FY 2024 Increase/Decrease Statement: Reduction due to less planned activities in 2024 as the program nears completion of development before transitioning to production.				
Title: Prototype and Concept Evaluation for Other Small Caliber Ammunition Description: Supports concept development/evaluation of applying OWL tracer solutions to other small caliber ammunition; including .50 Caliber ammunition.		0.115	-	-
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638 FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638		-	0.276	-
Accomplishments/Planned Programs Subtotals		4.717	7.565	3.093
C. Other Program Funding Summary (\$ in Millions) N/A Remarks				
D. Acquisition Strategy The OWL concept will be developed through Government and Industry prototyping efforts. Technology Readiness Assessments (TRAs) were conducted in FY 2017 and FY 2018 to evaluate the industry and Government concepts in order to proceed with the 7.62mm EMD. The 5.56mm, NGSW, and .50 Caliber cartridges follows the 7.62mm schedule with EMD starting in FY 2021 for the 5.56mm variant after conducting a TRA and achieving Technology Readiness Level 6 (TRL6) in FY 2020. The new tracer cartridges will replace legacy tracers in each of the various small caliber configurations.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		0.276		-		-		-	0.000	0.276	-
Subtotal			-	-		0.276		-		-		-	0.000	0.276	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Lake City Army Ammunition Plant Tech Integration PH II (5.56mm)	Option/ FFP	OLIN Winchester Corporation : Independence, MO	-	1.061	Jun 2022	-		-		-		-	0.000	1.061	-
OWL Manufacturing Tooling Development (5.56mm)	Option/ CPFF	JAK Tool Engineering Solutions : Cranbury, NJ	1.571	-		0.195	Jan 2023	-		-		-	0.000	1.766	-
EMD PH I Contract (5.56mm)	Option/ CPFF	OLIN Winchester Corporation : Independence, MO	3.000	1.885	Feb 2022	2.820	Feb 2023	-		-		-	0.000	7.705	-
Subtotal			4.571	2.946		3.015		-		-		-	0.000	10.532	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEVCOM-AC Engineering Support 7.62mm	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	4.834	-		0.500	Oct 2022	0.400	Oct 2023	-		0.400	0.000	5.734	-
DEVCOM-AC Engineering Support 5.56mm	MIPR	Development Command Armaments Center (DEVCOM-AC) :	1.546	0.831	Oct 2021	1.800	Oct 2022	1.730	Oct 2023	-		1.730	0.000	5.907	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Picatinny Arsenal, New Jersey													
OWL Solutions/Evaluation	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	0.095	0.115	Oct 2021	-		-		-		-	0.000	0.210	-
Subtotal			6.475	0.946		2.300		2.130		-		2.130	0.000	11.851	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Production Qualification Testing (PQT) 7.62mm	MIPR	Aberdeen Test Center : Aberdeen, MD	-	-		0.826	Mar 2023	0.214	Oct 2023	-		0.214	0.000	1.040	-
Radar Testing (5.56mm)	MIPR	US Army Research Lab : Aberdeen, MD	0.075	-		0.195	Oct 2022	-		-		-	0.000	0.270	-
Pre-Production Qualification Testing (PPQT) 5.56mm	MIPR	Aberdeen Test Center : Aberdeen, MD	-	0.627	May 2022	-		-		-		-	0.000	0.627	-
Soldier Touch Point 1 (5.56mm)	MIPR	US Army Maneuver Battle Labs : Fort Benning, GA	-	0.198	Jun 2022	-		-		-		-	0.000	0.198	-
Soldier Touch Point 2 (5.56mm)	MIPR	US Army Maneuver Battle Labs : Fort Benning, GA	-	-		0.150	Dec 2022	-		-		-	0.000	0.150	-
Soldier Touch Point 3 (5.56mm)	MIPR	US Army Maneuver Battle Labs : Fort Benning, GA	-	-		-		0.200	Oct 2023	-		0.200	0.000	0.200	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

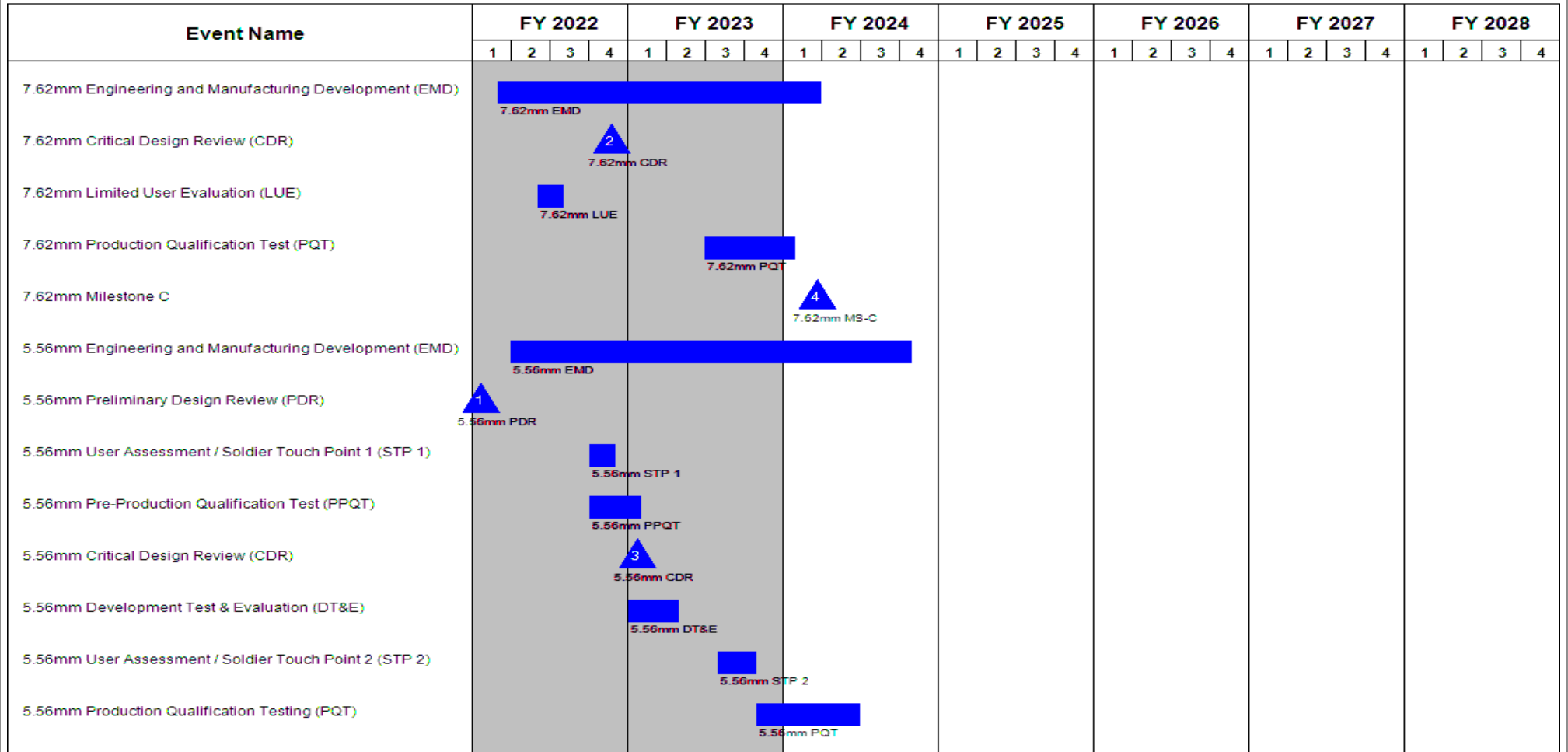
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Production Qualification Testing (PQT) 5.56mm	MIPR	Aberdeen Test Center : Aberdeen, MD	-	-		0.778	Apr 2023	0.549	Oct 2023	-		0.549	0.000	1.327	-
Verification Testing 5.56mm	MIPR	Night Vision Labs : Fort Belvoir, VA	-	-		0.025	Nov 2022	-		-		-	0.000	0.025	-
Subtotal			0.075	0.825		1.974		0.963		-		0.963	0.000	3.837	N/A
Project Cost Totals			11.121	4.717		7.565		3.093		-		3.093	0.000	26.496	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo



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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
5.56mm User Assessment / Soldier Touch Point 3 (STP 3)									■ 5.56mm STP 3																			
5.56mm Milestone C (MS-C)									▲ 5.56mm MS-C																			
Prototype & Concept Evaluation for Other Small Caliber Ammo									■ Concept Design Evaluation																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP4 / <i>One-Way Luminescence for Small Caliber Ammo</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
7.62mm Materiel Development Decision (MDD)	4	2016	4	2016
7.62mm Multiple Concept Design Evaluation	1	2015	1	2019
7.62mm Milestone B (MS-B)	1	2019	1	2019
7.62mm Transitions from BA04 EB8 to BA05 EP4	1	2019	1	2019
7.62mm Engineering and Manufacturing Development (EMD)	1	2019	1	2024
7.62mm Design Verification Test	2	2019	3	2019
7.62mm Preliminary Design Review (PDR)	3	2019	3	2019
7.62mm Development Test & Evaluation (DT&E)	3	2020	3	2021
7.62mm User Assessment	4	2020	1	2021
7.62mm Pre-Production Qualification Test (PPQT)	4	2020	2	2021
7.62mm Critical Design Review (CDR)	4	2022	4	2022
7.62mm Limited User Evaluation (LUE)	2	2022	3	2022
7.62mm Production Qualification Test (PQT)	3	2023	1	2024
7.62mm Milestone C	1	2024	1	2024
5.56mm Materiel Development Decision (MDD)	3	2018	3	2018
5.56mm Project Starts on BA04 EB8	3	2018	3	2018
5.56mm Multiple Concept Design Evaluation	4	2018	4	2020
5.56mm Cavity Design Test	1	2020	3	2020
5.55 Technology Readiness Level 6 (TRL 6)	4	2020	4	2020
5.56mm Milestone B (MS-B)	1	2021	1	2021
5.56mm Transitions from BA04 EB8 to BA05 EP4	1	2021	1	2021
5.56mm Engineering and Manufacturing Development (EMD)	1	2021	4	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo
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Events	Start		End	
	Quarter	Year	Quarter	Year
5.56mm Design Verification Test	3	2021	4	2021
5.56mm Preliminary Design Review (PDR)	1	2022	1	2022
5.56mm User Assessment / Soldier Touch Point 1 (STP 1)	4	2022	4	2022
5.56mm Pre-Production Qualification Test (PPQT)	4	2022	1	2023
5.56mm Critical Design Review (CDR)	1	2023	1	2023
5.56mm Development Test & Evaluation (DT&E)	1	2023	2	2023
5.56mm User Assessment / Soldier Touch Point 2 (STP 2)	3	2023	4	2023
5.56mm Production Qualification Testing (PQT)	4	2023	2	2024
5.56mm User Assessment / Soldier Touch Point 3 (STP 3)	2	2024	2	2024
5.56mm Milestone C (MS-C)	4	2024	4	2024
Prototype & Concept Evaluation for Other Small Caliber Ammo	1	2020	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
<i>EP7: Aviation Airborne Expendable Countermeasures</i>	-	7.251	6.363	3.194	-	3.194	3.208	0.932	-	-	0.000	20.948
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project EB9 / Aviation Airborne Expendable Countermeasures within PE 0603639A / Tank and Medium Caliber Ammunitions transitions to Engineering and Manufacturing Development (EMD) under Project EP7 / Aviation Airborne Expendable Countermeasures within PE 0604802A / Weapons and Munitions - Eng Dev.

A. Mission Description and Budget Item Justification

Aviation Airborne Expendable Countermeasures (AAECM) will support Integrated System Design (ISD), System Capability (SC) and Manufacturing Process Demonstrations (MPD) on expendable countermeasure flares and decoys to include the XM215 Infrared (IR) countermeasure Flare and XM20 Radio Frequency (RF) expendables. These expendable countermeasures systems are an essential part of survivability equipment for Army aircraft. Army Research Development Technology & Evaluation (RDT&E) efforts are coordinated with Program Executive Office (PEO) Aviation to address the AAECM capability, a critical enabler for enduring aircraft and the Future Vertical Lift (FVL) - Aircraft Survivability Equipment (ASE) Cross Functional Team (CFT) within Army's Top modernization priorities.

These advanced decoys will address deficiencies in Army aircraft protection and the safety of its aircrews against advanced Man-Portable Air Defense Systems (MANPADS) and Surface-to-Air Missiles (SAM) systems. The project will also support ISD, SC and MPD on new expendable countermeasure munitions that will protect Army aircraft from advanced and proliferated current guided missile threats. Activities include modeling and simulation, flight testing, qualification testing, environmental considerations, safety enhancements, manufacturing enhancements, qualification of other service and foreign munitions that could meet current requirements, product improvements, insertion of new technologies to increase performance, and enhancement of current flare solutions for new and existing aircraft. Systems include impulse cartridges and aircraft expendables (to include RF expendables). FY 2024 will support initial pattern development (XM215) and enhanced pattern development (XM20) for aircraft platforms.

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

	FY 2022	FY 2023	FY 2024
Title: Improvements to Countermeasure Flares	7.251	6.131	3.194
Description: This program will develop XM215 Infrared and XM20 Radio Frequency expendable countermeasure flare/decoy to defeat specific threats of interest and qualify them for Army use. This program will also develop countermeasure patterns/cocktails solutions to integrate these new expendables into Army's rotary wing and fixed wing aircraft.			
FY 2023 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>FY 2023 Funding will support XM20 modeling and simulation, procurement of test assets and flight testing and for XM215 test assets and Energetic Material Qualification Board (EMQB)</p> <p>FY 2024 Plans: FY 2024 funding will support modeling and simulation, additional procurement of test assets and flight testing for the XM20. Funding will also support XM215 test assets, Production Qualification Testing (PQT), Final Hazards Classification (FHC) and Insensitive Munitions (IM) testing</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There was a decrease in program funding due to completion of XM215 environmental testing, developmental testing, and flight testing in addition to XM20 flight testing.</p>			
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.232	-
Accomplishments/Planned Programs Subtotals	7.251	6.363	3.194

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• EB9: Aviation Airborne Expendable Countermeasures	5.327	-	0.000	-	0.000	-	-	-	-	0.000	5.327
• E49101: Flare, Aircraft Countermeasure, RF (Passive)	-	1.036	8.083	-	8.083	14.978	-	-	-	0.000	24.097
• E49102: Flare, Aircraft Countermeasure, XM215	-	-	0.000	-	0.000	0.860	0.538	8.279	9.574	0.000	19.251

Remarks
Project EB9 Aviation Airborne Expendable Countermeasures within PE 0604802A / Weapons and Munitions - Eng Dev supports the XM20 Radio Frequency (RF) AAECM capability development.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures

D. Acquisition Strategy

During the Materiel Solution Analysis (MSA), Milestone A phase, prototypes developed by the US Government (USG) and contractors were tested and evaluated against initial CDD requirements. The contractor developed XM20 design and the USG developed XM215 design were selected to enter into Engineering and Manufacturing Development (EMD), Milestone B phase, to finalize the design based on lessons learned from the MSA flight test and CDD requirements. Test assets are being procure from industry via Other Transaction Authority (OTA) contract mechanism in FY 2021 to support EMD. Final XM20 and XM215 and configurations to support production after MS C will be procured via Full and Open FAR based contracts.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EP7 / Aviation Airborne Expendable Countermeasures							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-	-		0.232	Jan 2023	-		-		-	0.000	0.232	-
Subtotal			-	-		0.232		-		-		-	0.000	0.232	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
XM215 Development Government	MIPR	CCDC Armaments Center : Picatinny Arsenal, NJ	1.906	0.823	Mar 2022	-		-		-		-	0.000	2.729	-
XM215 Development Contractor 1	C/CPFF	Kilgore : Toone, TN	1.378	0.363	Apr 2022	-		-		-		-	0.000	1.741	-
Subtotal			3.284	1.186		-		-		-		-	0.000	4.470	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
XM215 Engineering Support	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	2.758	2.368	Mar 2022	0.582	Jan 2023	-		-		-	0.000	5.708	-
XM20 Engineering Support	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	-	-		0.500	May 2023	1.168	Oct 2023	-		1.168	Continuing	Continuing	-
Subtotal			2.758	2.368		1.082		1.168		-		1.168	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
XM215 Flight Testing	MIPR	Various : Various	-	3.152	Apr 2022	-		-		-		-	0.000	3.152	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
XM215 Infrared Development																												
XM215 Engineering and Manufacturing Development	[Blue bar]																											
	XM215 EMD																											
XM215 Prototype Build	[Blue bar]																											
	XM215 Prototyping																											
XM215 Flight Test 2	[Blue bar]																											
	XM215 Flight Test 2																											
XM215 Developmental and Operational Testing	[Blue bar]																											
	XM215 DT/OT																											
XM215 Milestone C	[Blue bar]																											
	2 XM215 MS-C																											
XM215 Low Rate Initial Production	[Blue bar]																											
	XM215 LRIP																											
XM215 Pattern Development	[Blue bar]																											
	XM215 Pattern Dev																											
XM215 UH60/AH64 Seeker Bowl	[Blue bar]																											
	XM215 UH60/AH64 Seeker Bowl																											
XM215 CH47/FW Seeker Bowl	[Blue bar]																											
	XM215 CH47/FW Seeker Bowl																											
XM215 Full Rate Production	[Blue bar]																											
	XM215 FRP																											
XM20 Radio Frequency Development																												
XM20 Development Contract	[Blue bar]																											
	XM20 EMD																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
XM20 Critical Design Review	▲ 1 XM20 CDR																											
XM20 Developmental Testing	■ XM20 DT																											
XM20 Test Hardware					■ XM20 Test Hardware																							
XM20 UH60 Developmental Testing							■ XM20 UH60 DTE																					
XM20 UH60/AH64CH47 Radar Cross Section Testing									■ XM20 UH60/AH64CH47 RCS																			
XM20 Milestone C											▲ 3 XM20 MS-C																	
XM20 Low Rate Initial Production													■ XM20 LRIP															
XM20 AH64/CH47 Developmental Testing													■ XM20 AH64/CH47 DTE															
XM20 UH60 Initial Operational Test and Evaluation													■ XM20 UH60 IOTE															
XM20 AH64/CH47 Initial Operational Test and Evaluation																■ XM20 AH64/CH47 IOTE												
XM20 Production																				■ XM20 FRP								

Note
Project EB9 / Aviation Airborne Expendable Countermeasures within PE 0603639A / Tank and Medium Caliber Ammunitions transitions to Engineering and Manufacturing Development (EMD) under Project EP7 / Aviation Airborne Expendable Countermeasures within PE 0604802A / Weapons and Munitions - Eng Dev.

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP7 / <i>Aviation Airborne Expendable Countermeasures</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
XM215 Infrared Development	1	2019	4	2031
XM215 Milestone A	1	2019	1	2019
XM215 Prototyping	1	2019	2	2020
XM215 Down Select	3	2019	3	2019
XM215 Testing Efforts (Stability/Heat/Cold)	3	2019	2	2020
XM215 Flight Testing	1	2020	2	2020
XM215 Milestone B	2	2020	2	2020
XM215 Engineering and Manufacturing Development	2	2020	4	2023
XM215 Design Verification Test	2	2021	3	2021
XM215 Flight Test	2	2021	2	2021
XM215 Prototype Build	3	2021	4	2023
XM215 Flight Test 2	1	2023	1	2023
XM215 Developmental and Operational Testing	2	2023	4	2023
XM215 Milestone C	1	2024	1	2024
XM215 Low Rate Initial Production	1	2024	4	2026
XM215 Pattern Development	1	2024	1	2026
XM215 UH60/AH64 Seeker Bowl	3	2024	1	2025
XM215 CH47/FW Seeker Bowl	3	2025	1	2026
XM215 Full Rate Production	1	2027	4	2031
XM20 Radio Frequency Development	1	2019	4	2031
XM20 Milestone A	1	2019	1	2019
XM20 Prototype Development	1	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures
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Events	Start		End	
	Quarter	Year	Quarter	Year
XM20 Demonstrations	2	2019	3	2019
XM20 Technology Maturation and Risk Reduction	1	2020	2	2021
XM20 Flight Testing	2	2020	2	2020
XM20 Modeling and Simulation	3	2020	4	2020
XM20 Data Analysis	1	2021	2	2021
XM20 Milestone B	2	2021	2	2021
XM20 Development Contract	2	2021	4	2022
XM20 Critical Design Review	2	2022	2	2022
XM20 Developmental Testing	2	2022	4	2022
XM20 Test Hardware	1	2023	2	2026
XM20 UH60 Developmental Testing	4	2023	1	2024
XM20 UH60/AH64CH47 Radar Cross Section Testing	3	2024	4	2024
XM20 Milestone C	1	2025	1	2025
XM20 Low Rate Initial Production	2	2025	4	2026
XM20 AH64/CH47 Developmental Testing	3	2025	4	2025
XM20 UH60 Initial Operational Test and Evaluation	3	2025	4	2025
XM20 AH64/CH47 Initial Operational Test and Evaluation	2	2026	4	2026
XM20 Production	1	2027	4	2031

Note

Project EB9 Aviation Airborne Expendable Countermeasures within Program Element (PE) 0603639A Tank and Medium Caliber Ammunitions transitions to EMD under Project EP7 Aviation Airborne Expendable Countermeasures within PE 0604802A Weapons and Munitions - Eng Dev.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 / 40mm HV Improved High Explosive Dual Purpose
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EU4: 40mm HV Improved High Explosive Dual Purpose	-	4.618	2.073	-	-	-	-	-	-	-	0.000	6.691
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

40 millimeter (mm) High Velocity (HV) High Explosive Dual Purpose - Air burst (HEDP-AB) is a new capability identified as a Warfighter counter-defilade requirement in the 40mm High Velocity Improved High Explosive Dual Purpose Cartridge Capability Development Document (CDD) and will provide the Mk19 Mod 3 Grenade Machine Gun (GMG) an airburst capable cartridge with the ability of achieving required lethal effects against enemy targets in the open and in defilade while maintaining the capability to defeat unarmored and lightly armored vehicles. XM1176 HEDP-AB cartridges are manufactured by de-fuzing legacy M430A1 cartridges and installing a new airburst capable fuze onto the M430A1 warhead. In FY 2024 there is no funding request.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Engineering and Manufacturing Development (EMD)</p> <p>Description: Award EMD contracts to support Design Engineering Testing (DET) and Developmental Test & Evaluation (DT&E) of the 40mm dual purpose airburst capability.</p> <p>FY 2023 Plans: FY 2023 funding supports activities in preparation for Live Fire Testing & Evaluation (LFT&E) that is required due to the program being on Director Operational Test and Evaluation (DOT&E) Oversight.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: In FY 2024 there is no funding request.</p>	4.618	1.997	-
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.076	-
Accomplishments/Planned Programs Subtotals			
	4.618	2.073	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 / 40mm HV Improved High Explosive Dual Purpose

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	Total Cost
			Base	OCO	Total					Complete	
• E70505: CTG, 40MM, HV HEDP-AB, XM1176	13.844	15.853	0.000	-	0.000	2.898	3.147	13.106	13.214	0.000	62.062

Remarks

D. Acquisition Strategy

The 40mm HV HEDP-AB cartridge was developed through a competitive EMD program. Milestone B approval was followed by a competitive award for the EMD phase which included DET 1 and DET 2 and an option for DT&E. One contractor was awarded to develop an air burst capable fuze to be retrofitted onto the currently fielded, High Explosive Dual Purpose cartridges and develop a Programming Unit. Test results will support the documentation for Milestone C. After Milestone C is achieved, a contract option will be awarded for Low Rate Initial Production 1 (LRIP-1) followed by options for Low Rate Initial Production 2 (LRIP-2) and Production Year 1 (PY1).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EU4 I 40mm HV Improved High Explosive Dual Purpose								
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	TBD	Various : Various	-	-		0.076		-		-		-	0.000	0.076	-	
Subtotal			-	-		0.076		-		-		-	0.000	0.076	N/A	
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Project Manager Maneuver Ammunition Systems (PM MAS)	MIPR	Picatinny Arsenal : NJ	0.542	-		0.500	Nov 2022	-		-		-	0.000	1.042	-	
Subtotal			0.542	-		0.500		-		-		-	0.000	1.042	N/A	
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
DEVCOM-AC Engineering Support	MIPR	Development Command - Armaments Center (DEVCOM-AC) : Picatinny Arsenal, NJ	7.414	2.084	Oct 2021	0.924	Nov 2022	-		-		-	0.000	10.422	-	
Subtotal			7.414	2.084		0.924		-		-		-	0.000	10.422	N/A	
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Limited User Evaluation (LUE)	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.448	-		-		-		-		-	0.000	0.448	-	

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 I 40mm HV Improved High Explosive Dual Purpose

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Engineering and Manufacturing Development (EMD)	[Redacted]																											
Developmental Test & Evaluation (DT&E) Build	[Redacted]																											
Developmental Test & Evaluation (DT&E)	[Redacted]																											
Limited User Evaluation (LUE)																												
Milestone C																												
Low Rate Initial Production (LRIP) Contract Award																												
Low Rate Initial Production (LRIP)																												
Live Fire Test & Evaluation (LFT&E)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EU4 I 40mm HV Improved High Explosive Dual Purpose

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B Support Documents	2	2017	4	2018
Milestone B	4	2018	4	2018
Engineering and Manufacturing Development (EMD)	4	2018	4	2022
Test Readiness Review for Design Engineering Test 1	4	2019	4	2019
Design Engineering Test (DET) 1	1	2020	2	2020
Test Readiness Review for Design Engineering Test 2	2	2020	2	2020
Design Engineering Test (DET) 2	3	2020	4	2020
Developmental Test & Evaluation (DT&E) Contract Award	4	2020	4	2020
Critical Design Review (CDR)	1	2021	1	2021
Developmental Test & Evaluation (DT&E) Build	3	2021	2	2022
Developmental Test & Evaluation (DT&E)	2	2022	4	2023
Limited User Evaluation (LUE)	4	2023	4	2023
Milestone C	4	2023	4	2023
Low Rate Initial Production (LRIP) Contract Award	4	2023	4	2023
Low Rate Initial Production (LRIP)	4	2023	3	2024
Live Fire Test & Evaluation (LFT&E)	2	2024	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EU6: 155mm HE Rocket Assist Project Extended Range	-	26.646	14.382	28.772	-	28.772	15.600	2.650	-	-	0.000	88.050
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The 155 millimeter (mm) High Explosive (HE) Rocket Assisted Projectile, Extended Range Project supports projectile development efforts to achieve ranges of 40km in current 39 caliber artillery weapon systems and longer ranges in future 58 caliber Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH) to achieve the Army's requirement of extended range lethality. The Project is executing an evolutionary approach to meet the objectives of extended range and precision. The XM1113 will replace the obsolete M549A1 in 39 caliber weapon systems and increase range from 30km to 40km. The XM1210 will be optimized for 58 caliber guns and allow commanders to provide accurate cannon artillery fires at ranges of 70km and greater with ERCA. The XM1113 will not have a FY 2024 budget request. FY 2024 funding will continue to support XM1210 development and qualification activities for the Full Materiel Release (FMR) configuration.

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

	FY 2022	FY 2023	FY 2024
<p>Title: 155mm High Explosive Rocket Assisted Projectile (RAP) Extended Range</p> <p>Description: The XM1113 will replace the obsolete M549A1 in 39 caliber weapon systems and increase range from 30km to 40km. The XM1210, previously known as XM1113 Extended Range (XM1113ER), will be optimized for 58 caliber guns and allow commanders to provide accurate cannon artillery fires at ranges of 70km and greater with ERCA.</p> <p>FY 2023 Plans: FY 2023 funding will support the completion of XM1113 qualification activities, engineering efforts to evaluate test data to ensure that the projectile is safe, suitable and operationally effective as well as the gathering of all statutory and regulatory requirements in support of a Milestone C and Full Materiel Release (FMR). FY 2023 funding will also support XM1210 qualification and firing tables testing required for Safety Release for First Unit Issued (FUI) to support the ERCA Operational Assessment, Urgent Materiel Release (UMR) qualification activities and the initiation of FMR development activities.</p> <p>FY 2024 Plans: FY 2024 Funding will support XM1210 development and qualification activities for the Full Materiel Release (FMR) configuration.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase in funding in FY 2024 due to increased contract and test costs associated with XM1210 development and qualification efforts.</p>	26.646	13.857	28.772
<p>Title: SBIR/STTR Transfer</p>	-	0.525	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Description: Funding transferred in accordance with Title 15 USC §638			
FY 2023 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	26.646	14.382	28.772

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• E66501: PROJ, 155mm ARTY HE RAP, XM1113	77.264	68.588	26.688	-	26.688	23.317	43.625	49.376	48.632	0.000	337.490
• E27121: PROJ, 155MM ARTY HE RAP, M1210	-	17.489	2.932	-	2.932	18.219	22.195	31.854	31.854	0.000	124.543

Remarks
Procurement of Ammunition, Army (PAA) budget line items, Standard Study Numbers E66501 and E27121, have been established to resource the procurement of XM1113 and XM1210 quantities.

D. Acquisition Strategy
The 155mm HE Rocket Assisted Projectile, Extended Range Project is utilizing a competitively awarded DoD Ordnance Technology Consortium (DOTC) Other Transaction Agreement (OTA) initiative with GD-OTS to support the accelerated timeline to develop and qualify the XM1113 for 39 caliber weapon systems as well as 58 caliber Extended Range Cannon Artillery (ERCA) compatibility efforts. A separate competitively awarded DOTC OTA initiative with GD-OTS is being utilized for XM1210 development and qualification activities required to achieve ranges of 70km and greater with ERCA. The Project will complete XM1210 qualification efforts in support of Safety Release for First Unit Issued (FUI) for the ERCA Increased Range Operational Assessment and Urgent Materiel Release (UMR). XM1113 is planning a MS-C/TS-STD in 1QFY24. A Federal Acquisition Regulation (FAR) based production contract award will occur in support of UMR, Low Rate Initial Production (LRIP) and Full Rate Production (FRP).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Office of the Project Manager (PM) Combat Ammunition Systems (CAS) : Picatinny Arsenal, NJ	1.620	0.100	Oct 2021	0.100	Oct 2022	0.100	Oct 2023	-		0.100	0.000	1.920	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.525		-		-		-	0.000	0.525	-
Subtotal			1.620	0.100		0.625		0.100		-		0.100	0.000	2.445	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DOTC - XM1113 and XM1210 Engineering and Manufacturing Development (EMD)	MIPR	DoD Ordnance Technology Consortium Other Transaction Agreement (DOTC OTA) : Various	73.682	19.078	Nov 2021	6.929	Nov 2022	24.422	Nov 2023	-		24.422	0.000	124.111	-
Subtotal			73.682	19.078		6.929		24.422		-		24.422	0.000	124.111	N/A

Remarks
Increase in EMD contract costs to support additional activities required to achieve Full Materiel Release.

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	8.525	2.818	Nov 2021	2.253	Nov 2022	2.500	Nov 2023	-		2.500	0.000	16.096	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fire Control Software Integration	MIPR	U.S. Army Communications-Electronics Command (CECOM) : Aberdeen, MD	0.200	-		-		0.250	Nov 2023	-		0.250	0.000	0.450	-
Subtotal			8.725	2.818		2.253		2.750		-		2.750	0.000	16.546	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Qualification Testing	MIPR	Army Test and Evaluation Command (ATEC) Yuma Proving Ground (YPG) : Yuma, AZ	6.840	4.650	Mar 2022	4.575	Jan 2023	1.500	Jan 2024	-		1.500	0.000	17.565	-
Subtotal			6.840	4.650		4.575		1.500		-		1.500	0.000	17.565	N/A

			Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			90.867	26.646		14.382		28.772		-		28.772	0.000	160.667	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
XM1113 High Explosive Rocket Assisted Projectile																												
XM1113 HE RAP Engineering Manufacturing Development (EMD)	[Redacted]				[Redacted]																							
39 cal Qualification	[Redacted]				[Redacted]																							
39 cal Safety and Robustness Improvement Activities	[Redacted]				[Redacted]																							
39 cal Critical Design Review (CDR)	▲ 1 39 cal CDR																											
39 cal Urgent Materiel Release (UMR) Deliveries					[Redacted]																							
39 cal Milestone C									▲ 3 39 cal MS-C																			
39 cal Full Materiel Release (FMR)													▲ 7 39 cal FMR															
XM1210 HE RAP Extended Range																												
XM1210 HE RAP Extended Range EMD	[Redacted]																											
XM1210 Development Testing	■ XM1210 Development Testing																											
XM1210 UMR Critical Design Review (CDR)	▲ 2 XM1210 UMR CDR																											
XM1210 UMR and Safety Testing					[Redacted]																							

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
XM1210 Milestone B									▲ 5 XM1210 MS-B																				
XM1210 FMR Development									■																				
XM1210 SR Deliveries for Soldier Touch Points/OA									■																				
Safety Release for ERCA First Unit Issued (FUI)									▲ 4 SR for ERCA FUI																				
ERCA System of Systems (SoS) Developmental Testing (DT) OA									■																				
XM1210 UMR									▲ 6 XM1210 UMR																				
XM1210 FMR CDR													▲ 8 XM1210 FMR CDR																
XM1210 FMR Qualification Testing													■																
XM1210 Milestone C																	▲ 10 XM1210 MS-C												
XM1210 Initial Operational Test & Evaluation (IOT&E)																	▲ 9 XM1210 IOT&E												
XM1210 FMR																					▲ 11 XM1210 FMR								
Precision Guidance Aft (PG-Aft) - Congressional Add																													
PG-Aft Development & Testing	■				■				■																				

Note
XM1113 will achieve lethality against targets at 40km range. XM1210 (formerly XM1113ER) will achieve 70+km out of ERCA.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
<p>FY 2021 Congressional Add supported the completion of Precision Guidance Aft development and test efforts to include fuze survivability when fired out of the ERCA weapon system. Knowledge points achieved are being utilized to support long range precision fuze development efforts executed on Program Element 0604802A, Project S36, Precision Guidance Kit, and provide a risk mitigation alternative to support the ERCA System of Systems Operational Assessment.</p> <p>Safety Release (SR) Operational Assessment (OA) Developmental Testing (DT)</p>		

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
XM1113 High Explosive Rocket Assisted Projectile	1	2019	4	2023
XM1113 HE RAP Engineering Manufacturing Development (EMD)	4	2019	1	2023
39 cal Qualification	4	2019	1	2023
39 cal Safety and Robustness Improvement Activities	1	2021	3	2022
39 cal Critical Design Review (CDR)	2	2022	2	2022
39 cal Urgent Materiel Release (UMR) Deliveries	3	2023	1	2024
39 cal Milestone C	1	2024	1	2024
39 cal Full Materiel Release (FMR)	2	2025	2	2025
XM1210 HE RAP Extended Range	3	2021	4	2023
XM1210 HE RAP Extended Range EMD	2	2020	1	2027
XM1210 Development Testing	1	2021	2	2022
XM1210 Preliminary Design Review (PDR)	2	2021	2	2021
XM1210 UMR Critical Design Review (CDR)	3	2022	3	2022
XM1210 UMR and Safety Testing	4	2023	1	2024
XM1210 Milestone B	2	2024	2	2024
XM1210 FMR Development	4	2023	2	2026
XM1210 SR Deliveries for Soldier Touch Points/OA	1	2024	2	2025
Safety Release for ERCA First Unit Issued (FUI)	1	2024	1	2024
ERCA System of Systems (SoS) Developmental Testing (DT)/OA	1	2024	1	2026
XM1210 UMR	4	2024	4	2024
XM1210 FMR CDR	2	2025	2	2025
XM1210 FMR Qualification Testing	3	2025	1	2027

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
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Events	Start		End	
	Quarter	Year	Quarter	Year
XM1210 Milestone C	2	2026	2	2026
XM1210 Initial Operational Test & Evaluation (IOT&E)	2	2026	2	2026
XM1210 FMR	1	2027	1	2027
Precision Guidance Aft (PG-Aft) - Congressional Add	1	2020	1	2022
PG-Aft Development & Testing	1	2020	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU8 / Improved Multi-Option Fuze
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EU8: Improved Multi-Option Fuze	-	4.395	-	-	-	-	-	-	-	-	0.000	4.395
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Improved Multi-Option Fuze Project is a technology refresh and modernization effort that provides an incremental capability with technology advancements and performance improvements on the current non-precision artillery and mortar ammunition proximity multi-option fuze that will increase robustness to electronic countermeasures (ECM), eliminates the susceptibility of reverse engineering (RE), incorporates power source advancements, improves delay mode reliability, and integrates safe & arm improvements. This Project will develop and qualify safe, affordable, reliable, Proximity Height of Burst fuzing solutions with robust Defense Exportability Features (DEF) for non-precision conventional cannon artillery and mortar munitions that are resistant to adversary exploitation via ECM and RE threats. This Project does not have a Fiscal Year (FY) 2024 budget request.

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

	FY 2022	FY 2023	FY 2024
Title: Improved Multi-Option Fuze Development	4.395	-	-
Description: Develop and qualify improved multi-option fuze technologies.			
Accomplishments/Planned Programs Subtotals	4.395	-	-

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• E99909: Multi-Option Fuze, Artillery M782	13.653	-	19.000	-	19.000	19.050	29.359	29.954	30.549	0.000	141.565

Remarks

FY 2022 Procurement of Ammunition, Army (PAA) funding will be executed on Standard Study Number (SSN) E99909, Multi-Option Fuze, Artillery (MOFA) M782 for the procurement of MOFA fuzes.

D. Acquisition Strategy

The Improved Multi-Option Fuze Project currently utilizes the DoD Ordnance Technology Consortium Other Transaction Agreement (DOTC OTA) with incrementally funded Engineering and Manufacturing Development (EMD) contracts for improved and modernized Multi-Option Fuze Artillery (MOFA) II detailed designs and the fabrication of hardware through FY 2022. The Improved Multi-Option Fuze Project will enhance the existing multi-option fuzes for cannon artillery and mortar munitions programs of record. Detailed government-owned Technical Data Packages (TDPs) will enable "build to print" designs to facilitate competitive Federal Acquisition

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EU8 / <i>Improved Multi-Option Fuze</i>

Regulation (FAR) based contracting for procurement. Qualified MOFA II will be a Technology Readiness Level 8 (TRL-8) TC design with a mature technical design packages for production. Parallel Improved Multi-Option Fuze Mortar (iMOFM) effort will be a qualified TRL-8 design for incorporation into mortar cartridge production.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
2040 / 5						PE 0604802A / Weapons and Munitions - Eng Dev				EU8 / Improved Multi-Option Fuze					
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MOFA II Development & PQT Support	MIPR	DoD Ordnance Technology Consortium (DOTC) : Various	16.702	0.350	Nov 2021	-		-		-		-	0.000	17.052	-
iMOFM Fuze Test Hardware & Qualification	MIPR	DoD Ordnance Technology Consortium (DOTC) : Various	2.332	0.478	Jan 2022	-		-		-		-	0.000	2.810	-
Subtotal			19.034	0.828		-		-		-		-	0.000	19.862	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	MIPR	Combat Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	5.453	1.217	Nov 2021	-		-		-		-	0.000	6.670	-
Fuze Engineering Support	C/LH	SAVIT Corporation : Rockaway, NJ	-	0.150	May 2022	-		-		-		-	0.000	0.150	-
Subtotal			5.453	1.367		-		-		-		-	0.000	6.820	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Improved Multi-Option Fuze Test and Evaluations	MIPR	Combat Capabilities Development Command Armaments Center	-	0.250	Dec 2021	-		-		-		-	0.000	0.250	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU8 / Improved Multi-Option Fuze
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		(DEVCOM AC) : Picatinny Arsenal, NJ													
Improved Multi-Option Fuze Test and Evaluations	MIPR	Army Test and Evaluation Command (ATEC) Yuma Proving Ground (YPG) : Yuma, AZ	1.095	1.250	Jan 2022	-		-		-		-	0.000	2.345	-
Improved Multi-Option Fuze Test and Evaluations	MIPR	Army Test and Evaluation Command (ATEC) Aberdeen Proving Ground (APG) : Aberdeen, MD	0.040	0.120	Nov 2021	-		-		-		-	0.000	0.160	-
Improved Multi-Option Fuze Test and Evaluations	MIPR	White Sands Missile Range (WSMR) : White Sands, NM	0.635	0.330	Dec 2021	-		-		-		-	0.000	0.965	-
Improved Multi-Option Fuze Cyber Security Testing	MIPR	TBD : TBD	-	0.250	Apr 2023	-		-		-		-	0.000	0.250	-
Subtotal			1.770	2.200		-		-		-		-	0.000	3.970	N/A

Remarks
The test location for MOFA II Cyber Security Testing will be determined based on informed requirements by April 2023.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	26.257	4.395	-	-	-	-	0.000	30.652	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU8 / Improved Multi-Option Fuze

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MOFA II																												
MOFA II Safety, Reliability, Environmental, Qualificatio...																												
	Qualification Testing																											
MOFA II Milestone C																												
iMOFM																												
Fabricate iMOFM System Level Qualification Hardware																												
	Fabricate Hardware																											
iMOFM Qualification Testing																												
iMOFM Engineering Change Proposal (ECP)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU8 / Improved Multi-Option Fuze

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Fabricate Prototypes	3	2018	3	2019
Conduct Evaluations and Design Reviews	2	2019	4	2019
MOFA II	3	2019	4	2022
Fabricate MOFA II System Level Qualification Hardware	2	2020	4	2021
MOFA II Safety, Reliability, Environmental, Qualification Testing	1	2021	3	2022
MOFA II Milestone C	3	2022	3	2022
iMOFM	2	2020	4	2022
Fabricate iMOFM System Level Qualification Hardware	3	2020	2	2022
iMOFM Qualification Testing	4	2021	3	2022
iMOFM Engineering Change Proposal (ECP)	4	2022	4	2022

Note

Multi-Option Fuze Artillery (MOFA)
improved Multi-Option Fuze Mortar (iMOFM)

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EW1 / 40mm Low Velocity Ammunition			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EW1: 40mm Low Velocity Ammunition	-	3.508	2.045	0.082	-	0.082	0.110	-	-	-	0.000	5.745
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The 40 millimeter (mm) Low Velocity High Explosive Air Burst (HEAB) is a new capability identified as a Warfighter counter-defilade requirement in the Capability Development Document (CDD), 40mm Low Velocity (LV) Family of Ammunition Annex. The HEAB tactical cartridge allows the Warfighter to engage targets at increased effective ranges using the 40mm M320 Grenade Launcher. The HEAB cartridge provides the grenadier with a higher probability of achieving a first shot kill against enemy personnel, coupled with the ability to defeat personnel targets in defilade positions. When deployed against point and area targets, the cartridge inflicts incapacitating effects against personnel beyond those offered by the current M433 High Explosive Dual Purpose (HEDP) cartridge. The cartridge provides lethal effects against targets with improved accuracy and greater standoff ranges resulting in increased soldier survivability. Fiscal Year (FY) 2024 funds support test reports and close-out activities following Developmental Test and Evaluation (DT&E) and Soldier Touch Point (STP).

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

	FY 2022	FY 2023	FY 2024
<p>Title: 40mm LV HEAB, XM1166</p> <p>Description: Engineering Manufacturing Development (EMD) of the 40mm LV HEAB munition.</p> <p>FY 2023 Plans: FY 2023 funding will support activities in preparation of Developmental Test & Evaluation (DT&E), support for Milestone C, the execution of a Soldier Touch Point, and support of a follow-on Low-Rate Initial Production (LRIP) contract.</p> <p>FY 2024 Plans: FY 2024 funds support test reports and close-out activities following Developmental Test and Evaluation (DT&E) and a final STP will be conducted to support FMR.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funds decrease as the program transitions from development to production.</p>	3.508	1.970	0.082
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>	-	0.075	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Low Velocity Ammunition

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	3.508	2.045	0.082

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

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E71005: CTG, 40MM, LV HEAB, XM1166	10.500	13.888	2.021	-	2.021	2.768	-	11.061	11.048	0.000	51.286

Remarks

D. Acquisition Strategy

The HEAB cartridge will be developed through a competitive Engineering and Manufacturing Development (EMD) Program. Potential designs were evaluated as part of the pre-EMD activities using a Cooperative Research and Development Agreement (CRADA) with contractors. For EMD, the Government awarded two contracts utilizing an Other Transaction Agreement (OTA) through Department of Defense (DoD) Ordnance Technology Consortium (DOTC). The EMD phase will consist of a series of Design Engineering Tests (DET) to assess the Contractors' design progress and ability of achieving the program objectives. Any shortcomings and deficiencies will be addressed prior to Developmental Test & Evaluation (DT&E). After DT&E and a successful Milestone C, the Government will award a single contract for Low Rate Initial Production (LRIP) and four production year options utilizing a follow-on Federal Acquisition Regulation (FAR) based contract.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Low Velocity Ammunition
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		0.075		-		-		-	0.000	0.075	-
Subtotal			-	-		0.075		-		-		-	0.000	0.075	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LV HEAB XM1166 Contractor 1	C/CPFF	Day & Zimmerman, Inc (DZI) : Middletown, IA	22.179	1.372	Jan 2022	-		-		-		-	Continuing	Continuing	Continuing
Project Manager Maneuver Ammunition Systems (PM MAS)	Various	Picatiny Arsenal : Picatiny Arseanl, NJ	-	-		-		0.082	Oct 2023	-		0.082	0.000	0.082	-
Subtotal			22.179	1.372		-		0.082		-		0.082	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LV HEAB XM1166 - Engineering Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatiny Arsenal, NJ	7.563	1.228	Nov 2021	-		-		-		-	Continuing	Continuing	Continuing
LV HEAB XM1166 - Lethality Analysis	MIPR	Data & Analysis Center (DAC) : Aberdeen Proving Ground, Md	-	0.100	Nov 2021	-		-		-		-	0.000	0.100	-
Subtotal			7.563	1.328		-		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Low Velocity Ammunition
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LV HEAB XM1166 Developmental Test and Evaluation (DT&E)	MIPR	Aberdeen Test Center (ATC) : Aberdeen, MD	-	0.707	Dec 2021	1.798	Jan 2023	-		-		-	0.000	2.505	-
Soldier Touch Point 3 & 4 (STP 3 & 4)	MIPR	Aberdeen Test Center (ATC) : Aberdeen, MD	-	0.101	Apr 2022	0.172	Apr 2022	-		-		-	0.000	0.273	-
Subtotal			-	0.808		1.970		-		-		-	0.000	2.778	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		29.742	3.508	2.045	0.082	-	0.082	Continuing	Continuing	N/A

Remarks
Notes:
Low Velocity (LV)
High Explosive Air Burst (HEAB)

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Low Velocity Ammunition

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
40mm HEAB XM1166 Engineering Manufacturing Development	[Blue Bar]				[Grey Bar]																							
	HEAB EMD																											
40mm HEAB XM1166 Critical Design Review	[Blue Triangle 1]																											
	HEAB CDR																											
40mm HEAB XM1166 Subsystem Testing	[Blue Bar]																											
	HEAB SUBSYSTEM TEST																											
40mm Soldier Touch Point 3 (STP3)	[Blue Square]																											
	STP3																											
40mm HEAB XM1166 DT&E					[Blue Bar]																							
					HEAB DT&E																							
40mm Soldier Touch Point 4 (STP4)					[Blue Square]																							
					STP4																							
40mm HEAB XM1166 Milestone C					[Blue Triangle 2]																							
					HEAB MS-C																							
40mm HEAB XM1166 Low Rate Initial Production									[Blue Bar]																			
									HEAB LRIP																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EW1 / <i>40mm Low Velocity Ammunition</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
40mm HEAB XM1166 Cooperative Research & Development Agreement (CRADA) Testing	3	2017	1	2018
40mm HEAB XM1166 Milestone B	4	2018	4	2018
40mm HEAB XM1166 Engineering Manufacturing Development	4	2018	4	2022
40mm HEAB XM1166 Preliminary Design Review	2	2019	2	2019
40mm HEAB XM1166 Design Engineering Test DET 1	1	2020	2	2020
40mm Soldier Touch Point 1 (STP1)	1	2020	2	2020
40mm HEAB XM1166 Design Engineering Test DET 2	4	2020	2	2021
40mm Soldier Touch Point 2 (STP2)	2	2021	2	2021
40mm HEAB XM1166 Critical Design Review	3	2022	3	2022
40mm HEAB XM1166 Design Engineering Test DET 3	3	2021	4	2021
40mm HEAB XM1166 Subsystem Testing	1	2022	3	2022
40mm Soldier Touch Point 3 (STP3)	4	2022	4	2022
40mm HEAB XM1166 DT&E	2	2023	4	2023
40mm Soldier Touch Point 4 (STP4)	3	2023	3	2023
40mm HEAB XM1166 Milestone C	4	2023	4	2023
40mm HEAB XM1166 Low Rate Initial Production	1	2024	4	2024

Note

millimeter (mm)
 Low Velocity (LV)
 High Explosive Air Burst (HEAB)

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
FA6: 30mm Lethality	-	8.613	8.653	3.014	-	3.014	-	-	-	-	0.000	20.280
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The 30 millimeter (mm) Lethality project funds the development of a suite of 30x173mm caliber cartridges, which includes a XM1182 High Explosive Airburst with Trace (HEAB-T) cartridge for increased anti-personnel effects, XM1170 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) cartridge for anti-materiel, and ballistically matched training cartridges; XM1173 Target Practice with Trace (TP-T) cartridge and XM1172 Target Practice Discarding Sabot with Trace (TPDS-T) cartridge. The objective is to enhance the operational effectiveness and lethality of the Stryker Infantry Carrier Vehicle (ICV), Next Generation Combat Vehicle (NGCV), and any Army Fighting Vehicles that are equipped with a 30x173mm weapon system. The tactical APFSDS-T cartridge will provide an organic direct fire capability to support infantry at a greater range and will improve lethality when engaging light-to-medium armored vehicles. The HEAB-T cartridge will provide the Warfighter with increased lethality against troops in the open, counter defilade, Anti-Tank Guided Missile (ATGM) teams, and troops behind urban structures. The training cartridges will be ballistically matched to the tactical cartridges, allowing the Warfighter to train in a cost effective manner. This project is a follow-on of the earlier efforts in support of the United States Army Europe (USAREUR) Operational Needs Statement (ONS) #15-20590 Stryker Increased Lethality for the 2nd Cavalry Regiment (2CR). Fiscal Year (FY) 2024 funding will support execution of Live Fire Test & Evaluation (LFT&E) and Initial Operational Test & Evaluation (IOT&E).

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

	FY 2022	FY 2023	FY 2024
<p>Title: 30X173mm Armor-Piercing Fin-Stabilized Discarding with Sabot Trace (APFSDS-T) and Target Practice Discarding Sabot with Trace (TPDS-T)</p> <p>Description: Qualify 30x173mm armor piercing tactical and training cartridges for use on Stryker ICV, NGCV or other Army Future Fighting Vehicles.</p> <p>FY 2023 Plans: FY 2023 primary activities will include Live Fire Test & Evaluation (LFT&E) hardware fabrication/test assets/targets and conducting Milestone C decision.</p> <p>FY 2024 Plans: FY 2024 primary activities will include Live Fire Test & Evaluation (LFT&E).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding decreases due to completion of Milestone C. Remaining activities will include LFT&E.</p>	1.445	3.653	1.124
<p>Title: 30x173mm HEAB-T and TP-T</p>	7.168	4.684	1.890

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: Develop and qualify a 30x173mm airburst cartridge and trainer for use on Stryker Infantry Combat Vehicles (ICV), Next Generation Combat Vehicles (NGCV), or other Army Future Fighting Vehicles.</p> <p>FY 2023 Plans: FY 2023 primary activities will include integration testing, conducting Milestone C decision, and Live Fire Test & Evaluation (LFT&E) hardware fabrication/test assets/targets.</p> <p>FY 2024 Plans: FY 2024 primary activities will include Live Fire Test & Evaluation (LFT&E) and Initial Operational Test & Evaluation (IOT&E).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding decreases due to completion of Milestone C and platform integration testing. Remaining activities will include LFT&E and IOT&E.</p>			
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.316	-
Accomplishments/Planned Programs Subtotals	8.613	8.653	3.014

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E07610: CTG, 30MM, Progrmabl Air Burst Mun, Mk310, Linked	-	8.910	16.891	-	16.891	16.869	19.372	17.694	18.072	0.000	97.808
• E07306: CTG, 30mm TP-T, MK239, Single	0.826	30.439	24.582	-	24.582	21.388	22.590	25.631	26.002	0.000	151.458
• E07406: CTG, 30mm Hi Expl Incendry-T(HEI-T), Mk238 Series	-	8.603	0.406	-	0.406	0.271	0.268	0.269	0.311	0.000	10.128
• E09191: CTG, 30mm TPDS-T, MK317 (SABOT Trng), Single	6.000	32.078	18.575	-	18.575	13.487	13.631	14.138	13.834	0.000	111.743

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	Total Cost
			Base	OCO	Total					Complete	
• E09292: CTG, 30mm APFSDS-T, MK258, Single	7.000	37.133	6.919	-	6.919	16.361	12.830	9.781	9.557	0.000	99.581

Remarks

D. Acquisition Strategy

30X173mm APFSDS-T and TPDS-T: Proposals were requested from Industry to develop a 30x173mm APFSDS-T anti-materiel tactical cartridge (XM1170) and a 30x173mm TPDS-T ballistically matched training cartridge (XM1172) that will meet Army Performance Specifications and Stryker Lethality Annex Requirements. The Government awarded two contracts utilizing an Other Transaction Agreement (OTA) through Department of Defense (DoD) Ordnance Technology Consortium (DOTC) to support development, Design Engineering Tests (DET) and down-selected to one contract for Developmental Test & Evaluation (DT&E) in support of Milestone C. The Government will award Federal Acquisition Regulation (FAR)-based contracts for production of each cartridge.

30x173mm HEAB-T and TP-T: In support of the approved 30mm Multi-Function Munition Capability Development Document (CDD), the 30x173mm HEAB-T cartridge (XM1182) and the ballistically matched TP-T cartridge (XM1173) will be developed to meet the requirements. The Government awarded two contracts utilizing an Other Transaction Agreement (OTA) through Department of Defense (DoD) Ordnance Technology Consortium (DOTC) to support development, Design Engineering Tests (DET) and down-selected to one contract for Developmental Test & Evaluation (DT&E) in support of Milestone C. The Government will award a single FAR-based contract for production of the XM1182 HEAB-T and XM1173 TP-T cartridges.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		0.316		-		-		-	0.000	0.316	-
Subtotal			-	-		0.316		-		-		-	0.000	0.316	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
High Explosive Airburst with Trace (HEAB-T) EMD Contract 1	C/CPFF	General Dynamics - Ordnance and Tactical Systems (GD-OTS) : Marion, IL	8.868	-		-		-		-		-	0.000	8.868	-
High Explosive Airburst with Trace (HEAB-T) EMD Contract 2	C/CPFF	Northrop Grumman Information Systems (NGIS) : Plymouth, MN	17.063	2.989	Apr 2022	-		-		-		-	0.000	20.052	-
High Explosive Airburst with Trace (HEAB-T) LFTE Assets	C/FFP	Northrop Grumman Defense Systems (NGDS) : Plymouth, MN	-	-		1.000	Jan 2023	-		-		-	0.000	1.000	-
Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) EMD Contract 1	C/CPFF	General Dynamics - Ordnance and Tactical Systems (GD-OTS) : Marion, IL	5.024	-		-		-		-		-	0.000	5.024	-
Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) EMD Contract 2	C/CPFF	Northrop Grumman Information Systems (NGIS) : Plymouth, MN	16.423	-		-		-		-		-	0.000	16.423	-
Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) LFTE Assets	C/FFP	General Dynamics - Ordnance and Tactical Systems	-	-		0.800	Jan 2023	-		-		-	0.000	0.800	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		(GD-OTS) : Marion, IL													
Subtotal			47.378	2.989		1.800		-		-		-	0.000	52.167	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Development Command - Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	8.961	2.758	Nov 2021	3.500	Nov 2022	1.550	Nov 2023	-		1.550	0.000	16.769	-
Subtotal			8.961	2.758		3.500		1.550		-		1.550	0.000	16.769	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
APFSDS-T / TPSD-T Developmental Test & Evaluation (DT&E)	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	0.549	Nov 2022	-		-		-		-	0.000	0.549	-
APFSDS-T Live Fire Test & Evaluation (LFTE) Test	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	-		1.203	Jul 2023	0.374	Mar 2024	-		0.374	0.000	1.577	-
HEAB-T / TP-T Developmental Test & Evaluation (DT&E)	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	2.317	Jun 2022	-		-		-		-	0.000	2.317	-
HEAB-T Platform Integration and Live Fire	MIPR	Aberdeen Test Center (ATC) :	-	-		1.834	Jul 2023	-		-		-	0.000	1.834	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (LFTE) Test		Aberdeen Proving Ground, MD													
HEAB-T Live Fire Test & Evaluation (LFTE) and IOT&E	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	-		-		1.090	Nov 2023	-		1.090	0.000	1.090	-
Subtotal			-	2.866		3.037		1.464		-		1.464	0.000	7.367	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		56.339	8.613	8.653	3.014	-	3.014	0.000	76.619	N/A

Remarks
 Design Engineering Tests (DET)
 Engineering and Manufacturing Development (EMD)

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
30mm APFSDS-T / TPDS-T EMD	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q4]																											
30mm APFSDS-T / TPDS-T Design Engineering Test (DET)	[Blue bar in FY 2022 Q1]																											
30mm APFSDS-T / TPDS-T Critical Design Review (CDR)	[Blue triangle '2' in FY 2022 Q3]																											
30mm APFSDS-T / TPDS-T DT&E Hardware Build	[Blue bar in FY 2022 Q3-Q4]																											
30mm APFSDS-T / TPDS-T Developmental Test & Evaluation (DT&E)	[Blue bar in FY 2023 Q1-Q2]																											
30mm APFSDS-T / TPDS-T Milestone C	[Blue triangle '4' in FY 2023 Q4]																											
30mm APFSDS-T / TPDS-T Low Rate Initial Production (LRIP)	[Blue bar in FY 2024 Q1-Q4]																											
30mm APFSDS-T Live Fire Test and Evaluation (LFT&E)	[Blue bar in FY 2024 Q3-Q4]																											
30mm HEAB-T / TP-T EMD	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q2]																											
30mm HEAB-T / TP-T Critical Design Review (CDR)	[Blue triangle '1' in FY 2022 Q1]																											
30mm HEAB-T / TP-T DT&E Build	[Blue bar in FY 2022 Q1-Q2]																											
30mm HEAB-T / TP-T Developmental Test & Evaluation (DT&E)	[Blue bar in FY 2022 Q3-Q4]																											
30mm HEAB-T / TP-T Milestone C	[Blue triangle '3' in FY 2023 Q3]																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
30mm HEAB-T / TP-T Low Rate Initial Production (LRIP)																												
30mm HEAB-T Integration Test																												
30mm HEAB-T Live Fire Test and Evaluation (LFT&E)																												
30mm HEAB-T Initial Operational Test and Evaluation (IOT&E)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FA6 / <i>30mm Lethality</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Development Decision (MDD)	3	2019	3	2019
30mm APFSDS-T / TPDS-T EMD Contract Award	4	2019	4	2019
30mm APFSDS-T / TPDS-T EMD	4	2019	4	2023
30mm APFSDS-T / TPDS-T DET Build	2	2020	3	2021
30mm APFSDS-T / TPDS-T Design Engineering Test (DET)	4	2021	1	2022
30mm APFSDS-T / TPDS-T Critical Design Review (CDR)	2	2022	2	2022
30mm APFSDS-T / TPDS-T DT&E Hardware Build	2	2022	4	2022
30mm APFSDS-T / TPDS-T Developmental Test & Evaluation (DT&E)	4	2022	2	2023
30mm APFSDS-T / TPDS-T Milestone C	4	2023	4	2023
30mm APFSDS-T / TPDS-T Low Rate Initial Production (LRIP)	4	2023	2	2025
30mm APFSDS-T Live Fire Test and Evaluation (LFT&E)	3	2024	4	2024
30mm HEAB-T TMRR Contract Awards	1	2019	1	2019
30mm HEAB-T Technology Maturation and Risk Reduction (TMRR)	1	2019	1	2020
30mm HEAB-T TMRR Engineering Test 1	3	2019	4	2019
30mm HEAB-T TMRR Engineering Test 2	4	2019	1	2020
30mm HEAB-T / TP-T Milestone B	2	2020	2	2020
30mm HEAB-T / TP-T EMD Contract Award	3	2020	3	2020
30mm HEAB-T / TP-T EMD	3	2020	3	2023
30mm HEAB-T / TP-T DET Build	2	2020	2	2021
30mm HEAB-T / TP-T EMD Design Engineering Test (DET)	2	2021	4	2021
30mm HEAB-T / TP-T Critical Design Review (CDR)	1	2022	1	2022
30mm HEAB-T / TP-T DT&E Build	4	2021	2	2022

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
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Events	Start		End	
	Quarter	Year	Quarter	Year
30mm HEAB-T / TP-T Developmental Test & Evaluation (DT&E)	2	2022	2	2023
30mm HEAB-T / TP-T Milestone C	3	2023	3	2023
30mm HEAB-T / TP-T Low Rate Initial Production (LRIP)	3	2023	4	2024
30mm HEAB-T Integration Test	4	2023	1	2024
30mm HEAB-T Live Fire Test and Evaluation (LFT&E)	2	2024	3	2024
30mm HEAB-T Initial Operational Test and Evaluation (IOT&E)	3	2024	4	2024

Note

Engineering Manufacturing Development (EMD)
 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T)
 Target Practice Discarding Sabot with Trace (TPDS-T)
 High Explosive Airburst with Trace (HEAB-T)
 Target-Practice with Trace (TP-T)
 Technology Maturation and Risk Reduction (TMRR)

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
FJ4: Cannon-Delivered Area Effects Munitions (C-DAEM)	-	82.855	92.402	85.071	-	85.071	68.986	54.606	55.187	55.803	0.000	494.910
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Cannon-Delivered Area Effects Munitions (C-DAEM) Project will provide United States (U.S.) ground forces with the capability to engage area personnel through armored targets, while denying threat forces full operational freedom within the targeted area. An Analysis of Alternatives (AoA) was completed in January 2018 to inform Army acquisition and investment decisions regarding replacement of the current stockpile of 155 millimeter (mm) Dual Purpose Improved Conventional Munitions (DPICM) with Department of Defense (DoD) policy compliant munitions and address anti-armor and extended range capability requirements. The Army validated two materiel solutions for C-DAEM to be pursued in parallel to support the Army's modernization priorities; C-DAEM Armor and C-DAEM DPICM Replacement. C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks. Fiscal Year (FY) 2024 funding will continue to support C-DAEM Armor development and testing activities as well as engineering efforts required to integrate the Military-Code (M-Code) Global Positioning System (GPS) Receiver into the selected C-DAEM Armor objective materiel solution(s).

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

	FY 2022	FY 2023	FY 2024
Title: C-DAEM Armor	76.773	84.885	85.071
Description: C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks.			
FY 2023 Plans: FY 2023 funding is continuing to support the development and testing of the selected C-DAEM Armor solution(s) for an Early Operational Capability (EOC) opportunity and engineering efforts required to integrate the M-Code Global Positioning System (GPS) Receiver into the most promising C-DAEM Armor objective materiel solution(s).			
FY 2024 Plans: FY 2024 funding will continue to support C-DAEM Armor development and testing activities as well as engineering efforts required to integrate the M-Code Global Positioning System (GPS) Receiver into the selected C-DAEM Armor objective materiel solution(s).			
FY 2023 to FY 2024 Increase/Decrease Statement: Minor increase due to economic assumptions			
Title: C-DAEM DPICM Replacement	6.082	4.144	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: C-DAEM DPICM Replacement will destroy personnel to soft-skinned targets. The Army has approved the Israeli M999 advanced anti-personnel munition, now designated the US model XM1208, as the C-DAEM DPICM Replacement solution.</p> <p>FY 2023 Plans: FY 2023 funding is continuing to support the completion of XM1208 qualification activities and support engineering efforts to evaluate test data to ensure DoD policy compliance and that the round is safe, suitable and operationally effective, as well as the gathering of all statutory and regulatory requirements in support of a Milestone C.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease in funding in FY 2024 due to completion of C-DAEM DPICM Replacement qualification testing.</p>			
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	3.373	-
Accomplishments/Planned Programs Subtotals	82.855	92.402	85.071

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• F90112: PROJ, ARTY, 155MM C-DAEM ARMOR	-	36.894	57.488	-	57.488	194.351	226.235	226.235	226.235	0.000	967.438
• E68604: PROJ, ARTY, 155MM C-DAEM INCREMENT II	-	-	2.500	-	2.500	36.267	-	46.517	49.534	0.000	134.818

Remarks
A Procurement of Ammunition, Army (PAA) funding line for C-DAEM Armor, Standard Study Number (SSN), F90112, PROJ, ARTY, 155MM C-DAEM ARMOR, has been established.
A PAA funding line for C-DAEM DPICM Replacement, SSN E68604, PROJ, ARTY, 155MM C-DAEM INCREMENT II, has been established.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FJ4 / <i>Cannon-Delivered Area Effects Munitions (C-DAEM)</i>

D. Acquisition Strategy

The C-DAEM Program of Record is employing an evolutionary acquisition approach to efficiently address anti-armor, extended range capability requirements and deliver DOD unexploded ordnance (UXO) policy compliant munitions.

The Analysis of Alternatives (AoA) completed on 31 January 2018 qualified a significant enhancement of operational fires effectiveness, efficiency, and maneuver support when cannon artillery was equipped with a dedicated extended range anti-armor projectile. The U.S. Government reduced risk by executing prototype testing and evaluation efforts, while utilizing the AoA results to shape the selection criteria. C-DAEM Armor used the selection criteria to sponsor competitive demonstrations for C-DAEM Armor to streamline the acquisition process. The U.S. Government has selected the most promising candidate that will address medium to heavy armored targets in accordance with the validated Capabilities Development Document (CDD) with an opportunity to field an Early Operational Capability (EOC). C-DAEM Armor is utilizing competitively awarded Defense Ordnance Technology Consortium (DOTC) Other Transaction Agreements (OTA) to further support development and testing of the selected C-DAEM Armor solution in accordance with the decisions granted at the most recent Army Requirements Oversight Council (AROC) in August 2022. C-DAEM Armor is utilizing competitively awarded DOTC OTAs to complete development and qualification activities, including the M-Code Global Positioning System (GPS) Receiver integration efforts, in support of Milestone C for Low Rate Initial Production (LRIP) and Full Rate Production (FRP).

C-DAEM DPICM Replacement is utilizing an Irregular Warfare Technical Support Directorate (IWTSD), formerly known as Combating Terrorism Technical Support Office (CTTSO), task plan with Israel Ministry of Defense (IMOD) to deliver XM1208 hardware in support of qualification activities in accordance with decisions granted at the AROC in September 2020.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Office of the Project Manager Combat Ammunition Systems (PM CAS) : Picatinny Arsenal, NJ	0.027	0.450	Oct 2021	0.450	Oct 2022	0.400	Oct 2023	-		0.400	0.000	1.327	-
SBIR/STTR	TBD	Various : Various	-	-		3.373		-		-		-	0.000	3.373	-
Subtotal			0.027	0.450		3.823		0.400		-		0.400	0.000	4.700	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DOTC - Armor Engineering and Manufacturing Development (EMD)	MIPR	DoD Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	-	63.835	Nov 2021	71.205	Nov 2022	70.955	Nov 2023	-		70.955	0.000	205.995	-
DOTC - Armor M-Code GPS Receiver Integration	MIPR	DoD Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	-	7.780	Nov 2021	4.010	Nov 2022	3.500	Nov 2023	-		3.500	0.000	15.290	-
Subtotal			-	71.615		75.215		74.455		-		74.455	0.000	221.285	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	2.646	7.120	Nov 2021	7.520	Nov 2022	6.716	Nov 2023	-		6.716	0.000	24.002	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fire Control Software Update	MIPR	Multiple : Various	2.502	-		-		-		-		-	0.000	2.502	-
Subtotal			5.148	7.120		7.520		6.716		-		6.716	0.000	26.504	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Armor Testing	MIPR	Army Test & Evaluation Command (ATEC) : Yuma, AZ	-	-		2.500	Mar 2023	3.500	Mar 2024	-		3.500	0.000	6.000	-
DPICM Replacement Testing	MIPR	Army Test & Evaluation Command (ATEC) : Yuma, AZ	-	3.670	Mar 2022	3.344	Mar 2023	-		-		-	0.000	7.014	-
Subtotal			-	3.670		5.844		3.500		-		3.500	0.000	13.014	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		5.175	82.855	92.402	85.071	-	85.071	0.000	265.503	N/A

Remarks
 C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks. C-DAEM Dual Purpose Improved Conventional Munition (DPICM) Replacement will destroy personnel to soft-skinned vehicles. C-DAEM Armor and DPICM Replacement are being pursued in parallel to support the Army's modernization priorities.


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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028																														
	1	2	3	4	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-DAEM Armor																																																							
Acquisition Decision Memorandum (ADM) #1	▲ 1 ADM #1																																																						
Engineering Manufacturing & Development (EMD)																																																							
ADM #2																												▲ 2 ADM #2																											
Integrated Baseline Review (IBR)																												▲ 3 IBR																											
Preliminary Design Review (PDR)																												▲ 4 PDR																											
Army Requirements Oversight Council (AROC) Decision																												▲ 5 AROC																											
Milestone B																												▲ 7 MS-B																											
M-Code GPS Receiver Integration																																																							
Design Verification Testing (DVT)																												▲ 8 CDR																											
Critical Design Review (CDR)																												▲ 9 EOC DP																											
Early Operational Capability (EOC) Decision Point (DP)																												▲ 10 IOT&E																											
Initial Operational Test & Evaluation (IOT&E)																												▲ 10 IOT&E																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	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			
C-DAEM DPICM Replacement																												
Qualification and Testing																												
Unexploded Ordnance (UXO) DP																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FJ4 / <i>Cannon-Delivered Area Effects Munitions (C-DAEM)</i>

Note

In 1QFY22, the Milestone Decision Authority (MDA) for C-DAEM Armor signed an Acquisition Decision Memorandum (ADM) approving the initiation of Engineering Manufacturing and Development (EMD) and qualification activities. The U.S. Government has selected the most promising candidate that will address medium to heavy armored targets in accordance with the Capabilities Development Document (CDD) with an opportunity to field an Early Operational Capability (EOC).

In 3QFY22, the MDA for C-DAEM Amor signed a second ADM approving the continuation of EMD activities in accordance with the program plan as the C-DAEM Armor CDD continued through the Army's validation process.

In 1QFY23, the C-DAEM Armor CDD received approval.

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FJ4 / <i>Cannon-Delivered Area Effects Munitions (C-DAEM)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
C-DAEM Armor	1	2022	4	2026
Technology Maturation and Risk Reduction (TMRR)	1	2020	4	2021
In Process Review (IPR) #1	1	2021	1	2021
IPR #2	2	2021	2	2021
Acquisition Decision Memorandum (ADM) #1	1	2022	1	2022
Engineering Manufacturing & Development (EMD)	1	2022	4	2028
ADM #2	3	2022	3	2022
Integrated Baseline Review (IBR)	3	2022	3	2022
Preliminary Design Review (PDR)	4	2022	4	2022
Army Requirements Oversight Council (AROC) Decision	4	2022	4	2022
Milestone B	4	2023	4	2023
M-Code GPS Receiver Integration	1	2022	4	2025
Design Verification Testing (DVT)	1	2022	2	2024
Critical Design Review (CDR)	2	2024	2	2024
Early Operational Capability (EOC) Decision Point (DP)	2	2024	2	2024
Initial Operational Test & Evaluation (IOT&E)	4	2027	4	2027
Milestone C	2	2028	2	2028
C-DAEM DPICM Replacement	1	2021	4	2022
Qualification and Testing	1	2021	4	2023
Unexploded Ordnance (UXO) DP	3	2023	3	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FJ4 / <i>Cannon-Delivered Area Effects Munitions (C-DAEM)</i>

Note
C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks. C-DAEM Dual Purpose Improved Conventional Munition (DPICM) Replacement will destroy personnel to soft-skinned vehicles. C-DAEM Armor and DPICM Replacement are being pursued in parallel to support the Army's modernization priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
FL4: Small Caliber Ammo for Next Gen Squad Weapons	-	27.336	25.558	11.809	-	11.809	11.931	11.945	12.073	12.208	0.000	112.860
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The total cost of the Small Caliber Ammo for Next Gen Squad Weapons Middle Tier of Acquisition effort is \$144.1M million RDTE from FY2020 to FY2027. The remaining \$12.1M in FY2028 is fully funded across the Future Years Defense Program (FYDP).

A. Mission Description and Budget Item Justification

The Small Caliber Ammo for Next Gen Squad Weapons project is a critical technology development in response to the Soldier Lethality Cross Functional Team (SL CFT) Initial Capability Document (ICD) for the ammunition required to support the rapid prototyping, development, and fielding of the Next Generation Squad Weapons (NGSW) under the Middle Tier of Acquisition (MTA) authority for rapid prototyping/rapid fielding. The objective is to develop and Full Materiel Release (FMR) the new ammunition in parallel with the NGSW rifle and automatic rifle. The NGSW ammunition is split into multiple ammunition variants, the General Purpose (GP), the Special Purpose (SP), the Reduced Range Ammunition (RRA), Tracer Ammunition, Blank Ammunition, the Close Combat Mission Capability Kit (CCMCK) training ammunition, Drill Dummy Inert (DDI) cartridge, and High-Pressure Test (HPT) cartridge. Fiscal Year (FY) 2024 funding supports Urgent Materiel Release (UMR) preparation efforts for the GP, SP, RRA, Blank, DDI, and HPT variants. FY 2024 funds also support Live-Fire Testing and Evaluation (LFT&E) on the GP and Tracer variants. FY 2024 funds support Soldier Touch Points (STP) / User Evaluations and performing Production Qualification Testing (PQT) on the SP, RRA, and Tracer variants. Also, FY 2024 funds support design optimization efforts on the GP, Blank, DDI, and HPT variants. And, FY 2024 supports continuing the refinement, development, and maturation of the CCMCK, Blank, DDI, and HPT cartridges.

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

	FY 2022	FY 2023	FY 2024
Title: Rapid Prototyping GP	5.300	5.915	1.507
Description: Develop, demonstrate, and qualify new ammunition for the NGSW systems.			
FY 2023 Plans: Continue rapid prototyping efforts, conduct qualification tests and a user evaluation.			
FY 2024 Plans: Perform Urgent Materiel Release (UMR) preparation activities, initiate LFT&E, and commence design optimization effort.			
FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to planned activities as the program shifts to UMR / production.			
Title: Rapid Prototyping SP	10.876	7.300	4.052

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Description: Develop, demonstrate, and qualify new ammunition to defeat hard targets for the NGSW systems.</p> <p>FY 2023 Plans: Continuing rapid prototyping for the Special Purpose (SP) projectile and manufacture prototype ammunition required for developmental testing.</p> <p>FY 2024 Plans: Conduct qualification testing, Soldier Touch Point (STP) / User Evaluation, and perform Urgent Materiel Release (UMR) preparation activities.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to FY 2024 funds primarily supporting planned testing and support activities. Prototype builds are covered with prior FY funding.</p>				
<p>Title: Rapid Prototyping Reduced Range Ammunition (RRA) for NGSW</p> <p>Description: Develop and qualify RRA for the NGSW that will satisfy the requirement to provide training ammunition suitable for use on military installations with Surface Danger Zone (SDZ) restrictions. Two RRA variants will be developed under this effort - the NGSW RRA and the NGSW Reduced Range (RR) Tracer.</p> <p>FY 2023 Plans: Continue rapid prototyping effort to develop RRA and RR Tracer ammunition for the NGSW, perform PQT, and continue weapon and cartridge integration efforts.</p> <p>FY 2024 Plans: Conduct a Soldier Touch Point (STP) / User evaluation, complete PQT, and perform Urgent Materiel Release (UMR) preparation activities.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to planned activities as the program shifts to UMR / production.</p>		6.240	4.210	1.000
<p>Title: Rapid Prototyping Tracer Ammunition for NGSW</p> <p>Description: Rapid prototyping effort to develop and field tracer ammunition for the NGSW systems by building and evaluating competing tracer ammunition designs/concepts then down-selecting to a final tracer design.</p> <p>FY 2023 Plans:</p>		4.570	6.500	3.500

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Continue rapid prototyping effort to develop tracer ammunition for the NGSW, build and test tracer ammunition prototypes, and mature/refine down-selected tracer ammunition design. FY 2024 Plans: Continue rapid prototyping effort, conduct a STP / user evaluation, and conduct PQT and LFT&E. FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to FY 2024 funds primarily supporting planned testing and support activities. Prototype builds are primarily covered with prior FY funding.				
Title: Rapid Prototyping CCMCK Training Ammo Description: Rapid prototyping effort to develop training ammunition for the NGSW systems by building and evaluating competing CCMCK training ammunition designs/concepts then down-selecting to a final design. FY 2023 Plans: Continue rapid prototyping effort to develop CCMCK training ammunition for the NGSW by evaluating CCMCK training ammunition designs/concepts. FY 2024 Plans: Continue rapid prototyping effort to develop CCMCK training ammunition for the NGSW, building and evaluate CCMCK training ammunition designs/concepts, mature/refine selected design/designs in preparation for developmental testing. FY 2023 to FY 2024 Increase/Decrease Statement: Increase due to planned design maturation activities.		0.150	0.150	0.500
Title: Rapid Prototyping Blank, DDI and HPT Cartridges Description: Rapid prototyping effort to develop and field Blank, DDI and HPT cartridges for the NGSW weapon systems. FY 2023 Plans: Continue rapid prototyping effort to mature the Blank, DDI, and HPT cartridges/designs. Conduct Production Qualification Testing (PQT) and a Soldier Touch Point (STP) / User Evaluation. FY 2024 Plans: Continue rapid prototyping effort to mature the Blank, DDI, and HPT cartridges/designs. Perform UMR preparation activities and commence design optimization efforts. FY 2023 to FY 2024 Increase/Decrease Statement:		0.200	0.550	1.250

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Increase due to the starting the development effort to optimize each cartridge.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	-	0.933	-
Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)			
FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	27.336	25.558	11.809

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E06002: NEXT GENERATION COMBAT ROUND	53.459	23.523	35.896	-	35.896	38.064	70.087	70.079	70.079	Continuing	Continuing
• E06014: NEXT GENERATION REDUCED RANGE ROUND	13.159	42.043	107.341	-	107.341	112.182	167.497	167.497	167.497	0.000	777.216
• E06015: NEXT GENERATION SQUAD WEAPON SPECIAL PURPOSE ROUND	0.427	7.858	14.488	-	14.488	21.507	33.998	33.997	33.997	Continuing	Continuing
• E60011: NEXT GENERATION BLANK ROUND	4.189	23.072	33.519	-	33.519	33.725	64.077	64.077	64.077	Continuing	Continuing

Remarks
Procurement of Ammunition, Army E06002, E06014, E06015, and E60011: These funding lines supports the procurement of ammunition for the NGSW.

D. Acquisition Strategy
The NGSW ammunition program will utilize the Middle Tier of Acquisition (MTA) authority for rapid prototyping/rapid fielding to develop ammunition concepts/designs for the GP variant and the SP variant. The project will utilize Government developed projectile designs that will be delivered to development contractors as Government Furnished Material (GFM). The Government selected three contractors for the weapon system development and down-selected to a single contractor in FY 2022, prior to production contract award; with a planned Urgent Materiel Release (UMR) in FY 2024 and FMR in FY 2025. Development effort for the Reduced Range and Tracer ammunition follows a similar strategy beginning in FY 2021. Follow-on development efforts for additional NGSW ammunition variants including blank, CCMCK ammunition, DDI cartridge, and HPT cartridge commenced in FY 2022.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		0.933		-		-		-	0.000	0.933	-
Subtotal			-	-		0.933		-		-		-	0.000	0.933	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
General Purpose Qualification and Optimization	Option/ FFP	Sig Sauer : Newington, New Hampshire	-	1.618	Apr 2022	-		-		-		-	Continuing	Continuing	Continuing
General Purpose Projectile Development	Various	Various : Various	-	-		1.568	Dec 2022	-		-		-	Continuing	Continuing	Continuing
General Purpose Optimization	TBD	To Be Determined : To Be Determined	-	-		-		0.500	Feb 2024	-		0.500	Continuing	Continuing	Continuing
Projectile and Ammo Development Contract Special Purpose	Option/ CPFF	OLIN Winchester Corporation (LCAAP) : Independence, Missouri	7.433	1.808	Jul 2022	0.615	Jul 2023	-		-		-	Continuing	Continuing	Continuing
Prototype Manufacturing Special Purpose	Various	Various : Various	-	4.141	Jan 2022	3.166	Jan 2023	-		-		-	0.000	7.307	-
Tracer Ammunition Prototype Contract	Option/ CPFF	JAK Tool Engineering Solutions : Cranbury, New Jersey	0.750	0.512	Sep 2022	-		-		-		-	0.000	1.262	-
Tracer Ammunition Prototype Manufacturing	Option/ FFP	OLIN Winchester Corporation (LCAAP) : Independence, Missouri	-	3.975	Sep 2022	3.995	Mar 2023	-		-		-	0.000	7.970	-
Reduced Range Ammunition Prototype Contract 1	Option/ CPFF	JAK Tool Engineering	1.000	-		-		-		-		-	0.000	1.000	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Solutions : Cranbury, New Jersey													
Reduced Range Ammunition Prototype Contract 2	Option/ FFP	OLIN Winchester Corporation : Independence, Missouri	1.000	0.574	Sep 2022	0.103	Jul 2023	-		-		-	Continuing	Continuing	Continuing
Reduced Range Ammo Development	Option/ CPFF	Concurrent Technologies Corporation (CTC) : Johnstown, Pennsylvania	-	0.816	Dec 2021	0.984	Nov 2022	-		-		-	Continuing	Continuing	Continuing
Reduced Range Ammo Weapon Integration	Option/ FFP	Sig Sauer : Newington, New Hampshire	-	2.484	Apr 2022	0.250	May 2023	-		-		-	Continuing	Continuing	Continuing
CCMCK Training Ammo Development Contracts	TBD	To Be Determined : To Be Determined	-	-		-		0.250	Feb 2024	-		0.250	0.000	0.250	-
Blank, DDI and HPT Development Contracts	TBD	To Be Determined : To Be Determined	-	-		0.250	May 2023	-		-		-	Continuing	Continuing	Continuing
Blank, DDI and HPT Optimization Contracts	TBD	To Be Determined : To Be Determined	-	-		-		0.650	Mar 2024	-		0.650	Continuing	Continuing	Continuing
Subtotal			10.183	15.928		10.931		1.400		-		1.400	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Projectile Development and Support General Purpose	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	4.163	2.932	Nov 2021	2.530	Nov 2022	0.507	Oct 2023	-		0.507	0.000	10.132	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				FL4 / Small Caliber Ammo for Next Gen Squad Weapons							
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Projectile Development and Support General Purpose	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	1.153	0.750	Mar 2022	0.750	Feb 2023	-		-		-	Continuing	Continuing	Continuing
Projectile Development and Support Special Purpose	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	5.150	1.172	Nov 2021	1.836	Nov 2022	1.602	Oct 2023	-		1.602	Continuing	Continuing	Continuing
Special Purpose Support ARL	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	-	1.500	Nov 2021	0.750	Feb 2023	0.900	Oct 2023	-		0.900	0.000	3.150	-
Reduced Range Ammunition Prototype and Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	1.050	1.616	Nov 2021	1.623	Nov 2022	0.400	Oct 2023	-		0.400	Continuing	Continuing	Continuing
Reduced Range Ammunition Support ARL	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	-	-		0.750		0.250	Oct 2023	-		0.250	Continuing	Continuing	Continuing
Tracer Ammunition Development and Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	0.350	-		1.755	Nov 2022	0.600	Oct 2023	-		0.600	Continuing	Continuing	Continuing
Tracer Ammunition Support ARL	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	-	-		0.750	Feb 2023	0.750	Jan 2024	-		0.750	Continuing	Continuing	Continuing
CCMCK Training Development and Support	MIPR	Development Command Armaments Center (DEVCOM-AC) :	-	0.150	Nov 2021	0.150	Nov 2022	0.150	Oct 2023	-		0.150	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Picatinny Arsenal, New Jersey													
CCMCK Training Ammo Development and Support	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	-	-		-		0.100	Dec 2023	-		0.100	Continuing	Continuing	Continuing
Blank, DDI and HPT Development and Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	-	0.200	Nov 2021	0.300	Nov 2022	0.200	Oct 2023	-		0.200	Continuing	Continuing	Continuing
Subtotal			11.866	8.320		11.194		5.459		-		5.459	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
U.S. Army Aberdeen Test Center (ATC) General Purpose	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	0.900	-		1.550	Apr 2023	-		-		-	Continuing	Continuing	Continuing
General Purpose User Assessment	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	-	-		0.450	Apr 2023	-		-		-	0.000	0.450	-
General Purpose Live-Fire Testing	MIPR	U.S. Army Aberdeen Test Center (ATC) : Aberdeen, Maryland	-	-		-		0.500	Mar 2024	-		0.500	Continuing	Continuing	Continuing
U.S. Army Aberdeen Test Center (ATC) Special Purpose	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	0.500	-		-		1.000	Oct 2023	-		1.000	0.000	1.500	-
Army Research Lab (ARL) Testing Special Purpose	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	1.250	1.500	Dec 2021	-		-		-		-	Continuing	Continuing	Continuing
Engineering Tests Special Purpose	MIPR	Development Command	1.000	0.755	Nov 2021	-		-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey													
Special Purpose User Assessment	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	-	-		-		0.550	Oct 2023	-		0.550	Continuing	Continuing	Continuing
Reduced Range Ammunition Prototype Testing	MIPR	U.S. Army Aberdeen Test Center (ATC) : Aberdeen, Maryland	0.500	-		0.500	Mar 2023	-		-		-	Continuing	Continuing	Continuing
Army Research Lab (ARL) Testing Reduced Range	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	-	0.750	Dec 2021	-		-		-		-	0.000	0.750	-
Reduced Range Ammo User Assessment	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	-	-		-		0.350	Oct 2023	-		0.350	0.000	0.350	-
Tracer Live-Fire Testing	MIPR	U.S. Army Aberdeen Test Center (ATC) : Aberdeen, Maryland	-	-		-		1.200	Oct 2023	-		1.200	Continuing	Continuing	Continuing
Tracer Production Qualification Tests	TBD	To Be Determined : To Be Determined	-	-		-		0.700	Oct 2023	-		0.700	Continuing	Continuing	Continuing
User Assessment Tracer Ammunition	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	-	0.083	Jun 2022	-		0.250	Oct 2023	-		0.250	0.000	0.333	-
Blank, DDI, HPT Developmental Tests	TBD	To Be Determined : To Be Determined	-	-		-		0.400	Oct 2023	-		0.400	Continuing	Continuing	Continuing
Subtotal			4.150	3.088		2.500		4.950		-		4.950	Continuing	Continuing	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	26.199	27.336	25.558	11.809	-	11.809	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028											
	1	2	3	4	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 Effort General Purpose (GP)	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q4, FY 2024 Q1-Q2]																																			
	Rapid Prototyping GP																																			
Prototype & Manufacturing Integration General Purpose (GP)	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q2]																																			
	Mfg Integration GP																																			
Production Qualification Test General Purpose (GP)																	[Blue bar spanning FY 2023 Q3-Q4]																			
																	PQT GP																			
Soldier Touch Point General Purpose (GP)																	[Blue bar spanning FY 2024 Q1]																			
																	STP GP																			
Urgent Materiel Release General Purpose (UMR GP)																	[Blue triangle at FY 2024 Q1]																			
																	1 UMR GP																			
First Unit Equipped General Purpose (GP)																	[Blue triangle at FY 2024 Q1]																			
																	2 FUE GP																			
Rapid Fielding General Purpose (GP)																	[Blue bar spanning FY 2024 Q1-Q4, FY 2025 Q1-Q4, FY 2026 Q1-Q4, FY 2027 Q1-Q4, FY 2028 Q1-Q4]																			
																	Rapid Fielding GP																			
Design Optimization General Purpose (GP)																	[Blue bar spanning FY 2024 Q3-Q4]																			
																	Optimization GP																			
Live-Fire Testing and Evaluation General Purpose (GP)																	[Blue bar spanning FY 2025 Q1-Q2]																			
																	LFT&E GP																			
Full Materiel Release General Purpose (GP)																	[Blue triangle at FY 2025 Q3]																			
																	1 FMR GP																			
Rapid Prototyping Effort Special Purpose (SP)	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q4, FY 2024 Q1-Q2]																																			
	Rapid Prototyping SP																																			
Prototype & Manufacturing Integration General Purpose (SP)	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q2]																																			
	Mfg Integration SP																																			
Production Qualification Test Special Purpose (SP)																	[Blue bar spanning FY 2024 Q1-Q2]																			
																	PQT SP																			

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4												
Soldier Touch Point Special Purpose (SP)													■ STP SP																											
Urgent Materiel Release Special Purpose (SP)													▲ 7 UMR SP																											
First Unit Equipped Special Purpose (SP)													▲ 8 FUE SP																											
Rapid Fielding Special Purpose (SP)													■ Rapid Fielding SP																											
Design Optimization Special Purpose (SP)													■ Optimization SP																											
Live-Fire Testing and Evaluation Special Purpose (SP)													■ LFT&E SP																											
Full Materiel Release Special Purpose (SP)													▲ 14 FMR SP																											
Rapid Prototyping Effort Reduced Range Ammo (RRA)													■ Rapid Prototyping RRA																											
Prototype Manufacturing Reduced Range Ammo (RRA)													■ Prototype Manufacturing RRA																											
Product Qualification Testing Reduced Range Ammo (RRA)													■ PQT RRA																											
Soldier Touch Point Reduced Range Ammo (RRA)													■ STP RRA																											
Urgent Materiel Release Reduced Range Ammo (RRA)													▲ 5 UMR RRA																											
First Unit Equipped Reduced Range Ammo (RRA)													▲ 6 FUE RRA																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028							
	1	2	3	4	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 Fielding Reduced Range Ammo (RRA)													[Blue bar spanning FY 2025 Q1 to FY 2028 Q4]																			
Design Optimization Reduced Range Ammo (RRA)													[Blue bar: Q1-Q2 FY 2025]																			
Shoot-House Testing Reduced Range Ammo (RRA)													[Blue bar: Q3-Q4 FY 2025]																			
Full Materiel Release Reduced Range Ammo (RRA)																					▲ 12 FMR RRA											
Rapid Prototyping Effort Tracer Ammo	[Blue bar spanning FY 2022 Q1 to FY 2025 Q3]																															
Build and Test Tracer Ammo	[Blue bar spanning FY 2022 Q1 to FY 2024 Q3]																															
Soldier Touch Point Tracer Ammo													[Blue bar: Q1-Q2 FY 2024]																			
Product Qualification Testing Tracer Ammo													[Blue bar: Q1-Q2 FY 2025]																			
Live-Fire Testing and Evaluation Tracer Ammo													[Blue bar: Q1-Q2 FY 2025]																			
Full Materiel Release Tracer Ammo																					▲ 9 FMR Tracer											
First Unit Equipped Tracer Ammo																					▲ 10 FUE Tracer											
Rapid Fielding Tracer																	[Blue bar spanning FY 2025 Q3 to FY 2028 Q4]															
Rapid Prototyping Close Combat Mission Capability Kit (C...)	[Blue bar spanning FY 2022 Q1 to FY 2026 Q3]																															

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Concept Development and Evaluation Close Combat Mission ...	Development & Evaluation CCMCK																											
Developmental Testing Close Combat Mission Capability Ki...	DT CCMCK																											
Full Materiel Release Close Combat Mission Capability Ki...	13 FMR CCMCK																											
Fielding Close Combat Mission Capability Kit (CCMCK)	Fielding CCMCK																											
Rapid Prototyping Blank, DDI, and HPT	Rapid Prototyping Blank, DDI, & HPT																											
Product Qualification Testing Blank, DDI, and HPT	PQT Blank, DDI, & HPT																											
Soldier Touch Point Blank, DDI, and HPT	STP Blank, DDI, & HPT																											
Urgent Materiel Release Blank, DDI, and HPT	3 UMR Blank, DDI, and HPT																											
First Unit Equipped Blank, DDI, and HPT	4 FUE Blank, DDI, and HPT																											
Fielding Blank, DDI, and HPT	Fielding Blank, DDI, and HPT																											
Design Optimization Blank, DDI, and HPT	Optimization Blank, DDI, and HPT																											
Developmental Testing Blank, DDI, and HPT	DT Blank, DDI, and HPT																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FL4 / <i>Small Caliber Ammo for Next Gen Squad Weapons</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Rapid Prototyping Effort General Purpose (GP)	1	2019	2	2024
Prototype & Manufacturing Integration General Purpose (GP)	4	2021	2	2023
Production Qualification Test General Purpose (GP)	2	2023	4	2023
Soldier Touch Point General Purpose (GP)	4	2023	1	2024
Urgent Materiel Release General Purpose (UMR GP)	2	2024	2	2024
First Unit Equipped General Purpose (GP)	2	2024	2	2024
Rapid Fielding General Purpose (GP)	2	2024	2	2029
Design Optimization General Purpose (GP)	3	2024	1	2025
Live-Fire Testing and Evaluation General Purpose (GP)	4	2024	2	2025
Full Materiel Release General Purpose (GP)	4	2025	4	2025
Rapid Prototyping Effort Special Purpose (SP)	1	2019	2	2025
Prototype & Manufacturing Integration General Purpose (SP)	4	2021	4	2023
Production Qualification Test Special Purpose (SP)	1	2024	2	2024
Soldier Touch Point Special Purpose (SP)	4	2024	4	2024
Urgent Materiel Release Special Purpose (SP)	2	2025	2	2025
First Unit Equipped Special Purpose (SP)	2	2025	2	2025
Rapid Fielding Special Purpose (SP)	2	2025	2	2030
Design Optimization Special Purpose (SP)	3	2025	1	2026
Live-Fire Testing and Evaluation Special Purpose (SP)	4	2025	2	2026
Full Materiel Release Special Purpose (SP)	4	2026	4	2026
Rapid Prototyping Effort Reduced Range Ammo (RRA)	1	2021	4	2024
Prototype Manufacturing Reduced Range Ammo (RRA)	1	2021	2	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
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Events	Start		End	
	Quarter	Year	Quarter	Year
Product Qualification Testing Reduced Range Ammo (RRA)	3	2023	1	2024
Soldier Touch Point Reduced Range Ammo (RRA)	2	2024	3	2024
Urgent Materiel Release Reduced Range Ammo (RRA)	4	2024	4	2024
First Unit Equipped Reduced Range Ammo (RRA)	4	2024	4	2024
Rapid Fielding Reduced Range Ammo (RRA)	4	2024	4	2029
Design Optimization Reduced Range Ammo (RRA)	2	2025	4	2025
Shoot-House Testing Reduced Range Ammo (RRA)	3	2025	1	2026
Full Materiel Release Reduced Range Ammo (RRA)	2	2026	2	2026
Rapid Prototyping Effort Tracer Ammo	1	2022	3	2025
Build and Test Tracer Ammo	1	2022	4	2024
Soldier Touch Point Tracer Ammo	3	2024	4	2024
Product Qualification Testing Tracer Ammo	4	2024	2	2025
Live-Fire Testing and Evaluation Tracer Ammo	4	2024	2	2025
Full Materiel Release Tracer Ammo	4	2025	4	2025
First Unit Equipped Tracer Ammo	4	2025	4	2025
Rapid Fielding Tracer	4	2025	4	2030
Rapid Prototyping Close Combat Mission Capability Kit (CCMCK)	1	2022	3	2026
Concept Development and Evaluation Close Combat Mission Capability Kit (CCMCK)	1	2022	3	2026
Developmental Testing Close Combat Mission Capability Kit (CCMCK)	3	2025	1	2026
Full Materiel Release Close Combat Mission Capability Kit (CCMCK)	3	2026	3	2026
Fielding Close Combat Mission Capability Kit (CCMCK)	4	2026	4	2031
Rapid Prototyping Blank, DDI, and HPT	1	2022	2	2024
Product Qualification Testing Blank, DDI, and HPT	2	2023	4	2023
Soldier Touch Point Blank, DDI, and HPT	4	2023	1	2024
Urgent Materiel Release Blank, DDI, and HPT	2	2024	2	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
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Events	Start		End	
	Quarter	Year	Quarter	Year
First Unit Equipped Blank, DDI, and HPT	2	2024	2	2024
Fielding Blank, DDI, and HPT	2	2024	4	2033
Design Optimization Blank, DDI, and HPT	3	2024	1	2029
Developmental Testing Blank, DDI, and HPT	4	2024	2	2025

Note

- Special Purpose (SP)
- General Purpose (GP)
- Close Combat Mission Capability Kit (CCMCK)
- Drill Dummy Inert (DDI)
- High Pressure Test (HPT)

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
S36: Precision Guidance Kit	-	34.197	54.838	33.564	-	33.564	25.082	5.037	3.387	3.424	0.000	159.529
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Long Range-Precision Guidance Kit (LR-PGK) development effort will qualify state of the art technologies for a course correcting fuze that provides precision accuracy at extended ranges for current and future 155 millimeter (mm) High Explosive (HE) projectiles by eliminating a portion of the inherent errors associated with ballistic firing solutions, which effectively reduces the number of projectiles required to execute fire missions. LR-PGK will support projectile operation in Global Positioning System (GPS) degraded environments and compatibility with Army Modernization objectives under the Long Range Precision Fires Cross Functional Team's (LRPF CFT) new long range cannon, Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH). The ERCA and its new long range projectiles require the LR-PGK to meet lethality requirements. Fiscal Year (FY) 2024 funding will continue to support the fabrication of LR-PGK hardware, safety and development testing, and accomplishes a Preliminary Design Review (PDR).

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

	FY 2022	FY 2023	FY 2024
<p>Title: Long Range-Precision Guidance Kit (LR-PGK) Development</p> <p>Description: The LR-PGK development effort will qualify state of the art technologies for operation in GPS degraded environments as well as ensure compatibility with the Extended Range Cannon Artillery (ERCA) weapon and projectiles to meet Army Modernization objectives under the Long Range Precision Fires Cross Functional Team (LRPF CFT).</p> <p>FY 2023 Plans: FY 2023 funding supports LR-PGK development testing, and development of the Full Materiel Release (FMR) design configuration.</p> <p>FY 2024 Plans: FY 2024 funding will continue to support the fabrication of LR-PGK hardware, safety and development testing, and accomplishes a Preliminary Design Review (PDR).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase in funding in FY 2024 due to increase in contract and test costs associated with LR-PGK development and qualification efforts.</p>	34.197	28.749	33.564
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans:</p>	-	1.089	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023		FY 2024
Funding transferred in accordance with Title 15 USC §638				
FY 2023 to FY 2024 Increase/Decrease Statement:				
Funding transferred in accordance with Title 15 USC §638				
Accomplishments/Planned Programs Subtotals	34.197	29.838		33.564

	FY 2022	FY 2023
Congressional Add: Anti-Jam Precision Guidance Kit	-	25.000
FY 2023 Plans: FY 2023 Congressional Add supports Precision Guidance Kit Extended Range (PGK-ER) development efforts that provide a risk mitigation alternative to support the Extended Range Cannon Artillery (ERCA) System of Systems Operational Assessment and demonstrate its anti-jam capability with the 58 caliber ERCA Self-Propelled Howitzer (SPH) system.		
Congressional Adds Subtotals	-	25.000

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

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E99251: LONG-RANGE PRECISION GUIDANCE KIT (LR-PGK)	24.677	37.891	8.248	-	8.248	83.657	92.244	97.686	99.185	0.000	443.588

Remarks
A Procurement of Ammunition, Army (PAA) funding for Long Range-Precision Guidance Kit (LR-PGK), Standard Study Number (SSN) E99251, was established for this effort to deliver long range precision fuzes for the Extended Range Cannon Artillery (ERCA) Operational Assessment (OA) as well as future UMR and FMR quantities.

D. Acquisition Strategy
Long Range-Precision Guidance Kit (LR-PGK) development efforts are focused on addressing performance in Global Positioning System (GPS) degraded environments as well as ensuring compatibility with the Army's new long range 155mm cannon and projectiles, which are scheduled to be fielded in the same timeframe as LR-PGK. The initial contracting strategy included competitive DoD Ordnance Technology Consortium (DOTC) Other Transaction Agreement (OTA) concept development efforts with multiple contractors in Fiscal Year (FY) 2017, followed by a DOTC Risk Reduction concept maturation phase in FY 2018 through FY 2019. This developmental program has the objective to develop and safety qualify an initial configuration to support the Extended Range Cannon Artillery (ERCA). This overlaps with the development of the configurations for Full Material Release (FMR). The FMR qualification effort will begin in FY 2027 to support Milestone C in FY 2028. The program will transition to a Federal Acquisition Regulation (FAR) based production contract to support deliveries. Subsequent to Milestone C, the program will transition to a FAR based contract for Low Rate Initial Production (LRIP) and Full Rate Production (FRP) to support the delivery of the FMR configuration quantities.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) S36 / <i>Precision Guidance Kit</i>

This Project is also utilizing a Cornerstone OTA with Northrop Grumman Defense Systems (NGDS) for Precision Guidance Kit Extended Range (PGK-ER) development efforts that provide a risk mitigation alternative to support the Extended Range Cannon Artillery (ERCA) System of Systems Operational Assessment and demonstrate its anti-jam capability with the 58 caliber ERCA Self-Propelled Howitzer (SPH) system.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Office of the Project Manager (PM) Combat Ammunition Systems (CAS) : Picatinny Arsenal, NJ	14.043	0.075	Oct 2021	0.100	Oct 2022	0.100	Oct 2023	-		0.100	0.000	14.318	14.067
SBIR/STTR	TBD	Various : Various	-	-		1.089		-		-		-	0.000	1.089	-
Subtotal			14.043	0.075		1.189		0.100		-		0.100	0.000	15.407	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LR-PGK Engineering and Manufacturing Development (EMD)	MIPR	DOD Ordnance Consortium (DOTC) / BAE Systems : Various	40.593	27.003	Nov 2021	21.969	Nov 2022	25.713	Nov 2023	-		25.713	0.000	115.278	33.046
LR-PGK GPS System Maturation	MIPR	DOD Ordnance Consortium (DOTC) / L3-IEC : Various	23.754	2.794	Dec 2021	-		-		-		-	0.000	26.548	10.551
LR-PGK Software Engineering	Reqn	Leidos, Inc. : Reston, VA	0.699	0.700	Aug 2022	0.705	Aug 2023	-		-		-	0.000	2.104	-
LR-PGK Developmental Hardware	Reqn	American Ordnance, LLC : Middletown, IA	0.020	0.095	Apr 2022	0.250	Mar 2023	-		-		-	0.000	0.365	-
Cornerstone - Precision Guidance Kit Extended Range Development - Congressional Add	MIPR	Cornerstone OTA, Northrup Grumman Defense Systems : Plymouth, MN	-	-		21.000	Jun 2023	-		-		-	0.000	21.000	-
Subtotal			65.066	30.592		43.924		25.713		-		25.713	0.000	165.295	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LR-PGK Government Engineering Support	MIPR	Combat Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	47.200	3.030	Oct 2021	3.295	Oct 2022	4.651	Oct 2023	-		4.651	0.000	58.176	41.412
PGK-ER Engineering Support - Congressional Add	MIPR	Combat Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	-	-		2.000	Jun 2023	-		-		-	0.000	2.000	-
Subtotal			47.200	3.030		5.295		4.651		-		4.651	0.000	60.176	N/A

Remarks
Additional funding required for LR-PGK engineering support in FY 2024 to complete planned development activities leading up to Preliminary Design Review (PDR).

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LR-PGK System Development Testing	MIPR	Army Test and Evaluation Command (ATEC) Yuma Proving Ground (YPG) : Yuma, AZ	11.595	0.500	May 2022	2.430	Nov 2022	3.100	Nov 2023	-		3.100	0.000	17.625	10.442
PGK-ER Testing - Congressional Add	MIPR	Army Test and Evaluation Command (ATEC) Yuma Proving Ground (YPG) : Yuma, AZ	-	-		2.000	Sep 2023	-		-		-	0.000	2.000	-
Subtotal			11.595	0.500		4.430		3.100		-		3.100	0.000	19.625	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army							Date: March 2023				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev			Project (Number/Name) S36 / Precision Guidance Kit				
	Prior Years	FY 2022		FY 2023		FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	137.904	34.197		54.838		33.564	-	33.564	0.000	260.503	N/A

Remarks
 Defense Ordnance Technology Consortium (DOTC)
 Long Range-Precision Guidance Kit (LR-PGK)
 Engineering and Manufacturing Development (EMD)
 Army Test and Evaluation Command (ATEC)

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Long Range Precision Guidance Kit (LR-PGK)																												
Technology Maturation and Risk Reduction (TMRR) and EMD																												
<i>TMRR / EMD</i>																												
Prototype Development & Testing																												
<i>Prototyping & Testing</i>																												
Airframe, Guidance and Control Testing																												
<i>Airframe, Guidance and Control Testing</i>																												
Preliminary Design Review (PDR)																												
<i>PDR</i>																												
Critical Design Review (CDR)																												
<i>CDR</i>																												
Development Testing																												
<i>Development Testing</i>																												
Milestone B																												
<i>MS-B</i>																												
Full Materiel Release (FMR) Qualification Testing																												
<i>FMR Qualification Testing</i>																												
Milestone C																												
<i>MS-C</i>																												
Initial Operation Test and Evaluation (IOT&E)																												
<i>IOT&E</i>																												
Precision Guidance Kit Extended Range (PGK-ER)																												
Anti-Jam (AJ) Development and Testing																												
<i>AJ Development & Testing</i>																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028																																						
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																																			
Anti-Jam (AJ) Guided Flight Test (GFT)									3 AJ GFT																																																						
Extended Range Cannon Artillery (ERCA) Operational Asses...																																																															
ERCA OA Deliveries																																																															
ERCA System of Systems (SoS) Developmental Testing (DT) OA																																																															

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) S36 / Precision Guidance Kit

Note
Long range precision fuze survivability knowledge points achieved from FY 2021 Congressional Add on Program Element 0604802A Project EU6, 155mm HE Rocket Assist Project Extended Range, are being utilized to support the production of long range precision fuzes for the Extended Range Cannon Artillery (ERCA) Operational Assessment (OA).

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) S36 / <i>Precision Guidance Kit</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Long Range Precision Guidance Kit (LR-PGK)	1	2022	1	2022
Technology Maturation and Risk Reduction (TMRR) and EMD	1	2019	2	2028
Prototype Development & Testing	2	2020	4	2024
Airframe, Guidance and Control Testing	3	2021	4	2024
Preliminary Design Review (PDR)	4	2024	4	2024
Critical Design Review (CDR)	4	2025	4	2025
Development Testing	4	2024	4	2025
Milestone B	1	2026	1	2026
Full Materiel Release (FMR) Qualification Testing	2	2027	3	2028
Milestone C	3	2028	3	2028
Initial Operation Test and Evaluation (IOT&E)	4	2028	4	2028
Precision Guidance Kit Extended Range (PGK-ER)	1	2023	1	2023
Anti-Jam (AJ) Development and Testing	1	2023	4	2023
Anti-Jam (AJ) Guided Flight Test (GFT)	4	2023	4	2023
Extended Range Cannon Artillery (ERCA) Operational Assessment (OA) Production	4	2023	1	2024
ERCA OA Deliveries	1	2024	2	2024
ERCA System of Systems (SoS) Developmental Testing (DT)/OA	1	2024	1	2026

Note

Long range precision fuze survivability knowledge points achieved from FY 2021 Congressional Add on Program Element 0604802A Project EU6, 155mm HE Rocket Assist Project Extended Range, are being utilized to support the production of long range precision fuzes for the Extended Range Cannon Artillery (ERCA) Operational Assessment (OA).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	49.201	75.669	37.420	-	37.420	21.475	12.652	8.758	8.896	0.000	214.071
194: Engine Driven Gen Ed	-	13.102	25.023	12.806	-	12.806	12.151	7.167	3.214	3.291	0.000	76.754
EJ9: Maneuver Support Vessel (MSV)	-	4.175	9.473	7.827	-	7.827	-	-	-	-	0.000	21.475
FG4: Ultra-Lightweight Camouflage Net System (ULCANS)	-	1.100	5.000	-	-	-	-	-	-	-	0.000	6.100
H02: Tactical Bridging - Engineering Development	-	16.525	8.528	-	-	-	-	-	-	-	0.000	25.053
L39: Field Sustainment Support Ed	-	2.216	1.847	4.824	-	4.824	3.790	3.070	3.103	3.138	0.000	21.988
L41: Water And Petroleum Distribution - Ed	-	8.242	7.921	7.543	-	7.543	2.013	-	-	-	0.000	25.719
L46: Maintenance Support Equipment	-	0.738	0.972	1.306	-	1.306	-	-	-	-	0.000	3.016
L47: Improved Environmental Control Units Ed	-	1.735	1.529	1.102	-	1.102	1.207	1.207	1.220	1.233	0.000	9.233
VR7: Combat Service Support Systems	-	1.368	15.376	2.012	-	2.012	2.314	1.208	1.221	1.234	0.000	24.733

A. Mission Description and Budget Item Justification

This Program Element (PE) provides system development and demonstration for various projects. This PE includes the development of water craft, military tactical and assault bridging, material handling equipment, construction equipment, engineer support equipment, soldier support equipment (to include shelter systems, environmental control, field service equipment, camouflage systems and aerial delivery equipment), water purification equipment, petroleum distribution equipment, and mobile electric power.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	54.642	41.669	26.218	-	26.218
Current President's Budget	49.201	75.669	37.420	-	37.420
Total Adjustments	-5.441	34.000	11.202	-	11.202
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	34.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-5.441	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	11.202	-	11.202

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

Project: 194: *Engine Driven Gen Ed*

 Congressional Add: *Lightweight Portable Power*

Congressional Add Subtotals for Project: 194

Project: FG4: *Ultra-Lightweight Camouflage Net System (ULCANS)*

 Congressional Add: *Mobile Camouflage Systems (MCS)*

Congressional Add Subtotals for Project: FG4

Project: H02: *Tactical Bridging - Engineering Development*

 Congressional Add: *Program increase - national hydrography dataset*

Congressional Add Subtotals for Project: H02

Project: VR7: *Combat Service Support Systems*

 Congressional Add: *ASF-RWS P1 and P3 MINATORS*

Congressional Add Subtotals for Project: VR7

Congressional Add Totals for all Projects

	FY 2022	FY 2023
	-	10.000
Congressional Add Subtotals for Project: 194	-	10.000
	-	5.000
Congressional Add Subtotals for Project: FG4	-	5.000
	2.000	-
Congressional Add Subtotals for Project: H02	2.000	-
	-	12.000
Congressional Add Subtotals for Project: VR7	-	12.000
Congressional Add Totals for all Projects	2.000	27.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army Date: March 2023

Appropriation/Budget Activity
2040: *Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0604804A / *Logistics and Engineer Equipment - Eng Dev*

Change Summary Explanation

Fiscal Year (FY) 2024 funding increase in project L39 is to continue and complete design validation and continue developmental testing for RRDAS; begin JPADS M-code hardware/software development, test and integration.

Fiscal Year (FY) 2024 funding increase in project EJ9 is due to new efforts associated with industry and Government collaboration to inform MSV(H) desired characteristics through concept design analysis and modeling and simulation.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) 194 / Engine Driven Gen Ed
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
194: Engine Driven Gen Ed	-	13.102	25.023	12.806	-	12.806	12.151	7.167	3.214	3.291	0.000	76.754
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is a key enabler for multiple Army Modernization Priorities by providing adaptable and efficient electrical power sources for network modernization, lethality, long range precision fires, and, air & missile defense. The main efforts are integrating standardized power solutions supporting specific programs and modernizations within the CPI2 command post, Soldier power battery charging, and precision fires and air & missile defense systems.

This project supports the Tactical Electric Power (TEP) programs (2kW-800kW Generators and Associated Equip) which is established to develop a modernized, standard family of Mobile Electric Power (MEP) systems to include MEP Generating Sources (MEPGS), MEP Distribution Systems (MEPDS), MEP Storage Systems (MEPSS) and MEP Management Systems (MEPMS) for all Services throughout the Department of Defense IAW DoDI 4120.11. Building on the device/component evaluations conducted in PE 0603804A project G11, this project supports the system development and demonstration of a series of innovative mobile electric power systems that are essential to the development and eventual fielding of modernized MEPGS, MEPMS, MEPSS and MEPDS. This project also supports Army modernization priorities, specifically Combat Support/Combat Service Support (CS/CSS) demands in Network / Command, Control, Communications & Intelligence (C3I), Soldier Lethality, Air & Missile Defense and Long Range Precision Fires, field hospital power, and reduces sustainment requirements.

Power Distribution Illumination Systems Electrical (PDISE) provides reliable, modular design power distribution equipment that is critical to deploying power networks. PDISE Expansion will add power distribution greater than 60kW. The Prime Power Connection Kit (PPCK) effort will fulfill prime power (medium-voltage, 4160 Volts Alternating Current (VAC)) distribution shortfalls to support Force Provider Expeditionary (FPE) and 249th Engineer Battalion (Prime Power) requirements. PPCK will provide updated power distribution capabilities for the U.S. Army Deployable Power Generation and Distribution System (DPGDS) and the U.S. Air Force Basic Expeditionary Airfield Resources (BEAR) power systems. The PPCK will incorporate advanced capabilities and include three primary components: an improved Secondary Distribution Center (iSDC), a Tactical Prime Power Transformer (TPPT), and an improved Primary Switching Center (iPSC).

STEP is a modernization program for existing legacy small power generation systems, that will provide expeditionary, durable and reliable tactical electric power capabilities less than 5kW, to support operations in the austere environments of today's battlefield. The STEP program is a critical enabler to the Army modernization priorities under Army Futures Command Soldier Lethality Cross Functional Team (CFT) and Network CFT. It will provide battery charging power sources for Soldier borne sensors, lasers and optics.

The Integrated Fire Control Network (IFCN) Relay activities include the development and integration a 10kW bi-directional power converter to include the integration of 6T format Lithium Ion (Li-Ion) batteries on a IFCN platform system.

The U.S Army field hospital configurations require a modernized power generator and distribution system to support medical operations in large scale ground combat operations (LSGCO).? Based on the Army's modernized field hospital and recently fielded next generation computed tomography (CT) systems, the current Modified

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) 194 / Engine Driven Gen Ed
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Table of Organization and Equipment (MTOE) authorization of 100kw Tactical Quiet Generators (TQGs) are insufficient to meet the operational power demands for the 148-bed configuration.

FY 2024 funds will support prototyping and engineering, manufacturing and development efforts for the Lightweight Portable Power System, STEP 3kW, PDISE Expansion power distribution solution, Integrated Fire Control Network (IFCN) Relay, and 120kW microgrids for the field hospitals.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Power Distribution Illumination Systems Electrical (PDISE) expansion</p> <p>Description: Prepare PDISE- Prime effort by awarding the Prime Power Distribution System (PPDS) contract, developing Prime Power Connection Kit (PPCK) first article test (FAT) units and start developmental testing inclusive of the Improved Primary Switching Center (iPSC), Improved Secondary Distribution Center (iSDC), and Tactical Prime Power Transformer (TPPT). The PPCK enables distribution of power from prime power sources which use medium voltages or higher. The system will transform medium or higher voltages down to standard 120/208 V, 3-phase power. Elements of the PPCK will enhance the existing Secondary Distribution Center (SDC) by incorporating advanced capabilities to accept either 4160 Volts Alternating Current (VAC) primary input power from a USA Deployable Power Generation and Distribution System (DPGDS) or a United States Air Force (USAF) Basic Expeditionary Airfield Resources (BEAR) power source or 13,800 VAC from contracted and commercial power sources or host nation/existing distribution systems.</p> <p>FY 2023 Plans: Revision and release of Prime Power Connection Kit (PPCK) solicitation package to industry.</p> <p>FY 2024 Plans: PPCK First Article Test build.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Reduction from FY23 to FY24 due to reduction in test build efforts.</p>	1.315	2.500	0.127
<p>Title: Field Hospital Microgrid Systems</p> <p>Description: The effort will develop and integrate a 120kw microgrid power system onto a 5-ton trailer platform. This modernization effort will provide the necessary power requirements to meet all the medical healthcare operations of the newly modernized 148-bed field hospital.</p> <p>FY 2024 Plans: FY24 funds will support the platform engineering design and integration effort, engineering and logistics documentation, developmental testing activities, transportability testing, safety assessment, and operational assessment.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>	-	-	0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) 194 / <i>Engine Driven Gen Ed</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
FY23 to FY24 increases due to initiation of logistic documentation and developmental testing activities.				
<p>Title: STEP</p> <p>Description: The Small Tactical Electrical Power (STEP) is a modernization program for existing legacy 2kW and 3kW systems, that will provide small tactical electric power capabilities less than 5-Kilowatts (<5kW), and is durable and reliable, in order to operate in the austere environments of today's battlefield. The STEP program will consist of two major lines of effort providing three distinct power generating and power storage capabilities. These systems will be approached along lines of effort that associate with each system; STEP Lightweight (STEP-LW) and STEP 3kW will provide power generation and the STEP Hybrid Augmentation Systems (STEP HAS) will be an add-on for both systems that will provide power storage. The STEP program is a critical enabler to the Army modernization priorities under Army Futures Command Soldier Lethality Cross Function Team (CFT) and Network CFT. It will be power sources for Soldier borne sensors, lasers and optics.</p> <p>FY 2023 Plans: Begin STEP 3kW Engineering Manufacturing and Development (EMD) effort with 3 vendors and begin Hybrid Augmentation System (HAS) development.</p> <p>FY 2024 Plans: FY24 funds will support the continuation of the STEP 3kW.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Continuation of STEP 3KW EMD contract developmental efforts, which includes Critical Design Review (CDR).</p>		7.593	10.939	11.100
<p>Title: IFCN Effort</p> <p>Description: The effort will develop and integrate an advanced hybrid power solution for the AMMPS generators to initially support operation of the Integrated Fire Control Network (IFCN) Relay. Primary effort will include development and integration of a 10kW bi-directional power converter, integration of 6T format Lithium Ion (Li-Ion) batteries and development of a hybrid power architecture design that will provide IFCN a full range of AC and DC power. The bi-directional power converter will supply AC and DC power, provide AC transfer switch functions and charge Li-Ion batteries.</p> <p>FY 2023 Plans: FY23 funds will support prototype development and testing.</p> <p>FY 2024 Plans: FY24 funds will continue to support prototype development and complete testing.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>		0.370	1.036	1.079

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) 194 / Engine Driven Gen Ed

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding increased to support prototype testing.			
Title: Large Tactical Power System Description: LTPS provides mission critical power to the Army's Lower Tier Air & Missile Defense Sensor (LTAMDS), an AMD CFT modernization program. IAW DoDI 4120.11, LTPS will provide standardized mobile, durable and reliable tactical electric power above 60kW, to support Multi Domain Operations. The first procurement effort will be to produce and field Army standardized 500kW generators for emerging AMD CFT LTAMDS requirements. LTPS could potentially meet the power requirements of other large load demands such as field hospitals, airfields, and mission command nodes.	2.785	-	-
Title: SBIR/STTR FY 2023 Plans: SBIR/STTR transfer FY 2023 to FY 2024 Increase/Decrease Statement: SBIR/STTR transfer	-	0.548	-
Title: LAMPS contract termination Description: FY22 RDTE funds were used to execute the LAMPS contract termination settlement modification.	1.039	-	-
Accomplishments/Planned Programs Subtotals	13.102	15.023	12.806

	FY 2022	FY 2023
Congressional Add: Lightweight Portable Power FY 2023 Plans: FY23 Congressional funds to be executed on the prototyping and test and evaluation of lightweight, portable power systems.	-	10.000
Congressional Adds Subtotals	-	10.000

C. Other Program Funding Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Line Item			Base	OCO	Total						
• G11: Adv Elec Energy Con Ad	4.000	15.000	0.000	-	0.000	-	-	-	-	0.000	19.000
• MA9800: Generators And Associated Equip	106.120	112.689	78.364	-	78.364	83.661	91.456	104.272	104.475	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) 194 / Engine Driven Gen Ed

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

The Small Tactical Electric Power (STEP) program is a modernization program that will provide a family of systems of improved mobile Tactical Electric Power (TEP) sources and will replace the legacy 2 kilowatt (kW) Military Tactical Generator (MTG) and the 3kW Tactical Quiet Generator (TQG). STEP models will be lightweight, modular, reliable, and more logistically supportable power sources than their predecessors for the Department of Defense's (DoD) 21st Century digitized forces.

The acquisition for STEP will incorporate Joint service requirements to reduce cost, maximize interoperability and increase performance over existing generator systems. STEP will implement two separate lines of effort. Due to the recent change to requirements based on the Feb 23 approval of the STEP Capability Development Document (CDD), phasing of the two lines of effort have changed and the STEP 3kW will enter development in 2QFY23 and the STEP LW will not enter acquisition lifecycle at MS C in 1QFY23 since the STEP LW prototype testing in FY22 determined that the current solution was not viable for long-term sustainment. However, opportunities for engineering, manufacturing, and development exist and the STEP LW may enter the acquisition lifecycle at MS B in 2QFY25. STEP 3kW system will enter development at MS B in 1QFY23. STEP Hybrid Augmentation Systems (STEP HAS) will begin development in 4Q FY23.

Power Distribution Illumination Systems Electrical (PDISE) provides the linkage between the generators and the Network/C3I, Air & Missile Defense, Long Range Precision Fires, Command Post and Combat Support/Combat Service Support systems. PDISE is a family of power distribution and illumination equipment that transmits electrical power from mobile generation equipment to the end users in a field environment. PDISE expansion program = Prime Power Connection Kit (PPCK) inclusive of the Improved Primary Switching Center (iPSC), Improved Secondary Distribution Center (iSDC) and Tactical Prime Power Transformer (TPPT).

The acquisition strategy includes a 2-year Firm-Fixed Price (FFP) developmental contract in 1QFY24 that will develop a materiel solution to support Army Prime Power in addition to Force Provider Expeditionary contingency-base operations with a Prime Power Connection Kit (PPCK). The developmental contract includes the research, design, manufacturing, and delivery of first articles to support the developmental testing scheduled in 1QFY25. First article testing will be completed no later than 4QFY25 with follow-on operational assessment starting in 1QFY26.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) 194 / Engine Driven Gen Ed
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PDISE Expansion	Various	PM E2S2 : Ft. Belvoir	1.275	-		1.000	Sep 2023	-		-		-	Continuing	Continuing	Continuing
STEP	TBD	PM E2S2 Ft. Belvoir ; PM E2S2 Ft. Belvoir	0.082	3.122	Feb 2022	0.650	Jul 2023	0.656	Jan 2024	-		0.656	0.000	4.510	-
SBIR/STTR transfer	TBD	SBIR/STTR transfer : Ft. Belvoir	-	-		0.548		-		-		-	0.000	0.548	-
Subtotal			1.357	3.122		2.198		0.656		-		0.656	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
STEP	TBD	Prototyping and engineering, manufacturing and development efforts : TBD	0.400	5.200	Sep 2022	10.089	Mar 2023	10.092	Mar 2024	-		10.092	0.000	25.781	-
PDISE Expansion	TBD	Prototyping and engineering, manufacturing and development efforts : TBD	-	-		1.400	Dec 2023	0.127	Apr 2024	-		0.127	0.000	1.527	-
Field Hospital Microgrid Integration	MIPR	DEVCOM RTI : Ft. Belvoir	-	-		-		0.500	Jun 2024	-		0.500	0.000	0.500	-
LAMPS Termination	TBD	contract termination : ft belvoir	-	1.039	May 2022	-		-		-		-	0.000	1.039	-
Lightweight Portable Power	TBD	Engenuity Power Systems (MI, VA) : West Virginia University (WV)	-	-		10.000	Jul 2023	-		-		-	0.000	10.000	-
Subtotal			0.400	6.239		21.489		10.719		-		10.719	0.000	38.847	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) 194 / Engine Driven Gen Ed
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Large Tactical Power Systems	TBD	contract support : ft belvoir	-	2.785	Dec 2022	-		-		-		-	0.000	2.785	-
STEP	TBD	PM E2S2 Ft. Belvoir : PM E2S2 Ft. Belvoir	0.120	0.586	Sep 2022	0.200	Jun 2023	0.210	Jan 2024	-		0.210	0.000	1.116	-
IFCN	TBD	PM E2S2 Ft. Belvoir : PM E2S2 Ft. Belvoir	0.316	0.370	Jul 2022	1.036	Jun 2023	1.079	Oct 2023	-		1.079	0.000	2.801	-
PDISE Expansion	Various	PM E2S2 : Ft. Belvoir	-	-		0.100	Dec 2023	-		-		-	0.000	0.100	-
Subtotal			0.436	3.741		1.336		1.289		-		1.289	0.000	6.802	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
STEP	TBD	PM E2S2 Ft. Belvoir : PM E2S2 Ft. Belvoir	-	-		-		0.142	Jan 2024	-		0.142	0.000	0.142	-
Subtotal			-	-		-		0.142		-		0.142	0.000	0.142	N/A

Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	2.193	13.102	25.023	12.806	-	12.806	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) 194 / Engine Driven Gen Ed

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
STEP Lightweight MS B													▲ 3															
STEP HAS development																												
MS B STEP 3kW					▲ 1																							
STEP 3kW EMD																												
PDISE Expansion																												
PDISE Expansion Award									▲ 2																			
PDISE Expansion First Article Build																												
PDISE Expansion First Article Test																												
IFCN Prototype																												
Field Hospital Microgrid Systems Design and Integration																												
Field Hospital Microgrid Systems First Article Test																												
Lightweight Portable Power (FY23 Congressional Add)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) 194 / <i>Engine Driven Gen Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
STEP Lightweight MS B	2	2025	2	2025
STEP HAS development	2	2025	2	2027
MS B STEP 3kW	2	2023	2	2023
STEP 3kW EMD	2	2023	3	2026
PDISE Expansion	3	2021	4	2029
PDISE Expansion Award	1	2024	1	2024
PDISE Expansion First Article Build	1	2024	1	2025
PDISE Expansion First Article Test	2	2025	2	2026
IFCN Prototype	2	2021	4	2024
Field Hospital Microgrid Systems Design and Integration	3	2024	4	2024
Field Hospital Microgrid Systems First Article Test	4	2024	4	2024
Lightweight Portable Power (FY23 Congressional Add)	3	2023	3	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) EJ9 / <i>Maneuver Support Vessel (MSV)</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EJ9: <i>Maneuver Support Vessel (MSV)</i>	-	4.175	9.473	7.827	-	7.827	-	-	-	-	0.000	21.475
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project line supports the family of Maneuver Support Vessels (MSV) that support Dynamic Force Repositioning (DFR) by providing the Combatant, Multi-Domain Operations (MDO) and Joint All Domain Operations (JADO) Commanders with the ability to access multiple entry points via littorals and inland waterways (waterborne corridor) IOT sustain forces within an anti-access/area denial (A2/AD) bubble. The family of MSV include the Maneuver Support Vessel (Light) and Maneuver Support Vessel (Heavy), which are the Army's first digital architecture vessels (with improved draft, speed, and payload) and critical modernization efforts in support of the Army's Watercraft Systems Transformation Strategy (AWSTS). MSV connectors will provide Surge, Precision and Dispersed Logistics to move and maneuver tailored forces, combat ready troops, platforms, equipment, and supply bulk fuel and water across the full spectrum of operations. MSV connectors mitigate A2/AD threats by providing access to shallow coastal waters, rivers, in narrow inland waterways in support of dispersed force elements in austere environments and where mature ports or road networks are unavailable.

The Maneuver Support Vessel (Light) - MSV(L) provides upgraded capabilities such as higher operational speed, reduced draft and increased payload to support expeditionary movement and maneuver of tailored forces and combat power to mitigate the Anti-Access/Area Denial (A2/AD) operational environment. Capable of delivering a combat configured Abrams, Stryker or Bradley Fighting Vehicles along with critical sustainment missions including delivery of food, water, fuel, and ammunition. MSV(L) is the first new development program which will displace the Army's aging Landing Craft Mechanized-8 (LCM-8) class of vessels. The LCM-8 does not have the speed, functional draft (shallow water capability), interoperability, or maneuver capability to move today's Army Maneuver Platforms.

MSV(L) completes the Engineering and Manufacturing Development (EMD) phase in FY23 and delivers producing the single full scale prototype. The prototype will undergo contractor and government testing, which will inform the updated Joint Capabilities Integration Development System (JCIDS) requirements documentation at MS C. Following prototype testing the prototype vessel may be used as a test bench for future modifications and or a training asset.

The MSV(H) represents a new development of maritime transport, adding new capabilities to meet the joint formation's future operational and tactical movement and maneuver requirements. MSV(H) is in line with future joint and Army Operational Concepts stating that Army forces must conduct expeditionary movement over strategic distances and transition rapidly to cross-domain maneuver of sufficient scale and duration to accomplish operational objectives. This heavy lift capability enables intra-theater movement and maneuver of combat loaded, ready-to-fight forces (personnel, equipment, and supplies) in support of CCMDs. MSV(H) is interoperable with future joint sea basing concepts and designed with the right range, speed, and cargo capacity to employ combat power to multiple dispersed locations and project sustainment from intermediate staging bases or the sea base. The strategically dispersed and forward deployed MSV(H) fleet enables rapid and responsive theater employment of combat loaded, ready-to-fight forces (personnel, equipment, and accompanying supplies) in support of CCMDs, employ them at the point of need, provide tactical maneuver support during operations, and sustain them over the duration of operations. MSV(H) capabilities are a critical enabler in combatting A2/AD environment

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EJ9 / <i>Maneuver Support Vessel (MSV)</i>
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threats made more difficult by operating in the littoral operating space physically defined by natural choke points along rivers, in shallows, jutting peninsulas, offshore islands, bays, estuaries, coastlines and vessel-congested shipping areas.

FY 2024 RDTE dollars in the amount of \$7.827 million supports the family of Maneuver Support Vessels requirements development process with analysis and concept design to address approved requirements.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Program Management / Systems Engineering</p> <p>Description: PM/Matrix Support includes PM and systems engineering oversight required to manage the program and provide contractor oversight. Salaries for support through the EMD phase of MSV(L) and start MSV(H) in FY 2022.</p> <p>FY 2023 Plans: Funds matrix support, travel, and general oversight efforts.</p> <p>FY 2024 Plans: Funds matrix support, travel, and general oversight efforts.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: The FY 2024 increase is due to additional support required to facilitate requirements development.</p>	0.500	0.605	0.723
<p>Title: Maneuver Support Vessel Affordability and Feasibility Studies</p> <p>Description: Conduct Affordability and Feasibility Studies for future watercraft modernization.</p> <p>FY 2023 Plans: Funding needed to complete feasibility studies and Affordability Analysis.</p> <p>FY 2024 Plans: Conduct analysis development to complete affordability and feasibility studies.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: The FY 2024 decrease is due to the completion of feasibility studies.</p>	0.453	1.778	1.457
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 Plans: SBBR/STTR Tax \$90K</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>	-	0.090	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) EJ9 / Maneuver Support Vessel (MSV)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
decrease due to SBIR/STTR transfer of 90K			
Title: MSV(H) Requirements Development Description: Collaborative effort with industry and Government to inform MSV(H) desired characteristics. FY 2024 Plans: Funding supports MSV(H) requirements development process with analysis of A-CDD desired characteristics. FY 2023 to FY 2024 Increase/Decrease Statement: The FY 2024 increase is due to new efforts associated with industry and Government collaboration to inform MSV(H) desired characteristics through concept design analysis and modeling and simulation.	-	-	5.647
Title: MSV(L) EMD Description: MSV(L) EMD Close Out FY 2023 Plans: \$7M to fund MSV(L) EMD FY 2023 to FY 2024 Increase/Decrease Statement: MSV(L) EMD Phase fully completed in FY23.	3.222	7.000	-
Accomplishments/Planned Programs Subtotals	4.175	9.473	7.827

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• R03050: Maneuver Support Vessel (Light) (MSV-L)	76.660	97.676	149.449	-	149.449	42.027	31.077	13.353	13.365	0.000	423.607

Remarks
 Significant Accomplishments:
 -Prototype Launch and Extended Acceptance Trials
 - Milestone C Documentation generated and submitted into staffing.
 - MSV(L) EMD REAs funded

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EJ9 / <i>Maneuver Support Vessel (MSV)</i>

D. Acquisition Strategy

MSV(L) completes the Engineering and Manufacturing Development (EMD) phase in FY23 and delivers producing the single full scale prototype. The single full scale prototype will undergo contractor and government testing, which will inform the updated Joint Capabilities Integration Development System (JCIDS) requirements documentation at MS C. Following prototype testing the prototype vessel may be used as a test bench for future modifications and or a training asset.

MSV(H): competitive design efforts will result in digital prototype. MSV(H) acquisition strategy maximizes competition at every phase of design, prototyping, and test to yield the most affordable position for the Army in the program's production phase.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				EJ9 / Maneuver Support Vessel (MSV)							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-	-		0.090		-		-		-	Continuing	Continuing	-
Subtotal			-	-		0.090		-		-		-	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Trade Studies and Business Analysis	TBD	Various : Various	0.264	0.453	Nov 2021	1.778	May 2023	1.457	Nov 2023	-		1.457	Continuing	Continuing	-
MSV Requirements Development	TBD	TBD : TBD	-	-		-		5.647	Feb 2024	-		5.647	0.000	5.647	-
MSV(L) EMD	SS/ FPEPA	VIGOR LLC : Portland, OR	77.755	3.222	Jan 2023	7.000	Mar 2023	-		-		-	0.000	87.977	-
Subtotal			78.019	3.675		8.778		7.104		-		7.104	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Salaries for Matrix Personnel Army Watercraft, GVSC, ILSC PSID and ACC-Wrm.	MIPR	Detroit Arsenal : Warren, MI 48397-5000	21.220	0.500	Dec 2021	0.605	Jan 2023	0.723	Dec 2023	-		0.723	0.000	23.048	-
Salaries / Travel for Program Management Support Contracts	C/CPFF	Picatinny Arsenal, New Jersey 07806-5000 : Warren, MI 48397-5000	5.824	-		-		-		-		-	0.000	5.824	-
Subtotal			27.044	0.500		0.605		0.723		-		0.723	0.000	28.872	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) EJ9 / Maneuver Support Vessel (MSV)				
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	105.063	4.175	9.473	7.827	-	7.827	Continuing	Continuing	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EJ9 / <i>Maneuver Support Vessel (MSV)</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MSV Salaries for Matrix Support	[Blue bar]																											
MSV(L) Contractor System Integration Laboratory (CSIL)	[Blue bar]																											
MSV Affordability and Feasibility Studies	[Blue bar]																											
MSV(L) Prototype Build	[Blue bar]																											
MSV(L) Prototype Test and Evaluation (includes Subsystem...)	[Blue bar]																											
MSV(L) Knowledge Point 6 (KP6)	[Grey bar]																											
MSV(L) Milestone C	[Grey bar]																											
MSV(H) Future Watercraft Modernization	[Blue bar]																											
MSV(H) ASP Part 1	[Grey bar]																											
MSV(H) ASP Part 2	[Grey bar]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EJ9 / <i>Maneuver Support Vessel (MSV)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MSV Salaries for Matrix Support	4	2016	4	2028
MSV(L) Contractor System Integration Laboratory (CSIL)	4	2018	2	2022
MSV Affordability and Feasibility Studies	1	2022	4	2024
MSV(L) Prototype Build	4	2019	4	2022
MSV(L) Prototype Test and Evaluation (includes Subsystem tests)	4	2019	2	2023
MSV(L) Knowledge Point 6 (KP6)	3	2023	3	2023
MSV(L) Milestone C	3	2023	3	2023
MSV(H) Future Watercraft Modernization	1	2022	4	2028
MSV(H) ASP Part 1	1	2023	1	2023
MSV(H) ASP Part 2	2	2023	2	2023

Note

Family of Maneuver Support Vessels: Maneuver Support Vessel (Light), (MSV(L)) and Maneuver Support Vessel (Heavy), MSV(H).

FY24 funds are used to initiate competitive design efforts which will result in digital prototype.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) FG4 / Ultra-Lightweight Camouflage Net System (ULCANS)
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
FG4: <i>Ultra-Lightweight Camouflage Net System (ULCANS)</i>	-	1.100	5.000	-	-	-	-	-	-	-	0.000	6.100
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

ULCANS provides increased survivability against multi-spectral visual, infrared and radar threats, thermal signature suppression and significant thermal/solar reduction capability. ULCANS is capable of use in all types of weather and climatic conditions except in heavy snow and winds. ULCANS variants are integrated systems that are very lightweight, easily deployable, versatile, user friendly and tailored to the equipment meeting the requirements of operations for combat systems, command and control equipment, logistic support sites, tactical facilities, and fixed facilities. RDT&E funding for ULCANS Increment I program supports formal development for necessary technology/signature enhancements of three ULCANS Increment I variants (Woodland, Arctic, Desert/Urban) to replace current legacy ULCANS variants (Woodland and Desert).

Mobile Camouflage System (MCS) provides Full Spectrum Signature Management for Vehicles from ground, aerial, and satellite. MCS enables combat vehicle protection and survivability against current peer and near-peer threats; defeats enemy targeting and surveillance systems through multi-spectral concealment (UV, VIS, NIR, SWIR, Thermal, Radar); enables multi-domain operations in A2/AD environment and provides operational units layered protection and concealment against long-range precision fires, drones, ground, aerial, and satellite threats.

Funding supports modernization of current camouflage net systems by investigating technology insertions that decrease Soldier and ground combat vehicle detection from threat sensors. Funding also supports developing initial prototypes to enable refinement of operational requirements and early user feedback to maintain overmatch signature reduction against future threat sensors from peer competitors.

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

	FY 2022	FY 2023	FY 2024
Title: Ultra-Lightweight Camouflage Net System (ULCANS)	1.100	-	-
Description: ATR approved for support of Snow/Alpine testing			
Accomplishments/Planned Programs Subtotals	1.100	-	-

	FY 2022	FY 2023
Congressional Add: Mobile Camouflage Systems (MCS)	-	5.000
FY 2023 Plans: FY23 Congressional adds for MCS will be utilized for the research and development of multiple full-scale prototypes for operational platforms. Funding will be utilized for an MCS "coupon" which will allow		

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) FG4 / <i>Ultra-Lightweight Camouflage Net System (ULCANS)</i>
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	FY 2022	FY 2023
for a scalable and customizable solution to fit many different vehicle and weapons systems. MCS prototypes will be developed for Command Post platforms and tested in operation environments. Multiple test events are scheduled for prototype systems in FY23. Progression of the program and the data collected from R&D and test efforts will be utilized to ensure MCS will move through the entry gate process to become a requirement.		
Congressional Adds Subtotals	-	5.000

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

N/A

Remarks

D. Acquisition Strategy

The acquisition strategy for ULCANS is to accelerate product development and testing to transition into production. ULCANS Snow/Alpine variant is the last remaining variant to achieve FRP/TC-STD and FMR. All testing and observer trials have been complete. The FRP/TC-STD milestone will be approved March 2023 with FMR being scheduled for 3QFY23. MCS CDD entry gate scheduled for 4thQTR FY22, followed by full scale prototype for surrogate platform delivered by vendors. MCS will move through the entry gate process and become a requirement.

PMFSS will coordinate with other PMs to work MCS integration and address their platform's KPP's/KSA's for signature management. PMFSS will continue to develop mature MCS solutions for platform integration. PMFSS has MOU and support agreements with multiple PMs to include the GFE MCS solution for OMFV, and MCS endorsement between ELRV, SOCOM FOSOV, ERCA, LRPF, Mission Command Battle Lab, and the NGCV CFT. PMFSS will continue the efforts to finalize MCS as a formal requirement and a program of record.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				FG4 I Ultra-Lightweight Camouflage Net System (ULCANS)								
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
ULCANS	TBD	Various : PM FSS : Natick, MA	-	0.210	Jan 2023	-		-		-		-	0.000	0.210	-	
MCS	TBD	Various : PM FSS : Natick, MA	-	-		1.402	Oct 2023	-		-		-	0.000	1.402	-	
Subtotal			-	0.210		1.402		-		-		-	0.000	1.612	N/A	
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
MCS	TBD	Various : Various	-	-		2.098	Jul 2023	-		-		-	0.000	2.098	-	
Subtotal			-	-		2.098		-		-		-	0.000	2.098	N/A	
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
ULCANS	TBD	Various : Various	-	0.100	Mar 2023	-		-		-		-	0.000	0.100	-	
MCS	TBD	Various : Various	-	-		0.250	Aug 2023	-		-		-	0.000	0.250	-	
Subtotal			-	0.100		0.250		-		-		-	0.000	0.350	N/A	
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
ULCANS	TBD	Various : Various	-	0.790	Dec 2022	-		-		-		-	0.000	0.790	-	
MCS	TBD	Various : Various	-	-		1.250	May 2023	-		-		-	0.000	1.250	-	
Subtotal			-	0.790		1.250		-		-		-	0.000	2.040	N/A	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev			Project (Number/Name) FG4 / Ultra-Lightweight Camouflage Net System (ULCANS)					
	Prior Years	FY 2022	FY 2023		FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	-	1.100	5.000		-	-	-	0.000	6.100	N/A	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) FG4 / <i>Ultra-Lightweight Camouflage Net System (ULCANS)</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EMD testing for Snow/Alpine Variant	██████████				██████████																							
Complete documentation to support production decision fo...	██████████				██████████																							
Obtain production decision for Snow/Alpine Variant	██████████				██████████																							
Prepare documentation to support MS B Decision for MCS	██████████				██████████				██████████																			
MCS Coupon Development	██████████				██████████				██████████																			
Command Post MCS Development	██████████				██████████				██████████																			
Multiple MCS Field Test Events	██████████				██████████				██████████																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) FG4 / <i>Ultra-Lightweight Camouflage Net System (ULCANS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMD testing for Snow/Alpine Variant	3	2020	1	2023
Complete documentation to support production decision for Snow/Alpine Variant	3	2020	4	2022
Obtain production decision for Snow/Alpine Variant	4	2021	2	2023
Prepare documentation to support MS B Decision for MCS	3	2022	4	2024
MCS Coupon Development	3	2023	3	2024
Command Post MCS Development	3	2023	3	2024
Multiple MCS Field Test Events	3	2023	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) H02 / Tactical Bridging - Engineering Development			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
H02: Tactical Bridging - Engineering Development	-	16.525	8.528	-	-	-	-	-	-	-	0.000	25.053
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the engineering, prototyping, testing and manufacturing development of future force bridge systems and support equipment as well as improvements to existing systems within the Bridging Product Management portfolio.

Funding supports developmental and customer testing of the Line of Communication Bridge (LOCB), development, prototyping and testing of the Bridge Supplemental Set (BSS) and Bridge Protection Device (BPD), and funds multiple efforts to upgrade and modernize existing systems through the Family of Higher Military Load Classification Bridges (FoHMLC-B) program. Funding also supports development, test, and evaluation of upgrades / modernization of the Joint Assault Bridge (JAB) and Assault Breacher Vehicle (ABV) M1A1 base chassis to the standard Army M1A2 SEPv3 configuration (hereafter referred to as "M1A2 upgrade") in order to improve maintainability and supportability, minimize impacts of obsolescence, and establish commonality with the current Abrams Main Battle Tank (MBT) system. Funding also supports the development of new systems and modification of existing systems within the Bridging portfolio to enhance the Army's Engineering capabilities.

FY 2024 has no budget request.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Line of Communication Bridge (LOCB)</p> <p>Description: Funding requested for development and testing of higher Military Load Classification (MLC) modular Line of Communication Bridging with the mobility to span fixed or float gaps spanning 50 to 800 meters wide. Actions include the purchase of test assets, bridge structural strength analysis, performance assessments, Production Qualification Testing (PQT) and Customer Testing (CT) of the Line of Communication Bridge (LOCB) system.</p> <p>FY 2023 Plans: Funding supports the continuation and close-out of LOCB testing.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: RDTE efforts for the LOCB program ends in FY23 with the completion of testing.</p>	8.777	4.311	-
<p>Title: Bridge Supplemental Set (BSS)</p> <p>Description: Funding to develop a multi-functional, consolidated engineering set consisting of an anchorage system, access/egress traction improvement matting, power generation, tools, and a float Bridge Protection Device (BPD). The BSS is targeted</p>	1.160	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
for use with multiple tactical bridging systems to include the Improved Ribbon Bridge (IRB). It will increase the capability of the Multi-Role Bridging Company (MRBC).				
<p>Title: Family of Higher Military Load Classification Bridges (FoHMLC-B)</p> <p>Description: Funding provided to develop the Family of Higher Military Load Classification Bridges (FoHMLC-B). The FoHMLC-B program will upgrade current bridging systems and develop future bridging systems to support the increased weights of armored combat vehicles crossing Assault Fixed, Assault Float, Tactical Fixed and Tactical Float bridging systems.</p> <p>FY 2023 Plans: Funding supports development and testing of product improvements and various operational configurations for increased MLC rating of the Improved Ribbon Bridge (IRB).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY23 is the last year of program funding for FOHMLC</p>		4.223	3.506	-
<p>Title: M1A2 Chassis Upgrade of Joint Assault Bridge (JAB) and Assault Breacher Vehicle (ABV)</p> <p>Description: Funding requested for Joint Assault Bridge (JAB) / Assault Breacher Vehicle (ABV) M1A2 Chassis modernization development. Efforts will focus on enhanced reliability, maintainability and chassis commonality with the Abrams M1A2 Main Battle Tank system.</p>		0.365	-	-
<p>Title: Bridge Erection Boat (BEB)</p> <p>Description: Funding supports the development and testing of a weapon mount for the Bridge Erection Boat (BEB) in order to satisfy a user requirement for the BEB to safely and effectively conduct river patrols.</p> <p>FY 2023 Plans: BEB program moved from FY22 to FY23 due to additional requirements needed for Weapons Mount Test and Evaluation. \$160k for Weapons Mount Development and \$240k for ATEC Weapons Mount Test and Evaluation moved to FY23.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to development activities ending in FY 2024.</p>		-	0.400	-
<p>Title: SBIR/STTR Transfer</p> <p>Description: SBIR/STTR Transfer</p> <p>FY 2023 Plans:</p>		-	0.311	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) H02 / Tactical Bridging - Engineering Development
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	14.525	8.528	-

	FY 2022	FY 2023
Congressional Add: Program increase - national hydrography dataset	2.000	-
FY 2022 Accomplishments: Funding supports the development of a national hydrography dataset.		
Congressional Adds Subtotals	2.000	-

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• G06520: BRIDGE SUPPLEMENTAL SET	19.867	0.439	4.414	-	4.414	-	-	-	-	0.000	24.720
• G82404: LINE OF COMMUNICATION BRIDGE LOCB	9.625	13.785	0.000	-	0.000	-	-	-	-	0.000	23.410
• GZ3001: Joint Assault Bridge	110.588	36.990	159.804	-	159.804	180.097	142.708	179.259	213.572	0.000	1,023.018
• G84900: ASSAULT BREACHER VEHICLE (ABV)	16.454	3.852	0.000	-	0.000	-	10.181	10.194	10.203	0.000	50.884
• M27200: BRIDGE, FLOAT-RIBBON, PROPULSION	74.182	-	42.559	-	42.559	30.748	-	-	-	0.000	147.489

Remarks

D. Acquisition Strategy

The acquisition strategy is for Research, Development, Test & Evaluation efforts to support prototyping, testing and follow-on production efforts for future Bridging systems.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army													Date: March 2023		
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				H02 / Tactical Bridging - Engineering Development							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering and Program Management	MIPR	Various : Various	3.481	0.812	Dec 2022	1.129	Aug 2023	-		-		-	0.000	5.422	-
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.311	Feb 2023	-		-		-	0.000	0.311	-
Subtotal			3.481	0.812		1.440		-		-		-	0.000	5.733	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Line of Communication Bridge - 130m Float Bridge PQT System - AGL	SS/FFP	Acrow Global Limited (AGL) (formerly Mabey Bridge Limited) : Lydney, UK	-	6.993	Sep 2022	-		-		-		-	0.000	6.993	-
Family of High Military Load Class Bridges - HASB MLC120 Prototypes	MIPR	Anniston Army Depot (ANAD) : Anniston, AL	-	1.443	Apr 2022	0.350	Aug 2023	-		-		-	0.000	1.793	-
Bridge Erection Boat - Weapon Mount Development	C/TBD	TBD : TBD	-	-		0.160	Mar 2023	-		-		-	0.000	0.160	-
BSS - Prototype Manufacturing	MIPR	Tobyhanna Army Depot TYAD : Tobyhanna, PA	-	0.651	Jan 2023	-		-		-		-	0.000	0.651	-
Subtotal			-	9.087		0.510		-		-		-	0.000	9.597	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Bridge Test Lab	MIPR	CCDC GVSC - Bridge Test Lab : SANGB, MI	1.043	-		0.260	Nov 2022	-		-		-	0.000	1.303	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) H02 / Tactical Bridging - Engineering Development
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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/EMD Bridge Test Asset Transportation	TBD	TAC Code : TBD	0.266	-		0.050	Apr 2023	-		-		-	0.000	0.316	-
Program increase - national hydrography dataset	TBD	TBD : TBD	-	2.000	Jul 2022	-		-		-		-	0.000	2.000	-
LOCB - Modeling and Simulation	MIPR	DEVCOM ANALYSIS CENTER (DAC) : APG, MD	-	0.098	Jan 2023	-		-		-		-	0.000	0.098	-
Subtotal			1.309	2.098		0.310		-		-		-	0.000	3.717	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Line of Communication Bridge - PQT Transportability Testing	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	2.554	0.946	Aug 2022	3.216	Jun 2023	-		-		-	0.000	6.716	-
Line of Communication Bridge - PQT Durability Testing	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	2.305	-		1.100	Mar 2023	-		-		-	0.000	3.405	-
Line of Communication Bridge - Customer Testing (CT)	MIPR	Operational Test Command (OTC) : Fort Hood, TX	-	-		0.312	Mar 2023	-		-		-	0.000	0.312	-
Family of High Military Load Class Bridges - DSB - Durability Testing	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	1.474	Jun 2022	-		-		-		-	0.000	1.474	-
Family of High Military Load Class Bridges - IRB Test & Evaluation	MIPR	US Army Corps of Engineers - Engineering Research and Development Center	-	1.306		1.400	Mar 2023	-		-		-	0.000	2.706	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		(ERDC) : Vicksburg, MS													
Bridge Supplemental Set - BPD Test & Evaluation	MIPR	US Army Corps of Engineers - Engineering Research and Development Center (ERDC) : Vicksburg, MS	0.500	0.475	Sep 2022	-		-		-		-	0.000	0.975	-
Bridge Erection Boat - Weapon Mount Testing	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	-		0.240	Jun 2023	-		-		-	0.000	0.240	-
Line of Communication - ERDC - GSL Fatigue Testing/Pull Test	MIPR	ERDC - GSL : Vicksburg, MS	-	0.327	Dec 2023	-		-		-		-	0.000	0.327	-
Subtotal			5.359	4.528		6.268		-		-		-	0.000	16.155	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		10.149	16.525	8.528	-	-	-	0.000	35.202	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) H02 / Tactical Bridging - Engineering Development

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Program increase - health usage monitoring system																												
Automated Bridge Condition Device (ABCD)																												
	ABCD - Development / Demonstration																											
LOCB Transportability Testing																												
					LOCB - Transportability Testing																							
LOCB Durability Testing																												
	LOCB - Durability Testing																											
LOCB Structural Strength Testing																												
	LOCB - SST																											
LOCB Customer Testing																												
					LOCB - Customer Test																							
Bridge Supplemental Set (BSS)																												
BSS Prototyping																												
	BSS - Prototypes																											
BSS Transportability Testing																												
	BSS - Transportability Testing																											
BSS Bridge Protection Device (BPD) Testing																												
			BSS - BPD Testing																									
Family of High Military Load Class - Bridging (FoHMLC-B)																												
FoHMLC HASB ECP Design and Prototyping																												
					FoHMLC HASB ECP Development / Prototypes																							
FoHMLC HASB Prototype Testing																												
									FoHMLC HASB Testing																			

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FoHMLC DSB Durability Testing																												
FoHMLC IRB Test & Evaluation																												
Program Support / Scope Development																												
Bridge Erection Boat (BEB)																												
BEB Weapon Mount Development & Testing																												
Program increase - national hydrography dataset																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Program increase - health usage monitoring system	3	2021	4	2022
Automated Bridge Condition Device (ABCD)	3	2021	4	2022
Line Of Communication Bridge (LOCB)	2	2012	4	2021
LOCB Milestone "C"	3	2021	3	2021
LOCB Transportability Testing	1	2020	2	2024
LOCB Durability Testing	2	2020	2	2023
LOCB Structural Strength Testing	3	2021	1	2022
LOCB Customer Testing	4	2022	2	2024
Bridge Supplemental Set (BSS)	2	2019	2	2026
BSS Prototyping	3	2020	2	2022
BSS Milestone "C"	3	2021	3	2021
BSS Transportability Testing	1	2022	3	2022
BSS Bridge Protection Device (BPD) Testing	3	2022	1	2023
Family of High Military Load Class - Bridging (FoHMLC-B)	1	2018	2	2022
FoHMLC Abbreviated Capabilities Decision Document	2	2021	2	2021
FoHMLC HASB ECP Design and Prototyping	1	2021	1	2023
FoHMLC HASB Prototype Testing	2	2023	4	2023
FoHMLC DSB Durability Testing	3	2022	3	2023
FoHMLC IRB Test & Evaluation	1	2023	1	2024
Program Support / Scope Development	1	2022	4	2022
Bridge Erection Boat (BEB)	2	2023	2	2024
BEB Weapon Mount Development & Testing	3	2023	4	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Program increase - national hydrography dataset	4	2022	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) L39 / <i>Field Sustainment Support Ed</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
L39: <i>Field Sustainment Support Ed</i>	-	2.216	1.847	4.824	-	4.824	3.790	3.070	3.103	3.138	0.000	21.988
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the Engineering and Manufacturing Development (EMD) of critical capabilities for cargo aerial delivery for identified theater distribution and services capability gaps, improve unit sustainability, and increase combat effectiveness. Project supports the demonstration of engineering development models and Type Classification of cargo parachutes, airdrop containers, sling load equipment, and other aerial delivery equipment to improve safety, effectiveness, and efficiency of airborne operations. This project develops critical enablers that support the Army in executing future movement and maneuver operations and distributed sustainment support and the Army's Modular Force Capabilities by maintaining readiness through fielding and integrating new equipment. This project also ensures Army Expeditionary Forces are capable of rapid deployment by providing aerial delivery initiatives and reduces sustainment requirements, related Combat Support/ Combat Service Support (CS/CSS) demands in lift, combat zone footprint, and costs for logistical support.

Funding supports modernization of current cargo aerial delivery systems by investigating technology insertions that increase accuracy, collision avoidance, in flight communications, and reliability. Funding also supports developing initial prototypes to enable refinement of operational requirements and early user feedback to support future sustainment and operational movement concepts.

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

	FY 2022	FY 2023	FY 2024
Title: Rapid Rigging and De-Rigging Airdrop System (RRDAS)	2.216	1.780	3.285
Description: Rapid Rigging and DeRigging Airdrop System (RRDAS) reduces rigging times while also providing the capability to rapidly de-rig loads on the drop zone. This will reduce the lead time to prepare Low Velocity Airdrop Load (LVADS) loads while also increasing the survivability of receiving ground forces by ensuring the airdrop loads (to include weapon systems, prime movers, trailers, etc.) are quickly de-rigged and made operational.			
FY 2023 Plans: Complete development of RRDAS-Light including logistics support products and start Operational Testing. Start development of RRDAS-Heavy components.			
FY 2024 Plans: Complete operational testing RRDAS-Light. Production and Type Classification Standard decisions for RRDAS-Light (RRDAS-L). MS B for RRDAS Heavy 2Q FY24. Start development of RRDAS-Heavy components.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L39 / Field Sustainment Support Ed

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
FY2024 increase is provided to continue and complete design validation and continue developmental testing.			
<p>Title: Joint Precision Airdrop System (JPADS)</p> <p>Description: Joint Precision Air Drop System (JPADS) provides autonomous guidance of payloads dropped from altitudes up to 25,000 feet at increments of 2,000 (2K) and 10,000 (10K) pounds. JPADS allows precise delivery of critical supplies to the Warfighter on the ground while allowing aircraft delivering payloads to fly at significantly safer altitudes. The JPADS 2K V3 Upgrade provides a GPS-denied capability, but the configuration only partially meets the GPS-denied requirement. The next configuration of JPADS must support the full GPS-denied capability, including hardware and software technologies such as night-vision, anti-jam technology, radio-based navigation, low-earth orbit satellites, and M-code. M-code upgrade provides JPADS with the ability to utilize the military's upgrade GPS satellite signals. M-code signal is stronger and harder to jam, which will provide JPADS with a more resilient navigation ability when employed in GPS-denied environments.</p> <p>FY 2024 Plans: JPADS will start to integrate and test M-code GPS receiver on the JPADS V3 baseline platform. The effort will develop software to read new messages from the receiver and utilize them in navigation. It will also develop a hardware interface kit which mounts to the V3 JPADS and interfaces to the universal communication port. Finally, subsystem and system flight testing will be executed to demonstrate expected performance and reliability.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY24 Increase is due to the start of JPADS M-Code hardware/software development, test and integration.</p>	-	-	1.539
<p>Title: SBIR/STTR Transfer</p> <p>FY 2023 Plans: SBIR/STTR Reductions</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: SBIR/STTR Reductions</p>	-	0.067	-
Accomplishments/Planned Programs Subtotals	2.216	1.847	4.824

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• MA7806: Precision Airdrop	2.081	-	6.513	-	6.513	4.284	4.313	4.317	4.321	0.000	25.829
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L39 / Field Sustainment Support Ed

D. Acquisition Strategy

The acquisition strategy for RRDAS is complete development of the airdrop platform, complete developmental and operational testing and transition to sustainment for production availability for units to requisition. For JPADS the acquisition strategy will be to integrate the M-Code cards into the JPADS avionics module and upgrade the software, conduct flight testing and update drawing package with approved engineering change proposal.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				L39 / Field Sustainment Support Ed							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Support	Various	PM FSS : Natick, MA	6.516	0.395	Jun 2022	0.530	Apr 2023	0.723	Dec 2023	-		0.723	0.000	8.164	Continuing
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.067	Feb 2023	-		-		-	0.000	0.067	-
Subtotal			6.516	0.395		0.597		0.723		-		0.723	0.000	8.231	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JPADS	Various	Various : Various	3.055	-		-		0.821	Oct 2023	-		0.821	0.000	3.876	-
RRDAS	Various	Various : Various	2.498	0.453	Jun 2022	0.750	Apr 2023	1.280	Nov 2023	-		1.280	0.000	4.981	-
Subtotal			5.553	0.453		0.750		2.101		-		2.101	0.000	8.857	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JPADS	Various	Various : Various	0.256	-		-		0.100	Dec 2023	-		0.100	0.000	0.356	-
RRDAS	Various	Various : Various	-	-		-		0.120	Dec 2023	-		0.120	0.000	0.120	-
Subtotal			0.256	-		-		0.220		-		0.220	0.000	0.476	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JPADS	Various	Various : Various	2.174	-		-		0.500	Jan 2024	-		0.500	0.000	2.674	-
RRDAS	Various	Various : Various	1.350	1.368	Jan 2022	0.500	Aug 2023	1.280	Mar 2024	-		1.280	0.000	4.498	-
Subtotal			3.524	1.368		0.500		1.780		-		1.780	0.000	7.172	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army							Date: March 2023				
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) L39 / Field Sustainment Support Ed				
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	15.849	2.216	1.847	4.824	-	4.824	0.000	24.736	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L39 / <i>Field Sustainment Support Ed</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	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 DT/OT for RRDAS-L																												
Complete Milestone C/TC-STD for RRDAS-L																												
Complete MS B for RRDAS-Heavy																												
Develop and Fabricate RRDAS - Heavy Prototypes																												
Conduct DT and OT for RRDAS-Heavy																												
Complete MS C/TC STD for RRDAS-Heavy																												
Contract award for JPADS cloud navigation																												
Development for JPADS GPS-denied upgrades																												
Flight testing for JPADS GPS-denied upgrades																												
Hardware/software Development for JPADS M-code																												
Test/integration for JPADS M-code																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L39 / <i>Field Sustainment Support Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Conduct DT/OT for RRDAS-L	3	2022	1	2024
Complete Milestone C/TC-STD for RRDAS-L	4	2024	4	2024
Complete MS B for RRDAS-Heavy	1	2024	1	2024
Develop and Fabricate RRDAS - Heavy Prototypes	1	2024	2	2024
Conduct DT and OT for RRDAS-Heavy	3	2024	3	2025
Complete MS C/TC STD for RRDAS-Heavy	1	2027	1	2027
Contract award for JPADS cloud navigation	1	2022	1	2022
Development for JPADS GPS-denied upgrades	1	2022	4	2022
Flight testing for JPADS GPS-denied upgrades	2	2022	4	2022
Hardware/software Development for JPADS M-code	1	2024	3	2024
Test/integration for JPADS M-code	2	2024	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) L41 / Water And Petroleum Distribution - Ed			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
L41: Water And Petroleum Distribution - Ed	-	8.242	7.921	7.543	-	7.543	2.013	-	-	-	0.000	25.719
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports engineering and manufacturing development efforts as well as the Production Qualification Testing (PQT) and First Article Testing (FAT) efforts to provide all services with ample supply of clean fuel and water, supporting all types of missions. The Army has the mission to supply fuel for all land-based forces, including the Marines and the Air Force, and for supplying bulk drinking water to Soldiers. These programs enable the Army to improve maneuver sustainment operations to meet the demands of Army units and the Future Force. The mission includes receiving and transferring petroleum from trucks, ships, pipelines, and permanent and temporary storage facilities; moving petroleum from storage to and within corps and division areas; fuel quality surveillance testing; and dispensing in support of tactical operations, including rapid refueling of aircraft. This project also supports development and analysis of technologies designed to increase survivability of petroleum and water systems that may operate or be transported in hostile environments. The mission covers water purification and waste water treatment, reutilization, storage, distribution, alternative water source acquisition, disposal, and quality control. These research and development missions support the development and enhancement of rapidly deployed Petroleum and Water equipment, which enables the Army to achieve its vision by providing a highly mobile and self-sustaining systems in hostile joint operations areas. Programs funded on this Project includes: Tactical Fuel Distribution System (TFDS), Bulk Fuel Distribution System (BFDS), Petroleum Expeditionary Analysis Kit (PEAK), Water Bison and Water Bison Light, Water Storage and Distribution System (WSDS) , 3K Tactical Water Purification System (TWPS), Early Entry Fluid Distribution System (E2FDS) and Pipeline Trace Tool - Software Development, Modular Tactical Retail Refueling System (MTRRS), and Load Handling System (LHS) - Compatible Water Tank-rack System (HIPPO), Chemical Biological Radiological Nuclear (CBRN) Water Hauler (Camel).

This Project provides for the modernization of current Petroleum and Water System fleets by investigating technology insertions including, but not limited to: condition based maintenance, vetronics, Victory Architecture, autonomous operations and other emerging technologies. Funding also supports developing and testing initial prototypes, and production representative articles to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement operating concepts. Funding supports non-traditional and middle tier acquisitions to include Other Transaction Authority (OTA) and 804.

FY24 Base RDTE \$7.543 million provides for Petroleum Expeditionary Analysis Kit (PEAK) Production Qualification Testing (PQT), Water Bison 500g PQT/User Jury, Tactical Fuel Distribution System (TFDS) Production Qualification Testing (PQT), Ballistic and Transportation Testing, Chemical Biological Radiation Nuclear (CBRN) Water Hauler Design/Packaging Engineering, Production Qualification Testing (PQT) and Transportation Testing. 3k Tactical Water Purification System (3k TWPS) will conduct a Source Selection Evaluation Boards (SSEBs) after completing development of a level 3 Technical Data Package (TDP) and contract award. Funding also provides continued testing and engineering support for Bulk Fuel Distribution System (BFDS), and Water and Storage System (WSDS).

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

	FY 2022	FY 2023	FY 2024
Title: Water Bison / Bison Lite	0.858	1.472	0.483

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: The Unit Water Trailer (Water Bison) is a replacement for the 400 gallon Water Buffalo. A second variant, the Water Bison Lite, is also required. The Water Bison consists of a baffled, 500 gallon capacity tank and the Water Bison Lite consists of a baffled, 250 gallon capacity tank. They provide the modular force an efficient method of transporting a full day of supply (DOS) of bulk potable water. Both systems include freeze protection that are mounted on a trailer and include all hoses and fittings necessary to dispense water by means of gravity flow. The Water Bison and Water Bison Lite will be used by units at all echelons. The Family of Medium Tactical Vehicles (FMTV) shall be capable of towing this system.</p> <p>FY 2023 Plans: Bison - Start of Production Qualification Testing and User Jury</p> <p>FY 2024 Plans: Bison - System engineering test management</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to PQT completion in FY24.</p>			
<p>Title: Early Entry Fluid Distribution System (E2FDS)</p> <p>Description: The Early Entry Fluid Distribution System (E2FDS) is a new system that enhances the Inland Petroleum Distribution System (IPDS) pipeline and rapidly establishes new or extends existing pipeline traces. It is a high throughput flexible conduit system for the transport of bulk petroleum or water across the battlefield. It is rapidly-emplaced and capable of a throughput of 850,000 gallons of fuel or 650,000 gallons of raw non-potable water, per a 20 hour operational day through a trace up to 50 miles long. The E2FDS requires little to no engineer support to emplace the conduit or pump stations. Pump stations are fully automated and centrally controlled.</p> <p>FY 2023 Plans: Completion of Customer Event / Maintenance Demos and Software Int Lab Cyber Security Scan</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Program will transition to 100% OPA in FY24</p>	0.318	0.359	-
<p>Title: Petroleum Expeditionary Analysis Kit (PEAK)</p> <p>Description: The Petroleum Expeditionary Analysis Kit (PEAK) replaces Aviation Fuels Contamination Test Kit (AFCTK) and provides fuel quality surveillance within all Brigade Combat Teams and Support Brigades. It is a stand-alone system that will rapidly verify petroleum products' suitability for use at point of consumption. The PEAK will evaluate all kerosene-based and diesel fuels used in ground systems and aircraft. It will provide the field with the capability to determine fuel type, grade, and additives.</p>	0.495	0.306	1.069

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>FY 2023 Plans: PEAK requires funding to complete Production Qualification Testing, Customer Testing and Limited User Test (LUT)</p> <p>FY 2024 Plans: PEAK - System engineering test management and travel for FY24 portion of Production Qualification Testing</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase form FY23 to FY24 to pay for PEAK Production Qualification Testing</p>			
<p>Title: Tactical Fuel Distribution System (TFDS)</p> <p>Description: The Tactical Fuel Distribution System (TFDS) provides theater bulk petroleum distribution to maximize throughput in order to support early entry, buildup, and onward movement of forces. It replaces the M967 and M969 tanker trailers, which are nearing the end of its useful life. The TFDS consists of a 5,000 gallon armor kit compatible line haul tanker trailer, pulled primarily by the M1088 tractor. It shall be capable of retail fuel distribution and able to travel on unimproved roads and provides support from the Theater Army to Echelons Above Brigade (EAB).</p> <p>FY 2023 Plans: Completion of Prototype Run-off testing for contractor down select, Milestone C decision and award of LRIP production.</p> <p>FY 2024 Plans: TFDS - Production Qualification Testing (PQT) / Helicopter Sling Load and Transport Testing</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to multiple funded test events to include Production Qualification Testing, LRIP Ballistics Testing and multiple transportation testing events. TFDS also plans on conducting a User Jury and other Limited User Testing (LUT).</p>	3.856	0.370	3.480
<p>Title: Load Handling System (LHS) - Compatible Water Tankrack System (HIPPO)</p> <p>Description: Load Handling System (LHS) - Compatible Water Tank Rack System (HIPPO) replaces the Forward Area Water Point Supply system (FAWPSS) and Semi-Trailer Mounted Fabric Tank (SMFT). It provides capability to receive, store, transport, and distribute bulk and unit retail water to the warfighter. The HIPPO consists of a 2,000 gallon potable water tank in a 20' ISO frame with integrated pump, engine, alternator, hose reel, freeze prevention, and fill stand. The HIPPO is critical for sustaining the soldier and accomplishing combat service support missions at all echelons. Legacy water distribution systems do not provide the mobility required to achieve unit distribution goals for the current and objective force.</p> <p>FY 2023 Plans:</p>	1.343	0.996	-

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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Completion of HIPPO Customer Testing and Limited User Test (LUT)				
FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to HIPPO test completion in FY 2023.				
Title: Bulk Fuel Distribution System (BFDS)		0.515	1.409	0.150
Description: The Bulk Fuel Distribution System (BFDS) provides theater bulk petroleum distribution to maximize throughput to support early entry, buildup, and onward movement of forces. The BFDS consists of a 7,500 gallon line haul tanker trailer, pulled primarily by the M915A3 or later version tractor. The BFDS provides bulk distribution between large fuel storage areas and will include a automated level gauge sensor for mission command reporting and providing asset and in-transit visibility. The BFDS will be used on improved roads..				
FY 2023 Plans: Completion of incrementally funded Production Qualification Testing started in FY22.				
FY 2024 Plans: SEPM for Test Engineer, final PQT report for Full Rate Production Decision.				
FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to BFDS test completion in FY23. FY24 funding will continue system developmental engineering and test planning/system management.				
Title: Water and Storage System (WSDS)		0.070	0.961	-
Description: Water Storage Distribution System (WSDS) provides the large capacity capability that is tailorable in receiving, storing, and issuing to all bulk water systems in the Army inventory. The WSDS stores and issues potable water in support of individual consumption, medical treatment, Chemical, Biological, Radiological, and Nuclear (CBRN) decontamination. It is used in conjunction with the 1,500 gph Tactical Water Purification System (1.5K TWPS) or the 3,000 gph Reverse Osmosis Water Purification Unit (3K ROWPU). It is the only program of record that is designed to store bulk water in the quantities needed for the Warfighter. The 100,000 gallon WSDS is containerized and will take the place of two 40K systems in the Composite Supply Companies.				
FY 2023 Plans: Completion of Production Qualification Testing, Customer Testing and Limited User Test (LUT).				
FY 2023 to FY 2024 Increase/Decrease Statement:				

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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Decrease due to WSDS test completion in FY23.				
<p>Title: Modular Fuel System (MFS) Tank Rack Module (TRM) - M107 40gpm Pump Modification Kit</p> <p>Description: The Modular Fuel System (MFS), Tank Rack Module (TRM) is a 2,500 gallon mobile storage and distribution platform. It is configured in a 20 foot ISO frame and is capable of being transported by a Heavy Expanded Mobility Tactical Truck-Load Handling System (HEMTT-LHS) and the Palletized Load Handling System (PLS). The MFS TRM has a Stand-Alone Retail Capability, utilizing its integrated continuous use electric pump, filter separator and flow meter. It can be operate mounted on the prime mover or trailer or on the ground.</p> <p>There are currently two fielded variants of the TRM (M107 & M107A1). The M107 TRM has a 20 GPM fuel pump as compared to the 40 GPM pump on the M107A1. Modification effort will install the M107A1 pump (and correlating Filter Separator) into the M107 with result in a 100% faster pumping time.</p> <p>FY 2023 Plans: Award of Modular Fuel System (MFS) Tank Rack Module (TRM) - M107 40gpm Pump Modification Kit Prototype Testing at APG</p> <p>FY 2024 Plans: Fudning for system developmental engineering and test planning/system management, completion of Prototype Testing and contract award for Low Rate Initial Production</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding changes reflects planned lifecycle of this effort</p>		0.722	1.210	0.150
<p>Title: 3k Tactical Water Purification Sys. (3k TWPS)</p> <p>FY 2023 Plans: Award of 3K TWPS prototype test assets</p> <p>FY 2024 Plans: 3k TWPS - System engineering management and completion of TDP/P-Spec</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding decreased as program finishes FY23 funded level Tech Data Package/drawing updates and conducts a Source Selection Evaluation Boards (SSEBs) in FY24 for LRIP hardware award. FY24 funding will continue system developmental engineering and test planning/system management. Program funding will increase in FY25 to conduct Production Qualification Testing (PQT) and move program toward Full Rate Production (FRP).</p>		0.065	0.549	0.300
Title: Chemical Biological Radiological Nuclear (CBRN) Water Hauler		-	-	1.911

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: The Chemical Biological Radiological Nuclear (CBRN) Water Hauler consists of an 800-gallon capacity tank with integral freeze protection, mounted on the MTV 5 Ton Truck. Decontamination operations require bulk non-potable water in support of the Joint Force per ATP 3-11.32 of up to 450 gallons per vehicle. Decontamination capabilities are critical in Multi-Domain Operations (MDO) because the enemy will utilize multiple layers of Anti-Access and Area Denial (A2AD) capabilities to include CBRN threats to delay and to impose high cost to obstruct strategic objectives.</p> <p>FY 2024 Plans: Finalize product design/packaging engineering and production of prototype test asset. Production Qualification Testing (PQT) will be funded from FY24 RDTE and will span FY24-25.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to CBRN prototype production and increase to system engineering and test management support. Production Qualification Testing (PQT) will also be funded out of FY24 for a FY24-25 test event.</p> <p>Title: SBIR/STTR Transfer</p> <p>FY 2023 Plans: SBIR/STTR Transfer</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: SBIR/STTR Transfer</p>			
Accomplishments/Planned Programs Subtotals	8.242	7.921	7.543

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MA6000: Distribution Systems, Petroleum & Water	72.296	26.433	40.989	-	40.989	65.753	92.788	106.231	107.811	0.000	512.301
• D02001: Semitrailers, tankers	17.985	19.369	40.359	-	40.359	71.510	103.419	106.628	106.719	0.000	465.989
• MA4502: INSTALLATION OF MODIFICATIONS	4.240	6.957	5.833	-	5.833	8.352	5.706	5.709	5.714	Continuing	Continuing
• MB6400: QUALITY SURVEILLANCE EQUIPMENT	0.744	1.845	2.507	-	2.507	2.946	7.663	7.669	7.675	0.000	31.049

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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D. Acquisition Strategy

Develop engineering prototypes for the Chemical Biological Radiation Nuclear (CBRN) Water Hauler and select Non-Development Item (NDI) based on market surveys and proposals from industry. Conduct industry days and based on additional market research will award either competitive or sole source contracts. Conduct Integrated Product Team (IPT's) and develop acquisition strategies for Chemical Biological Radiation Nuclear (CBRN) Water Hauler, Water Bison 500g, Petroleum Expeditionary Analysis Kit (PEAK), Tactical Fuel Distribution System (TFDS), Bulk Fuel Distribution System (BFDS) and Water Storage and Distribution System (WSDS). Conduct developmental and operational testing where applicable for Petroleum Expeditionary Analysis Kit (PEAK), Water Bison 500g, Tactical Fuel Distribution System (TFDS), Petroleum Tankers, and Water Storage and Distribution Systems (WSDS) 40,000 gallon and 100,000 gallon sets. Conduct Source Selection Evaluation Boards (SSEBs) within the Petroleum and Water Systems portfolio. Develop documentation in support of Milestone Decisions. Will award Other Transactional Agreements (OTAs) or traditional Federal Acquisition Regulation (FAR) based contracts based on market research, industry capabilities and program risks.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				L41 / Water And Petroleum Distribution - Ed							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Matrix Spt / GVSC Engineering Spt	MIPR	Various TACOM : Warren, MI	3.009	2.531	Jan 2022	2.355	Jan 2023	2.603	Jan 2024	-		2.603	0.000	10.498	-
SBIR/STTR Transfer	TBD	SBBR/STTR Transfer : SBBR/STTR Transfer	-	-		0.289	Feb 2023	-		-		-	0.000	0.289	-
Subtotal			3.009	2.531		2.644		2.603		-		2.603	0.000	10.787	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TFDS - Contract Prototype Award (OTA)	C/FFP	TBD - OTA - Multiple Contractors : Multiple	0.372	2.315	Mar 2022	-		-		-		-	0.000	2.687	-
MFS TRM - Kit Int. Design/ Eng. Pump Modification Upgrade + Test Assets	SS/FFP	ISOMETRICS : Reidsville, NC	-	0.420	Aug 2022	-		-		-		-	0.000	0.420	-
TFDS - Ballistic Study	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	0.428	May 2022	-		-		-		-	0.000	0.428	-
CBRN - Design/Packaging Engineering	MIPR	Combat Capabilities Development Command (DEVCOM) Ground Vehicle Systems Center (GVSC) : TACOM Warren, MI	-	-		-		0.550	Nov 2023	-		0.550	0.000	0.550	-
3K TWPS - Tech Data Package Update	MIPR	GVSC : Warren, MI	-	-		0.300	Apr 2023	-		-		-	0.000	0.300	-
Subtotal			0.372	3.163		0.300		0.550		-		0.550	0.000	4.385	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Bison - User Jury	MIPR	TBD : TBD	-	-		-		0.120	Apr 2024	-		0.120	0.000	0.120	-
TFDS - User Jury	MIPR	TBD : TBD	-	-		-		0.200	Mar 2024	-		0.200	0.000	0.200	-
E2FDS Maintenance Demo	MIPR	TBD : TBD	-	-		0.085	Jul 2023	-		-		-	0.000	0.085	-
Subtotal			-	-		0.085		0.320		-		0.320	0.000	0.405	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PEAK - Prototype Dev Test - Fly Off Testing	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	0.305	-		-		-		-		-	0.000	0.305	-
TFDS - Prototype Run-Off Testing	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	0.450	Apr 2022	-		-		-		-	0.000	0.450	-
TFDS - Production Qualification / HSL / Transport	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	-		-		2.000	Feb 2024	-		2.000	0.000	2.000	-
TFDS - Ballistics Test	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	-		-		0.570	Aug 2024	-		0.570	0.000	0.570	-
HIPPO - PQT / FAT / HSL / Transportability Testing	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	0.200	1.310	May 2022	0.770	Dec 2022	-		-		-	0.000	2.280	-
Bison - KRC - Prototype Testing	C/FFP	Keweenaw Research Center : Calumet, MI	-	0.470	Mar 2022	-		-		-		-	0.000	0.470	-
MFS TRM - Mod Kit Prototype Testing	MIPR	Army Test Center : Yuma, AZ	-	-		0.850	Feb 2023	-		-		-	0.000	0.850	-
BFDS - Production Qualification Test	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	-		1.250	Mar 2023	-		-		-	0.000	1.250	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PEAK - Production Qualification Testing / Cust. Test (LUT)	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	-		-		0.700	Nov 2023	-		0.700	0.000	0.700	-
WSDS - Production Qualification Testing / Cust. Test (LUT)	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	-		0.675	Mar 2023	-		-		-	0.000	0.675	-
Bison - Production Qualification Testing	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	-		1.180	Sep 2023	-		-		-	0.000	1.180	-
CBRN - Production Verification Testing	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	-		-		0.800	Aug 2024	-		0.800	0.000	0.800	-
E2FDS - Production Qualification Test	MIPR	Aberdeen Proving Ground : Aberdeen Proving Ground, MD	-	0.318	Oct 2022	-		-		-		-	0.000	0.318	-
E2FDS - GVSC - Software Int Lab	MIPR	GVSC : Warren, MI	-	-		0.167	Jan 2023	-		-		-	0.000	0.167	-
Subtotal			0.505	2.548		4.892		4.070		-		4.070	0.000	12.015	N/A
Project Cost Totals			3.886	8.242		7.921		7.543		-		7.543	0.000	27.592	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Water Bison																												
Water Bison Other Transactional Authority Award	2 OTA Award																											
Water Bison Prototype Developmental Testing (DT)			[Bar]		[Bar]																							
Water Bison Milestone C					8 MS C																							
Water Bison - Low Rate Production									[Bar]																			
Water Bison Production Qualification Testing (PQT)											[Bar]																	
Water Bison Full Rate Production (FRP)													[Bar]															
Early Entry Fluid Distribution System (E2FDS)																												
E2FDS Developmental Testing / Production Qualification T...	[Bar]																											
E2FDS Log Demo and Limited User Test (LUT)		[Bar]			[Bar]																							
E2FDS Milestone C			6 MS C																									
E2FDS Low Rate Production (LRIP)		[Bar]																										
E2FDS Maintenance Demo											[Bar]																	

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
E2FDS FullRate Production (FRP)																												
Petroleum Expeditionary Analysis Kit (PEAK)																												
PEAK Contract Prototype Award (OTA)	1 OTA Award																											
PEAK - Prototype Dev Test - Fly Off Testing																												
PEAK Milestone C																												
PEAK LRIP Production Award																												
PEAK Production Qualification Testing (PQT)																												
PEAK Full Rate Production (FRP)																												
Tactical Fuel Distribution System (TFDS)																												
TFDS OTA Award																												
TFDS OTA Prototype Run-Off Testing																												
TFDS Milestone C																												
TFDS Low Rate Production (LRIP)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TFDS Production Qualification Testing (PQT)																												
TFDS Full Rate Production (FRP)																												
Load Handling System (LHS) - Compatible Water Tankrack S...																												
HIPPO Low Rate Production (LRIP)																												
HIPPO Production Qualification Testing (PQT)																												
HIPPO Full Rate Production (FRP)																												
Bulk Fuel Distribution System (BFDS)																												
BFDS (OTA) Testing																												
BFDS Milestone C																												
BFDS Low Rate Production (LRIP)																												
BFDS Production Qualification Testing (PQT)																												
BFDS Full Rate Production (FRP)																												
Water Storage Distribution System (WSDS)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
WSDS Pump Test Assets Contract Award	3																											
		5																										
WSDS Milestone C		MS C																										
WSDS Pump Off Testing																												
WSDS Low Rate Production (LRIP)																												
WSDS Production Qualification Testing (PQT)																												
WSDS Full Rate Production (FRP)																												
3000 Tactical Water Purification System (3k TWPS)																												
3k TWPS P-Spec and TDP Development																												
3k TWPS RFP/SSEB																												
3k TWPS Milestone C																												
3k TWPS Low Rate Production (LRIP)																												
3k TWPS Production Qualification Testing (PQT)																												
3k TWPS Full Rate Production (FRP)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Chemical Biological Radiological Nuclear (CBRN) Water Hauler																												
CBRN Market Research / Product and Packaging Development																												
CBRN TDP Integration and Packaging Engineering																												
CBRN Low Rate Production (LRIP)																												
CBRN Production Verification Testing (PQT)																												
CBRN Full Rate Production (FRP)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Water Bison	1	2022	4	2025
Water Bison Other Transactional Authority Award	1	2022	1	2022
Water Bison Prototype Developmental Testing (DT)	3	2022	1	2023
Water Bison Milestone C	1	2023	1	2023
Water Bison - Low Rate Production	3	2023	4	2024
Water Bison Production Qualification Testing (PQT)	4	2023	3	2024
Water Bison Full Rate Production (FRP)	1	2025	4	2031
Early Entry Fluid Distribution System (E2FDS)	1	2018	4	2023
E2FDS Developmental Testing / Production Qualification Testing (DT/PQT)	1	2021	4	2022
E2FDS Log Demo and Limited User Test (LUT)	2	2022	2	2022
E2FDS Milestone C	3	2022	3	2022
E2FDS Low Rate Production (LRIP)	1	2022	4	2022
E2FDS Maintenance Demo	4	2023	4	2023
E2FDS FullRate Production (FRP)	4	2022	3	2024
Petroleum Expeditionary Analysis Kit (PEAK)	1	2021	3	2023
PEAK Contract Prototype Award (OTA)	1	2022	1	2022
PEAK - Prototype Dev Test - Fly Off Testing	2	2022	3	2022
PEAK Milestone C	1	2023	1	2023
PEAK LRIP Production Award	1	2023	1	2024
PEAK Production Qualification Testing (PQT)	3	2023	1	2024
PEAK Full Rate Production (FRP)	2	2024	2	2029
Tactical Fuel Distribution System (TFDS)	1	2020	1	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
TFDS OTA Award	2	2022	2	2022
TFDS OTA Prototype Run-Off Testing	4	2022	2	2023
TFDS Milestone C	3	2023	3	2023
TFDS Low Rate Production (LRIP)	4	2023	3	2025
TFDS Production Qualification Testing (PQT)	2	2024	1	2025
TFDS Full Rate Production (FRP)	3	2025	3	2035
Load Handling System (LHS) - Compatible Water Tankrack System (HIPPO)	3	2020	4	2025
HIPPO Developmental Test (DT)	4	2020	1	2021
HIPPO Low Rate Production (LRIP)	2	2021	4	2023
HIPPO Production Qualification Testing (PQT)	4	2022	2	2023
HIPPO Full Rate Production (FRP)	4	2023	4	2031
Bulk Fuel Distribution System (BFDS)	1	2020	2	2028
BFDS Other Transaction Authority (OTA) Award	1	2021	1	2021
BFDS (OTA) Testing	4	2021	1	2022
BFDS Milestone C	3	2022	3	2022
BFDS Low Rate Production (LRIP)	3	2022	1	2024
BFDS Production Qualification Testing (PQT)	2	2023	1	2024
BFDS Full Rate Production (FRP)	1	2024	4	2029
Water Storage Distribution System (WSDS)	4	2019	3	2028
WSDS Pump Test Assets Contract Award	1	2022	1	2022
WSDS Milestone C	2	2022	2	2022
WSDS Pump Off Testing	2	2022	3	2022
WSDS Low Rate Production (LRIP)	1	2023	1	2024
WSDS Production Qualification Testing (PQT)	2	2023	4	2023
WSDS Full Rate Production (FRP)	2	2024	3	2032

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>

Events	Start		End	
	Quarter	Year	Quarter	Year
3000 Tactical Water Purification System (3k TWPS)	1	2023	2	2030
3k TWPS P-Spec and TDP Development	2	2023	1	2024
3k TWPS RFP/SSEB	2	2024	1	2025
3k TWPS Milestone C	1	2025	1	2025
3k TWPS Low Rate Production (LRIP)	2	2025	3	2026
3k TWPS Production Qualification Testing (PQT)	4	2025	2	2026
3k TWPS Full Rate Production (FRP)	4	2026	1	2038
Chemical Biological Radiological Nuclear (CBRN) Water Hauler	1	2023	2	2031
CBRN Market Research / Product and Packaging Development	1	2023	4	2023
CBRN TDP Integration and Packaging Engineering	1	2024	1	2024
CBRN Low Rate Production (LRIP)	3	2024	1	2025
CBRN Production Verification Testing (PQT)	4	2024	1	2025
CBRN Full Rate Production (FRP)	1	2025	2	2031

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) L46 / <i>Maintenance Support Equipment</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
L46: <i>Maintenance Support Equipment</i>	-	0.738	0.972	1.306	-	1.306	-	-	-	-	0.000	3.016
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mobile Maintenance Equipment provides state of the art, deployable, vehicle-mounted, Soldier portable and containerized shelter tool systems supporting the readiness of the Joint warfighter directly supporting Soldier Lethality, Next Generation Combat Vehicle (NGCV) and Long Range Precision Fires (LRPF), as well as, addressing GAPs 10 and 17. These systems are equipped with industrial quality tools required for Two Level Maintenance that reduce common tool redundancy, provide tool standardization, minimize transportation requirements, reduce logistical footprint, and are backed by a Lifetime Warranty/Replacement Program which reduces sustainment costs. This is accomplished by employing a system of systems approach to maintenance acquisition. The System of Systems approach builds a maintenance capability upon each system, allowing a logical and natural approach to the Army's overall two level maintenance strategy. These inter-connected systems distributed throughout the Army at multiple levels and echelons provide a holistic repair capability in all scenarios and environments. These systems provide the Maintenance and Combat Commanders an unprecedented capability to repair wheeled, tracked, aviation, ground support and weapons systems on site at one location at one time. This approach to maintenance acquisition increases efficiencies and supports the current force while providing modular configurations designed to meet the specific needs of the Army maintainer in today's complex transforming environment.

The need to develop and maintain a System of System maintenance approach is critical for maintaining readiness due to the growing complexity of today's military equipment, operational tempo, modularity, and current and evolving Tactics Techniques and Procedures (TTPs). The individual maintenance systems are comprehensive, interconnected and capable of solving and repairing any maintenance problems. The System of Systems approach does not advocate specific tools, methods or practices; instead it seeks to promote a streamlined comprehensive set of systems for solving maintenance challenges where the interactions of doctrine, technology, time and tactics techniques and procedures are the primary drivers. Funding for projects shall include test article procurement and testing of Soldier portable maintenance Sets, Kits, and Outfits (SKOs), load banks and refrigeration tool kit; investigation of new technologies for next generation mobile maintenance equipment shop sets including the Shop Equipment Welding (SEW) and Shop Equipment Contact Maintenance (SECM); development of additional Standard Automotive Tool Set (SATS) maintenance modules, Armament Repair Shop Set (ARSS), Mobile Ammunition Processing Facility (MAPF), Forward Repair System (FRS), Special Tools initiatives, shelter mounted system development; packaging development; and technical support for emerging Joint Capabilities Integration and Development System (JCIDS) materiel requirements documents. Additive Manufacturing increased capabilities to the Metal Working and Machining Shop Set (MWMSS) to include a polymer and metal printing and associated digital library capability. Modernization upgrades increase effectiveness while improving efficiency, reliability and maintainability while supporting emerging Army systems as well as using lower cost set components.

Funding supports modernization of the current Ordnance equipment by investigating technology insertions due to but not limited to obsolescence and technology innovations. Funding also supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement concepts.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L46 / Maintenance Support Equipment
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FY 2024 Base funding in the amount of \$1.306 million supports market research and limited user experiments for MWMSS Additive Manufacturing capabilities and development, prototyping, and test for the FRS program.

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

	FY 2022	FY 2023	FY 2024
<p>Title: MWMSS Additive Manufacturing</p> <p>Description: Develop Additive Manufacturing capability for Army systems, Limited User Experiment and Evaluation.</p> <p>FY 2024 Plans: Funds will support market research and ongoing limited user experimentation in support of MWMSS AM capabilities.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase in number of MWMSS AM manufacturing capabilities under consideration in FY 2024.</p>	0.200	-	0.431
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.036	-
<p>Title: Forward Repair System and Standard Automotive Tool Set</p> <p>FY 2023 Plans: Funds development, TDP updates, test build, test activities, and logistics updates in support of the FRS and SATS.</p> <p>FY 2024 Plans: Funds development, TDP updates, test build, test activities, and logistics updates in support of the FRS and SATS.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Initial efforts for FRS and SATS will commence in FY 2023. FY 2024 will be used to support developmental activities.</p>	0.538	0.936	0.875
Accomplishments/Planned Programs Subtotals	0.738	0.972	1.306

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• G05301: Mobile Maintenance Equipment Systems	135.934	123.936	17.287	-	17.287	13.831	14.932	15.531	18.536	0.000	339.987

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L46 / Maintenance Support Equipment

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

Programs will progress through market research, market samples, Description for Purchase, development, production representative systems and testing. Modernization and Optimization of existing tools and testing of market samples will progress from Engineering and Manufacturing Development (EMD) and transition into production. All efforts will support the two level maintenance concept utilizing commercial technologies and incorporating them into SKOs to support next generation weapon and support systems.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				L46 / Maintenance Support Equipment							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	PM SKOT : Warren, MI	0.372	0.200	Jan 2023	-		-		-		-	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.036		-		-		-	0.000	0.036	-
Subtotal			0.372	0.200		0.036		-		-		-	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Additive Manufacturing Hardware	Various	TBD : TBD	1.098	-		-		0.331	Jan 2024	-		0.331	0.000	1.429	-
Forward Repair System Development / Prototype	MIPR	CCDC : Rock Island, IL	-	0.538		0.936		0.625	May 2024	-		0.625	0.000	2.099	-
Subtotal			1.098	0.538		0.936		0.956		-		0.956	0.000	3.528	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Additive Manufacturing Support	MIPR	ECBC : IL	0.467	-		-		-		-		-	Continuing	Continuing	-
Subtotal			0.467	-		-		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Additive Manufacturing Testing	MIPR	ATEC : Aberdeen Test Center	-	-		-		0.100	May 2024	-		0.100	0.000	0.100	-
Forward Repair System Testing	MIPR	ATEC : Aberdeen Test Center	-	-		-		0.250	May 2024	-		0.250	0.000	0.250	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L46 / Maintenance Support Equipment
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		0.350		-		0.350	0.000	0.350	N/A
Project Cost Totals			1.937	0.738		0.972		1.306		-		1.306	Continuing	Continuing	N/A

Remarks

<u>Remarks</u>	
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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L46 / <i>Maintenance Support Equipment</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	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, Procure, and Test Additive Manufacturing																												
	MWISS AM																											
Develop, Procure, for Forward Repair System (FRS)																												
					FRS Development																							
FRS Reprourement																												
									FRS Reprourement																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L46 / <i>Maintenance Support Equipment</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Develop, Procure, and Test Additive Manufacturing	3	2016	4	2024
Develop, Procure, for Forward Repair System (FRS)	2	2023	4	2024
FRS Reprocurement	3	2024	4	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) L47 / <i>Improved Environmental Control Units Ed</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
L47: <i>Improved Environmental Control Units Ed</i>	-	1.735	1.529	1.102	-	1.102	1.207	1.207	1.220	1.233	0.000	9.233
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This line supports the Army Network Modernization Strategy Line of Effort #4 (Command Post). Program develops/integrates Improved Environmental Control Units (IECUs) supporting existing and new requirements including the Command Post Integrated Infrastructure (CPI2), the Army Standard Family of Rigid Wall Shelters (ASFRWS) and other applications. In addition, it supports the development of critical Chemical Biological Radiological and Nuclear (CBRN) modifications required to support the Chemically Protected Deployable Medical System and other systems requiring this capability.

The IECU program will provide updates to replace the current Military Standard Family of Environmental Control Units (ECUs) with the new generation IECUs using environmentally-suitable refrigerants to eliminate Ozone-Depleting Chemicals (ODCs) and reduce Global Warming Potential (GWP). The IECUs will provide improved cooling, heating and dehumidification to Soldiers and critical equipment systems in combat, combat support, combat service support units, and field hospitals. The IECUs are required to replace the currently fielded ECUs in order to comply with statutory and regulatory mandates on the use of Class II ODCs (such as HCFC-22) and address increasing restrictions on high GWP chemicals. Technical improvements over existing ECUs will yield fuel and weight savings, reduction in scheduled maintenance and increased reliability. Funding also provides applications engineering support to integration development for shelter/trailer platforms to assist users and help further standardize cooling units in the field. Funding also supports developing initial prototypes to enable refinement of operational requirements and technology refreshment, and design improvements to address issues and support future sustainment. Expansion of product variants will further accommodate replacement of aging legacy ECUs.

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

	FY 2022	FY 2023	FY 2024
Title: Technology Development	0.800	0.454	0.267
Description: Development and integration of Improved Environmental Control Units (IECU) in the range of 9-60K BTUH to support integrated shelter and command post systems.			
FY 2023 Plans: Identify and evaluate a near term drop in replacement refrigerant (454B) to provide a lower Global Warming Potential (GWP) alternative for existing and new production 9K, 18K, 36K, and 60Ks as well as test 9K remediation developed in FY22 including near term refrigerant.			
FY 2024 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L47 / Improved Environmental Control Units Ed		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Integrate near term drop in replacement refrigerant (replacing R410a) to provide a lower Global Warming Potential (GWP) alternative for existing and new production 9, 18K & 36K's as well as test and evaluation for performance and reliability. FY 2023 to FY 2024 Increase/Decrease Statement: FY23 to FY24 decrease as remediation test will be complete.				
Title: Government System Test and Evaluation Description: Testing of IECU performance for multiple variants for stand-alone and soft wall shelter IECUs. FY 2023 Plans: Conduct testing to verify performance and reliability of 9/18/36/60K IECUs with interim drop in replacement refrigerant (454B) chemical to provide a lower Global Warming Potential alternative for existing and new production IECUs. FY 2024 Plans: Continue testing to verify performance and reliability of 9/18/36/60K IECUs with interim drop in replacement refrigerant (454B) to provide a lower Global Warming Potential (GWP) alternative for existing and new production IECUs. FY 2023 to FY 2024 Increase/Decrease Statement: FY23 to FY24 decrease as refrigerant testing is completed.		0.500	0.544	0.105
Title: Other Contract and Government Agency Description: Support engineering, logistics, and testing efforts for multiple ECU variants, and integrated heating/cooling units. Match and right-size current IECU family to applications and/or develop and test new variants to provide the most efficient system solution. FY 2023 Plans: Provide refrigeration technical expertise in support of alternative near term refrigerant development efforts and integration and/or adaptations for IECU user programs across the Army. FY 2024 Plans: Continue to provide refrigeration technical expertise (fielding, testing, evaluation) in support of alternative near term refrigerant development efforts and integration and/or adaptations for IECU user programs across the Army. FY 2023 to FY 2024 Increase/Decrease Statement: FY23 to FY24 increase continues refrigeration technical expertise efforts.		0.301	0.125	0.130
Title: Government Program Management		0.134	0.350	0.600

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L47 / Improved Environmental Control Units Ed

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: Provide oversight and management of engineering, logistics, contracts, and testing efforts for the IECU family (9, 18, 36, 60K) and multiple user engagements in preparation for IECU variants to transition to production. Provide oversight and management of follow-on IECU variants.</p> <p>FY 2023 Plans: Continue to provide oversight and management of engineering, logistics, contracts, and testing efforts for product improvement and next generation IECU system development efforts including 9/18/36K and 60K IECU programs.</p> <p>FY 2024 Plans: Continue to provide oversight and management of engineering, logistics, contracts, and testing efforts for product improvement and next generation IECU system development efforts including 9/18/36K and 60K IECU programs. Prepare to initiate effort for objective solutions with low GWP refrigerant designs planned for FY25.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY23 to FY24 increase for planning and preparation for contract efforts on objective refrigerant solutions.</p>			
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.056	-
Accomplishments/Planned Programs Subtotals	1.735	1.529	1.102

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• MF9303: IMPROVED ENVIRONMENTAL CONTROL UNITS	6.116	7.672	7.617	-	7.617	7.413	7.425	7.430	7.385	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L47 / Improved Environmental Control Units Ed

D. Acquisition Strategy

Support modernization and technology insertions required to adapt ECUs for future integrated system heating and cooling applications in support of existing and new requirements including the Command Post Integrated Infrastructure (CPI2) and chemically protected deployable medical system. Evaluate requirements versus existing IECU fleet and develop/test initial prototypes of new or modified ECUs to meet integrated system heating and cooling parameters. This effort will support the development of Purchase Descriptions (PDs) and Technical Data Packages (TDPs) for eventual competitive procurement.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L47 / Improved Environmental Control Units Ed
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
9,18,36,60K Improved Environmental Control Unit (IECU)	Various	PM E2S2 : various	1.578	0.067	May 2022	0.350	Oct 2022	0.600	Dec 2023	-		0.600	0.000	2.595	Continuing
60K IECU	Various	PM E2S2 : various	0.673	0.067	May 2022	-		-		-		-	0.000	0.740	-
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.056	Feb 2023	-		-		-	0.000	0.056	-
Subtotal			2.251	0.134		0.406		0.600		-		0.600	0.000	3.391	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
9,18,36,60K Improved Environmental Control Unit (IECU)	MIPR	NSSC : Natick, MA	3.333	0.800	Jun 2022	0.454	Jun 2023	0.267	Mar 2024	-		0.267	0.000	4.854	Continuing
Subtotal			3.333	0.800		0.454		0.267		-		0.267	0.000	4.854	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
9,18,36,60K Improved Environmental Control Unit (IECU)	MIPR	CERDEC : Ft. Belvoir, VA	3.729	0.301	Jun 2022	0.125	Mar 2023	0.130	Dec 2023	-		0.130	0.000	4.285	-
Subtotal			3.729	0.301		0.125		0.130		-		0.130	0.000	4.285	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L47 / Improved Environmental Control Units Ed	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Fabricate 60K IECU prototypes	█	█																										
Test the modified 60K CB IECU units	█	█																										
Award contract for IECU R&D			▲																									
Single Near-Term Refrigerant (SNTR) Chosen and Tried i...					█	█																						
Apply and Trial the Near-Term Refrigerant in 9K and 18K							█	█																				
Validate Design, Update TDP & Log Docs for SNTR in 9/18/36K									█	█	█																	
Apply and Trial the Near-Term Refrigerant in 60K									█	█																		
Validate Design, Update TDP & Log Docs for SNTR in 60K											█	█																
Study for Long-Term Refrigerant Solution and Design													█	█														
Implement Design Changes and Refrigerants into 9/18/36/60K															█	█												
Design Refinement and Validation Through Formal Testing																	█	█										
Finalize Long-Term LGWP Regulatory Compliant 9/18/36/60K...																					█	█	█	█				
Award contract for development of 9K 208V and 18K Vertic...																											▲	

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) L47 / Improved Environmental Control Units Ed	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	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 9K 208V and 18K vertical IECU's																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L47 / <i>Improved Environmental Control Units Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Fabricate 60K IECU prototypes	1	2022	1	2022
Test the modified 60K CB IECU units	1	2022	2	2022
Award contract for IECU R&D	4	2022	4	2022
Single Near-Term Refrigerant (SNTR) Chosen and Tried in 36K	1	2023	2	2023
Apply and Trial the Near-Term Refrigerant in 9K and 18K	3	2023	1	2024
Validate Design, Update TDP & Log Docs for SNTR in 9/18/36K	1	2024	3	2024
Apply and Trial the Near-Term Refrigerant in 60K	1	2024	2	2024
Validate Design, Update TDP & Log Docs for SNTR in 60K	3	2024	1	2025
Study for Long-Term Refrigerant Solution and Design	1	2025	2	2025
Implement Design Changes and Refrigerants into 9/18/36/60K	3	2025	2	2026
Design Refinement and Validation Through Formal Testing	3	2026	4	2026
Finalize Long-Term LGWP Regulatory Compliant 9/18/36/60K Design	1	2027	4	2027
Award contract for development of 9K 208V and 18K Vertical IECUs	4	2027	4	2027
Develop 9K 208V and 18K vertical IECU's	1	2028	4	2028

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) VR7 / Combat Service Support Systems			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
VR7: <i>Combat Service Support Systems</i>	-	1.368	15.376	2.012	-	2.012	2.314	1.208	1.221	1.234	0.000	24.733
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development (EMD) of critical soldier support and sustainment systems that provide more endurance and agility to combat operations, enabling success of Army Expeditionary Forces in future multi-domain scenarios. Project includes highly mobile shelter systems (rigid and soft wall), expeditionary base camp subsystems, field service systems, mortuary affairs equipment, field heaters, and other combat service support equipment. These systems will fill identified theater capability gaps, improve safety, improve unit sustainability, improve resource and energy efficiency; address environmental impacts, and increase combat effectiveness. This project supports Engineering and Manufacturing Development (EMD), Prototyping, and testing of critical tactical support systems that allow mobile Joint Service command and control, as well as medical, force projection, and maintenance platforms. This project develops critical enablers that support a number of strategic initiatives, including the Army Campaign Plan, the Army Modernization Strategy, the Army Climate Strategy, and the Army Arctic Strategy. This project ensures Army Expeditionary Forces are capable of rapid deployment while reducing sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands in lift, combat zone footprint, and costs for logistical support. Specifically, shelters developed under these efforts will be better insulated and more energy efficient, thus reducing environmental control requirements, energy demand, and fuel usage. Therefore, they will reduce the Army's logistics and carbon footprint and lengthen the resupply interval in contested, support-constrained environments. Additionally, better insulated shelter systems allow for operational viability in extreme environments such as the Arctic.

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

	FY 2022	FY 2023	FY 2024
Title: Army Standard Family of Rigid Wall Shelters (ASF-RWS)	1.368	3.253	2.012
<p>Description: The ASF-RWS program conducts formal development to modernize and standardize three variants of Army rigid wall shelters by incorporating the latest material and manufacturing technologies. Doing so will reduce the proliferation of non-standard shelters and their associated logistics burden across the Services. The program produces approved and tested standard shelter designs to support procurements by materiel developers and Program Managers (PMs) requiring rigid wall shelters. Once developed and formally type-classified, ASF-RWS shelter procurements are customer-funded by PMs as a cost under their program(s). The ASF-RWS program is structured as three sub-programs, each focused on a shelter variant:</p> <p>Phase One (P1) - Expandable/Non-Expandable Variant Phase Two (P2) - Vehicle Mounted Variant Phase Three (P3) - Panelized Variant</p> <p>FY 2023 Plans:</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) VR7 / Combat Service Support Systems

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Award performance specification based development contract with production options, conduct design development build and test PQT units, conduct Test Readiness Review (TRR) and initiate logistics development for ASF-RWS P1 (Expandable/Non-expandable ISO Variant). Conduct market strategy, develop performance specification, build performance specification based RFP with production options for ASF-RWS P2 (Vehicle Mounted Variant).</p> <p>FY 2024 Plans: Continue with ASF-RWS P1 program development. Award performance specification based development contract with production options, conduct design development build and test PQT units, conduct Test Readiness Review (TRR) and initiate logistics development for ASF-RWS P2 (Vehicle Mounted Shelters). Conduct market strategy, develop performance specification, build performance specification based RFP with production options for ASF-RWS P3 (Panelized Shelter).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funds decrease due to completion of ASF-RWS P1 development</p>			
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.123	-
Accomplishments/Planned Programs Subtotals	1.368	3.376	2.012

	FY 2022	FY 2023
Congressional Add: ASF-RWS P1 and P3 MINATORS	-	12.000
FY 2023 Plans: ASF-RWS P1 prototypes will be procured to advance testing schedule and support to Modular, Insulated, Next-generation, All-weather, TSCIF-capable, Off-grid, Rapidly buildable Structure (MINATORS), a technical maturation effort to include prototypes for Operational Assessment (OA) in support of future P3 efforts		
Congressional Adds Subtotals	-	12.000

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>

D. Acquisition Strategy

To support modernization and standardization to the next generation of Army Rigid Wall Shelters (RWS) by incorporating 30+ years of shelter performance technology and improved manufacturing for increased producibility and affordability. Provide more modular shelters for increased interoperability and scalability.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) VR7 / Combat Service Support Systems
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Project Management Support	Various	PM Force Sustainment Systems : Natick, MA	2.609	0.225	Dec 2022	3.075	May 2024	1.009	Dec 2023	-		1.009	0.000	6.918	-
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.123	Feb 2023	-		-		-	0.000	0.123	-
Subtotal			2.609	0.225		3.198		1.009		-		1.009	0.000	7.041	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Army Standard Family of Rigid Wall Shelters (ASF-RWS)	Various	Various : Various	2.000	1.143	Sep 2022	10.452	Aug 2023	0.803	Dec 2023	-		0.803	0.000	14.398	-
Subtotal			2.000	1.143		10.452		0.803		-		0.803	0.000	14.398	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Army Standard Family of Rigid Wall Shelters (ASF-RWS)	Various	Various : Various	0.582	-		1.726	Feb 2024	0.200	Dec 2023	-		0.200	0.000	2.508	-
Subtotal			0.582	-		1.726		0.200		-		0.200	0.000	2.508	N/A

			Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			5.191	1.368	15.376	2.012	-	2.012	0.000	23.947	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) VR7 / Combat Service Support Systems

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ASF-RWS: Execute DT for ASF-RWS P1																												
ASF-RWS: Achieve MS C / TC-STD for ASF-RWS P1																	▲ 3											
ASF-RWS: Prepare development contract for ASF-RWS P2																												
ASF-RWS: Award development contract, design & prototype ...													▲ 1															
ASF-RWS: Execute DT and Safety Evaluation for ASF-RWS P2																												
ASF-RWS: Prepare for and execute MS C / TC-STD decision ...																												
ASF-RWS: Achieve MS C / TC-STD for ASF-RWS P2																					▲ 4							
ASF-RWS: Prepare development contract, design & prototype...																												
ASF-RWS: Award developmental contract for ASF-RWS P3																	▲ 2											
ASF-RWS: Execute DT and Safety Evaluation for ASF-RWS P3																												
ASF-RWS: Prepare for and execute MS C / TC-STD decision ...																												
ASF-RWS: Achieve MS C / TC-STD for ASF-RWS P3																									▲ 5			
ASF-RWS: P3 MINATORS Technical Maturation effort and pro...																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) VR7 / Combat Service Support Systems	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ASF-RWS: P3 MINATORS Conduct several COCOM Operational A...																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ASF-RWS: Execute DT for ASF-RWS P1	4	2023	4	2024
ASF-RWS: Achieve MS C / TC-STD for ASF-RWS P1	4	2025	4	2025
ASF-RWS: Prepare development contract for ASF-RWS P2	1	2023	2	2024
ASF-RWS: Award development contract, design & prototype for ASF-RWS P2	2	2024	2	2024
ASF-RWS: Execute DT and Safety Evaluation for ASF-RWS P2	4	2024	4	2025
ASF-RWS: Prepare for and execute MS C / TC-STD decision for ASF-RWS P2	3	2025	3	2026
ASF-RWS: Achieve MS C / TC-STD for ASF-RWS P2	3	2026	3	2026
ASF-RWS: Prepare development contact, design & prototype for ASF-RWS P3	3	2024	1	2025
ASF-RWS: Award developmental contract for ASF-RWS P3	2	2025	2	2025
ASF-RWS: Execute DT and Safety Evaluation for ASF-RWS P3	2	2025	1	2026
ASF-RWS: Prepare for and execute MS C / TC-STD decision for ASF-RWS P3	1	2026	1	2027
ASF-RWS: Achieve MS C / TC-STD for ASF-RWS P3	1	2027	1	2027
ASF-RWS: P3 MINATORS Technical Maturation effort and produce prorotypes	3	2023	2	2024
ASF-RWS: P3 MINATORS Conduct several COCOM Operational Assessments	2	2024	4	2024

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Communications Systems - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	19.372	44.993	34.214	-	34.214	33.899	33.914	34.264	34.646	0.000	235.302
593: <i>Joint Battle Command - Platform (JBC-P)</i>	-	19.372	44.993	34.214	-	34.214	33.899	33.914	34.264	34.646	0.000	235.302

Note

In FY 2023, the Army combined the RDT&E funding from the Mounted Computing Environment (MCE) (PE 0604818/Proj EJ5) and Joint Battle Command - Platform (JBC-P) (PE 0604805A/Proj 593) lines. The RDT&E funding covers modernizing the JBC-P capability, which will be provided through the Mounted Mission Command (MMC) Family of Systems (FoS). MMC FoS includes Blue Force Tracking 3 (BFT-3) work under MMC-Transport (MMC-T) and MMC-Software (MMC-S), which was previously funded under Project EJ5.

A. Mission Description and Budget Item Justification

This Program Element (PE) is directly aligned to the Army Network Modernization Strategy Line of Effort (LOE) 2. Specifically, JBC-P/MMC FoS supports LOE 2 by utilizing and providing:

- Interoperable data, message, and waveforms
- Integration with Joint Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, and Reconnaissance (C5ISR) and strike capabilities
- Sensors and applications that enable operations across domains
- Critical Interoperability features that bridge the communications gap between the Command Post Computing Environment and Mobile/ Handheld Computing Environment (Nett Warrior)
- Data mediation, message format translation, and waveform exchanges across all computing environments (CEs) delivering improved information dissemination
- Mounted Common Operating Picture data sources, shared blue / red situational awareness, and Position / Location Information across the CEs
- Common, reusable services that enable Warfighting Function (WfF) convergence for rapid capability development and delivery with reduced costs for external programs
- Mounted platform data sensor collection, processing, and disbursement applications that enable and enhance WfFs on the battlefield
- Foundational cross-cutting capabilities that integrate with Joint C5ISR and strike capabilities

The JBC-P and MMC FoS programs are the cornerstone of Joint Forces command and control situational awareness and communications, and include networks that enable the movement of data and provide a secure BFT capability in both platforms and command posts. This capability provides soldiers and commanders a near real-time map-based view of the battlefield, reducing fratricide and populating the Tactical Common Operating Picture. Modernization of the JBC-P capability will be accomplished via the MMC FoS approach to maximize development flexibility and support incremental JBC-P capability improvements over time. The MMC FoS addresses the BFT-3 effort under the MMC-T program and the next generation software development under MMC-S (previously captured in the MCE funding line); planning is underway for future MMC FoS programs to address compute and store requirements.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Communications Systems - Eng Dev</i>
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The MMC-T program continues development of the next generation BFT capabilities (BFT-3), including electronic warfare (EW) and cyber resiliency using a modular open systems approach, developing the next generation BFT-3 transceiver and encryption device, which will provide the Warfighter with multiple avenues to transmit voice/data information while increasing EW and cyber resiliency.

The MMC-S program continues next generation software development that facilitates convergence of WfF applications into the MCE infrastructure, as well as developing smart routing processes that will use the BFT-3 network, along with leveraging all available networks in the platform. MMC-S will enhance existing JBC-P capability and prepare the software to host applications (apps) developed by external programs to provide robust WfF capabilities within the MCE.

FY 2024 funding supports MMC-T development and systems engineering efforts to continue the transceiver and encryption device prototype development. MMC-T development activities will include the integration of the BFT waveform and terrestrial radio line of sight waveform on the transceiver; integration of the transceiver and encryption device to each mounted platform; and interoperability with the BFT-2 Satellite Network Control Center (SNCC) and Satellite Ground Station (SGS).

FY 2024 funding supports MMC-S software and infrastructure development to facilitate convergence of WfF applications and smart routing capabilities as part of the next MMC-S release. MMC-S activities will include development of the MCE infrastructure to host WfF apps; continued DevOps and a Developmental Test; an Operational Test to support a Fielding Decision; an Army Interoperability Certification Test; and interface development to Integrated and Firing Platforms.

B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	20.107	40.038	34.936	-	34.936
Current President's Budget	19.372	44.993	34.214	-	34.214
Total Adjustments	-0.735	4.955	-0.722	-	-0.722
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.735	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.722	-	-0.722
• FFRDC Transfer	-	-0.045	-	-	-

Change Summary Explanation

Decreased funding to support higher Army priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Comm unications Systems - Eng Dev				Project (Number/Name) 593 / Joint Battle Command - Platform (JBC-P)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
593: Joint Battle Command - Platform (JBC-P)	-	19.372	44.993	34.214	-	34.214	33.899	33.914	34.264	34.646	0.000	235.302
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project supports the JBC-P and MMC FoS programs that are the cornerstone of Joint Forces command and control situational awareness and communications, and include networks that enable the movement of data and provide a secure BFT capability in both platforms and command posts. This capability provides soldiers and commanders a near real-time map-based view of the battlefield, reducing fratricide and populating the Tactical Common Operating Picture. Modernization of the JBC-P capability will be accomplished via the MMC FoS approach to maximize development flexibility and support incremental JBC-P capability improvements over time. The MMC FoS addresses the BFT-3 effort under the MMC-T program and the next generation software development under MMC-S (previously captured in the MCE funding line); planning is underway for future MMC FoS programs to address compute and store requirements.

The MMC-T program continues development of the next generation BFT capabilities (BFT-3), including electronic warfare (EW) and cyber resiliency using a modular open systems approach, developing the next generation BFT-3 transceiver and encryption device, which will provide the Warfighter with multiple avenues to transmit voice/data information while increasing EW and cyber resiliency.

The MMC-S program continues next generation software development that facilitates convergence of WfF applications into the MCE infrastructure, as well as developing smart routing processes that will use the BFT-3 network, along with leveraging all available networks in the platform. MMC-S will improve upon existing JBC-P capability and prepare the software to host applications (apps) developed by external programs to provide robust WfF capabilities within the MCE.

FY 2024 funding supports MMC-T development and systems engineering efforts to continue the transceiver and encryption device prototype development. MMC-T development activities will include the integration of the BFT waveform and terrestrial radio line of sight waveform on the transceiver; integration of the transceiver and encryption device to each mounted platform; and interoperability with the BFT-2 Satellite Network Control Center (SNCC) and Satellite Ground Station (SGS).

FY 2024 funding supports MMC-S software and infrastructure development to facilitate convergence of WfF applications and smart routing capabilities as part of the next MMC-S release. MMC-S activities will include development of the MCE infrastructure to host WfF apps; continued DevOps and a Developmental Test; an Operational Test to support a Fielding Decision; an Army Interoperability Certification Test; and interface development to Integrated and Firing Platforms.

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

	FY 2022	FY 2023	FY 2024
Title: Software/Systems Engineering	16.457	35.359	22.815
Description: Perform Software/Systems Engineering needed to develop BFT-3 capabilities, applications and services, to include, but not limited to conducting engineering studies, architecture development (network and software), system analyses,			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Comm unications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>technical readiness assessments, technical interchange/exchange meetings/events, and development of related reports and other deliverables.</p> <p>MMC-S provides an integrated mission command capability across Platforms, through all echelons, delivering simplicity, intuitiveness, core services and applications, a common look and feel, and functionality across all Warfighting Functions (WfF), including Fires, Logistics, Intelligence, and Maneuver. Software development is focused on enhanced situational awareness functions, cross-cutting data exchange services, and Mission Command applications displayed on the next-generation common geospatial solution [map] through a graphical user interface that delivers a "common look and feel" across the CEs.</p> <p>FY 2023 Plans: Funds continue to support software/systems engineering and development of the BFT-3 capability (MMC-T). Specifically, it covers the BFT-3 transceiver and encryption device development contracts. Support will include; the integration of the BFT modular waveform, enabling competition by allowing third party transceiver manufacturers to access and interoperate with the existing BFT network, to include the BFT-2 SNCC and SGS, the integration of a resilient line of sight waveform on a software defined radio, the integration of the transceiver and encryption devices to each mounted platform, and an upgrade of the Waveform/Network Virtualization for the BFT network to support the new modular waveform and line of sight waveform. A CDR will also be conducted for the transceiver and encryption device development.</p> <p>Funds complete software development/systems engineering and incorporation of MCE (MMC-S) baseline capabilities (version 3.1) focused on infrastructure, core utilities, backwards compatibility, and WfF application convergence into a holistic system of systems, while ensuring subsystems function together in accordance with program requirements, specifications, and interoperability requirements. These efforts require extensive development of complex capabilities to ensure robust features are delivered to the Warfighter. Funding will continue development of MMC-S version 3.2, focused on multiple platforms and programs, such as: Platform Integration (Stryker, JLTV, Abrams, Bradley, AMPV), Sensor Integration (Long-Range Acquisition System (LRAS), Improved Target Acquisition System (ITAS), Fire-Support Sensor System (FS3), Netted Lethality Upgrades, Precision Fires - Mounted Integration, finalize Over the Air Updates (Over The Network Keying (OTNK), Map Updates), Remote Display, Improved Route Planning / Navigation, Network Path Diversity (Smart Routing / APACE), additional third-party application integration, message standards migration, netted asset (Non A-PNT), and VICTORY migration.</p> <p>FY 2024 Plans: Funds continue to support MMC-T software/systems engineering and development of the BFT-3 capability under the BFT-3 transceiver and encryption device development contracts. Efforts include the integration of the BFT modular waveform, that will enable competition by allowing third-party transceiver manufacturers to access and interoperate with the existing BFT network</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Comm unications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>(including the BFT-2 SNCC and SGS); integration of a resilient line of sight waveform on a software defined radio; and integration of the transceiver and encryption devices to each mounted platform.</p> <p>Funds complete development of MMC-S v3.2, focused on platform sensor and interface support as well as integration with the Fires Wff. Platform development will focus on supporting interfaces to the Stryker and Bradley platforms, including Remote Display, multi-user support, and sensor integration such as Long-Range Acquisition System (LRAS), Improved Target Acquisition System (ITAS), Fire-Support Sensor System (FS3), and Netted Lethality Upgrades. Fires capability will be integrated by converging the Precision Fires - Mounted (PF-M) for trained users and adding untrained observer fires capabilities for other users. MMC-S v3.2 development funding builds on the MMC-S v3.1 smart routing features by developing support for the MMC-T prototype transceiver and encryption device to provide network path diversity and PACE planning features. These funds also initiate development of MMC-S v3.3, which includes DEVOPS, completes integration with BFT-3, and aligns with Capability Set 27 priorities.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to shift during FY 2024 from development to testing efforts for MMC-T and the focus on defect mitigation vice new feature development for MMC-S v.3.2.</p>				
<p>Title: Test, Evaluation and Integration</p> <p>Description: Test and evaluation (T&E) efforts consist of planning and execution of required test events for MMC-T and MMC-S to inform fielding decisions and ensure the safe delivery of capability to the Warfighter. T&E events include: Development Operations (DevOps), Developmental Tests (DT), Field Tests (FT), Software Assurance Tests, Capability Set Integration Events, Risk Reduction Tests, DT and Capability Set Operational Demonstration, Army Interoperability Certification (AIC), Security Control Assessment-Validation, and Initial Operational Test and Evaluation (IOT&E).</p> <p>FY 2023 Plans: Funds support the National Security Agency (NSA) Cybersecurity evaluation and subsequent NSA certification for the BFT-3 (MMC-T) encryption device, as well as Soldier Touch Point (STP) #1.</p> <p>Funds the required AIC and IOT&E events that support the MMC-S version 3.1 Full Deployment Decision planned for FY23. Additionally, funds DevOps activities for MMC-S version 3.2 that will commence in FY23.</p> <p>FY 2024 Plans: Funds support BFT network certification of the BFT-3 transceiver and NSA certification of the encryption device. Funds also support MMC-T T&E activities for a DT and a STP #2 (FT) in support of BFT-3 development as the program moves towards a production decision.</p>		0.529	4.695	7.833

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Comm unications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Funds support MMC-S T&E activities for the required DT, AIC and OT events that support the MMC-S v3.2 Full Deployment Decision (FDD) planned for FY 2024.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase due to significant MMC-T requirements, including the DT and STP #2 (FT) for the BFT-3 transceiver and encryption device, and increased test efforts required for MMC-S v3.2 (DT, AIC, OT) to support the MMC-S v3.2 FDD.</p>				
<p>Title: PM Support (Matrix & Contractor)</p> <p>Description: Matrix and contractor support, including technical, logistics, and business staff oversight, for MMC-T and MMC-S.</p> <p>FY 2023 Plans: Funds continue to support matrix and contractor personnel to support BFT-3 (MMC-T) and MCE (MMC-S) development/systems engineering and provide technical and business oversight for BFT-3 transceiver and encryption device prototypes, and MMC-S software changes. Technical areas include SATCOM, Network, Intel, Cyber, RF, Waveform and Transport. Additionally, this PM support includes system analyses of Program of Record systems and future systems for integration and convergence into the MCE (MMC-S) baselines, technical readiness assessments and assistance with stakeholder technical exchange meetings and events. Business/program management includes funds execution, contract management and logistical support. Some of this work is secured via Functional Support Agreements (FSAs) between PM MC and various Government support agencies, such as the Combat Capabilities Development Command (CCDC) C5ISR (Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance and Reconnaissance) Center, and other PEOs (e.g. PEO GCS).</p> <p>FY 2024 Plans: Funds continue to finance matrix and contractor personnel to support MMC-T and MMC-S development/systems engineering and provide technical, test expertise, and business oversight for BFT-3 transceiver and encryption device prototypes, and MMC-S software changes. Technical areas include SATCOM, Network, Intel, Cyber, Radio Frequency, Waveform and Transport. Additionally, this PM support includes system analyses of external programs systems and future systems for integration and convergence into the MCE infrastructure, technical readiness assessments and assistance with stakeholder technical exchange meetings and events. Business/program management efforts include funds execution, contract management and logistical support. Some of this work is secured via FSAs between the PM and various Government support agencies, such as the DEVCOM Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) Center, and other PEOs (e.g. PEO STRI).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>		2.386	3.479	3.566

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Communications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Increase reflects planned lifecycle efforts.			
Title: SBIR/STTR	-	1.460	-
Description: Funding transferred in accordance with Title 15 USC §638			
FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	19.372	44.993	34.214

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

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• W61990: JOINT BATTLE COMMAND - PLATFORM (JBC-P)	253.661	186.515	215.290	-	215.290	241.819	169.334	168.780	165.067	Continuing	Continuing

Remarks
Procurement funding (Base funding) is designated for the procurement, fielding, training and program management of JBC-P (through FY 2025) and the Mounted Mission Command (MMC) Family of Systems (FoS). JBC-P will complete procurement of its Army Acquisition Objective/Basis of Issue in FY 2024, and reach Full Operational Capability in FY 2025. MMC-T development efforts are underway to ensure the next generation transceiver and encryption device (BFT-3 hardware) are compatible as the MMC FoS transitions to replace the JBC-P system. MMC-S to begin Platform Integration and Post Deployment System Support (PDSS) in FY 2025.

D. Acquisition Strategy
The JBC-P program achieved First Unit Equipped in FY 2015 in response to the JBC-P Capabilities Development Document in lieu of Capabilities Production Document (CDD ILO CPD), which was Joint Requirements Oversight Council (JROC) approved in March 2013. Using the CDD ILO CPD objective requirements, PdM JBC-P began Systems Engineering development in FY 2017 for the program's next generation Blue Force Tracking (BFT) Open Systems Architecture Developmental and systems engineering efforts, which were performed through intra-government collaboration with C5ISR's Research and Technology Integration Directorate (RTI) and the Engineering and Systems Integration Directorate (ESI).

At this same time, PdM JBC-P was overseeing development for the Mounted Computing Environment (MCE), which is one of six computing environments in the Common Operating Environment (COE). MCE is the Army's initiative to provide simple and intuitive Mission Command on-the-Move and situational awareness down to the platoon level. It is standards based, protected, and supports incremental improvements and Warfighting Function application capability enhancements.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Comm unications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>
<p>Modernization of the JBC-P capability will be accomplished via a MMC Family of Systems (FoS) approach to maximize development flexibility and supports incremental JBC-P capability improvements over time. The MMC FoS addresses the BFT-3 effort under the MMC Transport (MMC-T) program and the next generation software development (previously conducted under the MCE funding line) under the MMC Software (MMC-S) program; planning is underway for future FoS programs to address compute and store requirements. This structure capitalizes on work completed to date to utilize and respond to technological advances to provide cutting-edge capabilities to the Warfighters and out-pace the obsolescence curve.</p> <p>MMC-T is based on the objective requirements in the JBC-P CDD ILO CPD, the MCE Requirements Definition Package (RDP), and the Mounted Mission Command-Hardware & Transport (MMC HW&T) Abbreviated CDD. This program will offer a transport agnostic Modular Open System Approach (MOSA) compliant, resilient, multi-band, multi-path capability that enables Commanders' the ability to perform Mission Command on the Move against near-peer adversaries during Multi Domain Operations in cyber- and electronic warfare-denied environments.</p> <p>The MMC-T Materiel Development Decision (MDD) Acquisition Decision Memorandum (ADM) signed in September 2021, designated MMC-T an Acquisition Category II program. The life cycle entry point will be identified based on system maturity and MMC HW&T CDD status. MMC-T utilizes an approved evolutionary acquisition approach punctuated by prototype development of the BFT-3 transceivers and encryption devices, as well as modular waveforms, which will be subjected to Developmental/Operations (DevOps) and Soldier Touch Points (STPs) to inform a MMC HW&T CDD.</p> <p>In response to the COE Information System-Initial Capability Document and the MCE RDP (both approved in October 2018), PdM JBC-P established the MMC-S program to develop the next generation JBC-P software and the MCE infrastructure to facilitate convergence of external programs and third-party applications into the MCE. MMC-S provides a common user experience that enables leaders to lead and fight their formations from anywhere on the battlefield. MMC-S serves as the data mediator between disparate computing environments (CEs), including the Command Post Computing Environment and the Mobile/Handheld Computing Environment (Nett Warrior), enabling seamless Mission Command and Common Operating Picture generation across all three CEs.</p> <p>The MMC-S MDD ADM signed in June 2020 designated MMC-S an Acquisition Category II program and approved entry into the acquisition life cycle at the Full Deployment Decision (FDD) for MMC-S v3.1, which is scheduled in FY 2023. MMC-S utilizes an agile and incremental development approach, leveraging DevOps, to ensure capability is delivered quickly, satisfies requirements, and addresses Warfighter feedback. This development process injects enhancements into the baseline software, making it easier and faster to incorporate technological advances. The product office conducts commercial software assessments to determine applicability and suitability for inclusion in the MCE.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Comm unications Systems - Eng Dev	Project (Number/Name) 593 / Joint Battle Command - Platform (JBC-P)
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		1.460		-		-		-	0.000	1.460	-
Subtotal			-	-		1.460		-		-		-	0.000	1.460	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BFT-3 (MMC-T) Software/ Systems Engineering	C/FFP	GDMS/L3Harris : Multiple	78.801	16.457	Nov 2021	19.798	Nov 2022	11.343	Nov 2023	-		11.343	Continuing	Continuing	-
MCE (MMC-S) Software/ Systems Engineering	SS/ Various	Multiple (Government and industry) : Multiple	-	-		15.561	Nov 2022	11.472	Nov 2023	-		11.472	Continuing	Continuing	-
Subtotal			78.801	16.457		35.359		22.815		-		22.815	Continuing	Continuing	N/A

Remarks
Decrease due to shift during FY 2024 from development to testing efforts for MMC-T and the focus on defect mitigation vice new feature development for MMC-S v.3.2.

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (Matrix / SETA Contractor)	Various	PM JBC-P : Aberdeen Proving Ground (APG), MD	11.474	2.386	Nov 2021	3.479	Nov 2022	3.566	Nov 2023	-		3.566	Continuing	Continuing	-
Subtotal			11.474	2.386		3.479		3.566		-		3.566	Continuing	Continuing	N/A

Remarks
Funding remains relatively consistent.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Comm unications Systems - Eng Dev	Project (Number/Name) 593 / Joint Battle Command - Platform (JBC-P)
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BFT-3 (MMC-T) Develop and Conduct Tests and Assessments	MIPR	Multiple : Multiple	30.394	0.529	Oct 2021	1.030	Oct 2022	2.844	Nov 2023	-		2.844	Continuing	Continuing	-
MCE (MMC-S) Develop and Conduct Tests and Assessments	MIPR	Multiple : Multiple	-	-		3.665	Nov 2022	4.989	Nov 2023	-		4.989	Continuing	Continuing	-
Subtotal			30.394	0.529		4.695		7.833		-		7.833	Continuing	Continuing	N/A

Remarks
Increase due to significant MMC-T requirements, including the DT and STP #2 (FT) for the BFT-3 transceiver and encryption device, and increased test efforts required for MMC-S v3.2 (DT, AIC, OT) to support the MMC-S v3.2 FDD.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	120.669	19.372	44.993	34.214	-	34.214	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Comm unications Systems - Eng Dev	Project (Number/Name) 593 / Joint Battle Command - Platform (JBC-P)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BFT-3 (MMC-T) Resilient Line of Sight (LOS) Contract Award	▲1																											
<i>Resilient Line of Sight Contract Award (Prototype Development)</i>																												
BFT-3 (MMC-T) Resilient LOS Development																												
<i>BFT-3 LOS Development</i>																												
BFT-3 (MMC-T) Transceiver Request for Prototype Proposal...		▲2																										
<i>Standard Transceiver RFP</i>																												
BFT-3 (MMC-T) Encryption Device RFP		▲3																										
<i>Encryption Device RFP</i>																												
BFT-3 (MMC-T) Transceiver & Encryption Device Contract A...																												
<i>Standard Transceiver & Encryption Device Contract Awards (Prototype Development)</i>																												
BFT-3 (MMC-T) Transceiver and Encryption Development																												
<i>BFT-3 Transceiver & Encryption Dev</i>																												
BFT-3 (MMC-T) Transceiver & Encryption Developmental Tes...																												
<i>CSISR Lab Based Testing To Further Inform Prototype Development</i>																												
BFT-3 (MMC-T) Transceiver Design Review 1																												
<i>PDR for Standard Transceiver</i>																												
BFT-3 (MMC-T) Line of Sight Waveform Delivery																												
<i>Initial Delivery of Line of Sight Waveform</i>																												
BFT-3 (MMC-T) Soldier Touch Point (STP) 1																												
<i>Planned DevOps Test Event (11th ACR)</i>																												
BFT-3 (MMC-T) Encryption Device Design Review 1																												
<i>Preliminary Design Review (PDR) for Standard Transceiver Encryption Device</i>																												
BFT-3 (MMC-T) Transceiver Design Review 2																												
<i>Critical Design Review (CDR) Standard Transceiver</i>																												
BFT-3 (MMC-T) Encryption Device Design Review 2																												
<i>CDR Standard Encryption Device</i>																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Comm unications Systems - Eng Dev	Project (Number/Name) 593 / Joint Battle Command - Platform (JBC-P)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BFT-3 (MMC-T) Encryption Device Initial Prototype Deliveries								9																				
BFT-3 (MMC-T) Transceiver Initial Prototype Deliveries								12																				
BFT-3 (MMC-T) Transceiver & Encryption Device Developmen...																												
BFT-3 (MMC-T) Soldier Touch Point (STP) 2 (Field Test)																												
BFT-3 (MMC-T) Encryption Device Certification																												
BFT-3 (MMC-T) Transceiver & Encryption Device Final Prot...																												
BFT-3 (MMC-T) Operational Test (OT) / Limited User Test ...																												
BFT-3 (MMC-T) Low Rate Initial Production (LRIP) Award																												
BFT-3 (MMC-T) Deliveries (Limited Rate Initial Productio...																												
BFT-3 (MMC-T) Transceiver & Encryption Device Initial Op...																												
BFT-3 (MMC-T) Aviation Development																												
BFT-3 (MMC-T) Transceiver & Encryption Device Army Inter...																												
BFT-3 (MMC-T) Transceiver & Encryption Device Full Rate ...																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Comm unications Systems - Eng Dev	Project (Number/Name) 593 / Joint Battle Command - Platform (JBC-P)	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BFT-3 (MMC-T) Transceiver & Encryption Device First Unit...																	18 Planned FUE for Standard Transceiver & Encryption Device											
MCE (MMC-S) v3.1 Planned Army Interoperability Certifica...					[Redacted]																							
MCE (MMC-S) v3.1 Planned Initial Operational Test & Eval...					[Redacted]																							
MCE (MMC-S) v3.1 Full Deployment Decision (FDD)					[Redacted]				10 MMC-S v3.1 FDD																			
MCE (MMC-S) v3.1 First Unit Equipped (FUE)					[Redacted]				11 MMC-S v3.1 FUE																			
MCE (MMC-S) v3.2 Arch, System Engr & Development					[Redacted]				[Redacted]																			
MCE (MMC-S) v3.2 Planned Developmental Test (DT)					[Redacted]				[Redacted]																			
MCE (MMC-S) v3.2 Planned Operational Test (OT)					[Redacted]				[Redacted]																			
MCE (MMC-S) v3.2 Planned Army Interoperability Certifica...					[Redacted]				[Redacted]																			
MCE (MMC-S) v3.2 Full Deployment Decision (FDD)					[Redacted]				15 MMC-S v3.2 FDD																			
MCE (MMC-S) v3.2 First Unit Equipped (FUE)					[Redacted]				16 MMC-S v3.2 FUE																			
MCE (MMC-S) v3.3 Arch, System Engr & Development					[Redacted]				[Redacted]				[Redacted]															
MCE (MMC-S) v3.3 Planned Operational Test (OT)					[Redacted]												[Redacted]											

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / Command, Control, Comm unications Systems - Eng Dev	Project (Number/Name) 593 / Joint Battle Command - Platform (JBC-P)
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Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MCE (MMC-S) v3.3 Planned Army Interoperability Certifica...																	 MMC-S v3.3 AIC to inform FDD											
MCE (MMC-S) v3.3 Full Deployment Decision (FDD)																	 MMC v3.3 FDD											
MCE (MMC-S) v3.4 Arch, System Engr & Development																	 MMC-S v3.4 SE & Development/DevOps											
MCE (MMC-S) v3.4 Planned Operational Test (OT)																									 MMC-S v3.4			
MCE (MMC-S) v3.4 Planned Army Interoperability Certifica...																									 MMC-S v3.4			
MCE (MMC-S) v3.4 Full Deployment Decision (FDD)																									 MMC			

Note
In FY 2023, the Army combined the RDT&E funding from the Mounted Computing Environment (MCE) (PE 0604818/Proj EJ5) and Joint Battle Command - Platform (JBC-P) (PE 0604805A/Proj 593) lines. The RDT&E funding covers modernizing the JBC-P capability, which will be provided through the Mounted Mission Command

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army **Date:** March 2023

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

(MMC) Family of Systems (FoS). MMC FoS includes Blue Force Tracking 3 (BFT-3) work under MMC-Transport (MMC-T) and MMC-Software (MMC-S), which was previously funded under Project EJ5.

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Comm unications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BFT-3 (MMC-T) Systems Engineering Development and Consortium	2	2017	4	2021
BFT-3 (MMC-T) Developmental Testing (C5ISR Lab based)	1	2021	4	2021
BFT-3 (MMC-T) Resilient Line of Sight (LOS) Contract Award	1	2022	1	2022
BFT-3 (MMC-T) Resilient LOS Development	1	2022	2	2023
BFT-3 (MMC-T) Transceiver Request for Prototype Proposal (RPP)	2	2022	2	2022
BFT-3 (MMC-T) Encryption Device RPP	2	2022	2	2022
BFT-3 (MMC-T) Transceiver & Encryption Device Contract Awards	3	2022	4	2022
BFT-3 (MMC-T) Transceiver and Encryption Development	3	2022	2	2025
BFT-3 (MMC-T) Transceiver & Encryption Developmental Testing (C5ISR Lab based) 2	3	2022	4	2022
BFT-3 (MMC-T) Transceiver Design Review 1	4	2022	4	2022
BFT-3 (MMC-T) Line of Sight Waveform Delivery	1	2023	1	2023
BFT-3 (MMC-T) Soldier Touch Point (STP) 1	2	2023	2	2023
BFT-3 (MMC-T) Encryption Device Design Review 1	3	2023	3	2023
BFT-3 (MMC-T) Transceiver Design Review 2	3	2023	3	2023
BFT-3 (MMC-T) Encryption Device Design Review 2	4	2023	4	2023
BFT-3 (MMC-T) Encryption Device Initial Prototype Deliveries	4	2023	4	2023
BFT-3 (MMC-T) Transceiver Initial Prototype Deliveries	1	2024	1	2024
BFT-3 (MMC-T) Transceiver & Encryption Device Developmental Test (DT)	2	2024	3	2024
BFT-3 (MMC-T) Soldier Touch Point (STP) 2 (Field Test)	3	2024	3	2024
BFT-3 (MMC-T) Encryption Device Certification	3	2024	3	2024
BFT-3 (MMC-T) Transceiver & Encryption Device Final Prototype Deliveries	4	2024	4	2024
BFT-3 (MMC-T) Operational Test (OT) / Limited User Test (LUT)	1	2025	1	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Comm unications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
BFT-3 (MMC-T) Low Rate Initial Production (LRIP) Award	3	2025	3	2025
BFT-3 (MMC-T) Deliveries (Limited Rate Initial Production (LRIP))	1	2026	4	2026
BFT-3 (MMC-T) Transceiver & Encryption Device Initial Operational Test & Eval	2	2026	2	2026
BFT-3 (MMC-T) Aviation Development	3	2026	1	2028
BFT-3 (MMC-T) Transceiver & Encryption Device Army Interoperability Cert (AIC)	3	2026	4	2026
BFT-3 (MMC-T) Transceiver & Encryption Device Full Rate Production (FRP) Award	3	2026	3	2026
BFT-3 (MMC-T) Transceiver & Encryption Device First Unit Equipped (FUE)	4	2026	4	2026
MCE (MMC-S) v3.1 Planned Army Interoperability Certification (AIC)	1	2023	2	2023
MCE (MMC-S) v3.1 Planned Initial Operational Test & Evaluation (IOT&E)	3	2023	3	2023
MCE (MMC-S) v3.1 Full Deployment Decision (FDD)	4	2023	4	2023
MCE (MMC-S) v3.1 First Unit Equipped (FUE)	1	2024	1	2024
MCE (MMC-S) v3.2 Arch, System Engr & Development	1	2023	3	2024
MCE (MMC-S) v3.2 Planned Developmental Test (DT)	1	2024	1	2024
MCE (MMC-S) v3.2 Planned Operational Test (OT)	3	2024	3	2024
MCE (MMC-S) v3.2 Planned Army Interoperability Certification (AIC)	3	2024	3	2024
MCE (MMC-S) v3.2 Full Deployment Decision (FDD)	4	2024	4	2024
MCE (MMC-S) v3.2 First Unit Equipped (FUE)	1	2025	1	2025
MCE (MMC-S) v3.3 Arch, System Engr & Development	2	2024	2	2026
MCE (MMC-S) v3.3 Planned Operational Test (OT)	3	2026	3	2026
MCE (MMC-S) v3.3 Planned Army Interoperability Certification (AIC)	3	2026	3	2026
MCE (MMC-S) v3.3 Full Deployment Decision (FDD)	4	2026	4	2026
MCE (MMC-S) v3.4 Arch, System Engr & Development	2	2026	2	2028
MCE (MMC-S) v3.4 Planned Operational Test (OT)	3	2028	3	2028
MCE (MMC-S) v3.4 Planned Army Interoperability Certification (AIC)	3	2028	3	2028
MCE (MMC-S) v3.4 Full Deployment Decision (FDD)	4	2028	4	2028

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604805A / <i>Command, Control, Comm unications Systems - Eng Dev</i>	Project (Number/Name) 593 / <i>Joint Battle Command - Platform (JBC-P)</i>

Note
In FY 2023, the Army combined the RDT&E funding from the Mounted Computing Environment (MCE) (PE 0604818/Proj EJ5) and Joint Battle Command - Platform (JBC-P) (PE 0604805A/Proj 593) lines. The RDT&E funding covers modernizing the JBC-P capability, which will be provided through the Mounted Mission Command (MMC) Family of Systems (FoS). MMC FoS includes Blue Force Tracking 3 (BFT-3) work under MMC-Transport (MMC-T) and MMC-Software (MMC-S), which was previously funded under Project EJ5.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	43.023	5.513	6.496	-	6.496	7.516	6.930	7.004	7.083	0.000	83.565
832: <i>Field Medical Systems Engineering Development</i>	-	26.582	5.513	6.496	-	6.496	7.516	6.930	7.004	7.083	0.000	67.124
849: <i>Infec Dis Drug/Vacc Ed</i>	-	16.441	-	-	-	-	-	-	-	-	0.000	16.441

A. Mission Description and Budget Item Justification

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

Projects in this PE include the following:

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

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

These Projects are managed by United States (U.S.) Army Medical Materiel Development Activity (USAMMDA) of the U.S. Army Medical Research and Development Command.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	44.400	5.513	6.598	-	6.598
Current President's Budget	43.023	5.513	6.496	-	6.496
Total Adjustments	-1.377	0.000	-0.102	-	-0.102
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.377	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.102	-	-0.102

Change Summary Explanation

Decreased funding to support higher Army priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>				Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
832: <i>Field Medical Systems Engineering Development</i>	-	26.582	5.513	6.496	-	6.496	7.516	6.930	7.004	7.083	0.000	67.124
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

	FY 2022	FY 2023	FY 2024
Title: Field Medical Systems Engineering Development - Medical Readiness	11.236	5.385	6.496
Description: Funding is provided for engineering and manufacturing development of medical products for diagnostic devices and testing of medical devices for use in the field.			
FY 2023 Plans: Laboratory Assay for TBI- Point of Care: Funding and mission realigned as part of US Army Medical Research and Development Command transfer to the Defense Health Agency in order to meet Congressional intent as outlined in National Defense Authorization Act 2019 (Sections 711) and NDAA 2020 (Section 737). Funding transferred to Program Element 0605145DHA, Project Code 375D.			
Medical Device Prototype Development and Testing (formerly Modernization of medical equipment sets): Continue to provide rapid prototype design; fabrication; evaluation and testing; and fixes for medical and medical support products, components and systems as well as harden COTS products for use in a field environment used to sustain and support the Warfighter. Continue to conduct Developmental Test and Evaluation (DT&E) as required by Army and DoD regulations, consisting of Environmental T&E IAW Mil-STD-810G; Performance Verification Testing; and Competitive Analysis.			
Airworthiness Certification: Continue tests both developmental and commercial off-the-shelf (COTS) carry-on medical equipment destined for use aboard Army aircraft required by AR 70-62, for Medical Equipment Set and Mission Essential Package with products			
FY 2024 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Medical Device Prototype Development and Testing (formerly Modernization of medical equipment sets): Will continue to provide rapid prototype design; fabrication; evaluation and testing; and fixes for medical and medical support products, components and systems as well as harden commercial products for use in a field environment used to sustain and support the Warfighter. Will continue to conduct Developmental Test and Evaluation (DT&E) as required by Army and DoD regulations, consisting of Environmental T&E IAW Mil-STD-810G; Performance Verification Testing; and Competitive Analysis.</p> <p>Airworthiness Testing: Will continue testing both developmental and commercial carry-on medical equipment destined for use aboard Army aircraft required by AR 70-62, for Medical Equipment Set and Mission Essential Package with products.</p> <p>Medical Health Applications: Transitioned some more advanced applications from 6.4 - 836 to 832. Will finalize Independent Verification and Validation, Cyber Security Assessments, and Operational Assessments of performance optimization decision aid(s) for Soldier environmental exposure data collection; Clinical Practice Guidelines (CPGs) to maintain proficiency and expertise while deployed; and optimizes Soldier cold weather clothing ensemble.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: The increase of funding in FY24 is due to the projected requirements of the Medical Health Applications program.</p>			
<p>Title: Field Medical Systems Engineering Development - Battlefield Care and Return to Fight</p> <p>Description: Funding is provided for engineering and manufacturing development of medical products for enhanced combat casualty care and follow-on care, including blood products.</p>	15.346	-	-
<p>Title: SBIR/STTR</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638.</p>	-	0.128	-
Accomplishments/Planned Programs Subtotals	26.582	5.513	6.496

C. Other Program Funding Summary (\$ in Millions)
N/A
Remarks
D. Acquisition Strategy
To support developing in-house or industrial prototypes in government-managed programs to meet military and regulatory requirements for production and fielding.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical B iological Defense Equipment - Eng Dev	Project (Number/Name) 832 / Field Medical Systems Engineering Development
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medical Product Development Management Services Cost	Various	Various : Various	60.872	2.726		2.058		3.299		-		3.299	Continuing	Continuing	Continuing
Medical Product Development Management Services Cost	PO	General Dynamics Information Technology : Frederick MD	0.752	0.300		-		-		-		-	0.000	1.052	-
SBIR/STTR Transfer	Various	Various : Various	-	-		0.128		-		-		-	0.000	0.128	-
Subtotal			61.624	3.026		2.186		3.299		-		3.299	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medical Product Development Cost	Various	Various : Various	12.896	0.691		1.631		0.652		-		0.652	Continuing	Continuing	Continuing
Cryopreserved Platelets	Various	TBD : TBD	10.915	3.514		-		-		-		-	0.000	14.429	-
Assay for Traumatic Brain Injury	C/Various	Abbott Laboratories : Chicago, IL	28.914	6.470		-		-		-		-	Continuing	Continuing	Continuing
Handheld Ultrasound	Various	TBD : TBD	-	1.461		-		-		-		-	Continuing	Continuing	Continuing
Extremity Injury Repair - Vascular	TBD	Humacyte : Morrisville, NC	-	2.541		-		-		-		-	0.000	2.541	-
Subtotal			52.725	14.677		1.631		0.652		-		0.652	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medical Device Prototype Development and Testing	Various	Various : Various	16.519	-		-		0.106		-		0.106	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete			
Airworthiness Certification and Evaluation	TBD	Various : Various	2.995	1.813		1.696		1.783		-		1.783	0.000	8.287	-	
Medical Health Applications	TBD	Various : Various	-	-		-		0.656		-		0.656	0.000	0.656	-	
Subtotal			19.514	1.813		1.696		2.545		-		2.545	Continuing	Continuing	N/A	

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete			
Cryopreserved Platelets	C/CPFF	Cellphire : Rockville, MD	17.996	1.246		-		-		-		-	0.000	19.242	-	
Freeze Dried Plasma	C/CPFF	Westat : Rockville, MD	18.383	5.820		-		-		-		-	0.000	24.203	-	
Subtotal			36.379	7.066		-		-		-		-	0.000	43.445	N/A	

Project Cost Totals	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
	170.242	26.582	5.513	6.496	-	6.496	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cryopreserved Platelets (CPP) Phase 2/3 clinical studies	[Blue Bar]				[Grey Bar]																							
Freeze-dried Plasma (FDP) Phase I safety clinical studies	[Blue Bar]																											
Freeze-dried Plasma (FDP) Phase 2 efficacy clinical studies	[Blue Bar]																											
Freeze-dried Plasma (FDP) FDA Submission	[Blue Bar]																											
Freeze-dried Plasma (FDP) Phase 3 FDA Post Marketing	[Blue Bar]																											
Assay for TBI Point of Care Device Clinical Trial (Whole...)	[Blue Bar]																											
Extremity Injury Repair - Vascular- Pivotal Study	[Blue Bar]																											
Extremity Injury Repair - Vascular- Environmental Testi...	[Blue Bar]																											
Handheld Ultrasound - Developmental Testing	[Blue Bar]																											
Medical Health Applications													[Blue Bar]															

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 832 / <i>Field Medical Systems Engineering Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Cryopreserved Platelets (CPP) Phase 2/3 clinical studies	3	2017	4	2022
Freeze-dried Plasma (FDP) Phase I safety clinical studies	3	2014	4	2022
Freeze-dried Plasma (FDP) Phase 2 efficacy clinical studies	2	2016	4	2022
Freeze-dried Plasma (FDP) FDA Submission	1	2021	3	2022
Freeze-dried Plasma (FDP) Phase 3 FDA Post Marketing	1	2022	4	2022
Assay for TBI Point of Care Device Clinical Trial (Plasma)	1	2021	4	2021
Assay for TBI Point of Care Device Clinical Trial (Whole Blood)	4	2021	4	2022
Extremity Injury Repair - Vascular- Pivotal Study	1	2022	4	2022
Extremity Injury Repair - Vascular- Environmental Testing/Operational Testing	4	2022	4	2022
Handheld Ultrasound - Developmental Testing	1	2022	4	2022
Medical Health Applications	1	2024	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev	Project (Number/Name) 849 / Infec Dis Drug/Vacc Ed
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
849: <i>Infec Dis Drug/Vacc Ed</i>	-	16.441	-	-	-	-	-	-	-	-	0.000	16.441
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds development of candidate medical countermeasures (MCM: e.g., vaccines, drugs, diagnostic kits/devices) for militarily relevant endemic infectious diseases. It funds research that supports conclusive human clinical trials to demonstrate MCM effectiveness safety and related manufacturing tests. This work, which is jointly performed by military laboratories, civilian contracted pharmaceutical firms and foreign research partners, is directed toward the prevention of disease, early diagnosis, and speeding recovery once diagnosed. Medical products approved for human use must meet the United States (U.S.) Food and Drug Administration (FDA) approval before MCM can be used on Warfighters. Development priority is based upon four major factors: (1) the extent of the disease within the Combatant Commands' theater of operations, (2) the clinical severity of the disease, (3) the technical maturity of the proposed solution, and (4) the affordability of the solution (development, production, and sustainment). Malaria, dysentery and dengue diseases (a severe debilitating disease transmitted by mosquitoes), which are found in all Combatant Command areas and are at the top of the infectious diseases risks list.

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

	FY 2022	FY 2023	FY 2024
Title: Infectious Disease Drug and Vaccine Engineering Development - Medical Readiness	12.329	-	-
Description: Funding is provided for the development of candidate medical countermeasures for military relevant infectious diseases focusing on prevention to increase medical readiness. Funding supports both technical evaluations and human clinical testing to assure the safety and effectiveness of vaccines.			
Title: Infectious Disease Drug and Vaccine Engineering Development - Battlefield Care and Return to Fight	4.112	-	-
Description: Funding for research and development efforts for drugs for treatment and devices for early diagnosis for infectious diseases that are top threats to deployed US forces. Funds research that supports conclusive human clinical trials to demonstrate effectiveness, safety and related manufacturing tests			
Accomplishments/Planned Programs Subtotals	16.441	-	-

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

N/A

Remarks

D. Acquisition Strategy

To support testing and evaluation of in-house and commercially developed products in government-managed trials to meet FDA requirements.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical B iological Defense Equipment - Eng Dev	Project (Number/Name) 849 / Infec Dis Drug/Vacc Ed
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medical Product Development Management Services Cost	Various	Various : Various	32.561	0.620		-		-		-		-	Continuing	Continuing	Continuing
Medical Product Development Management Services Cost	C/CPFF	General Dynamics Information Technology : Frederick MD	14.675	2.191		-		-		-		-	0.000	16.866	-
Subtotal			47.236	2.811		-		-		-		-	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Rapid Human Diagnostics	Various	Inbios, Inc : Seattle WA	3.443	2.415		-		-		-		-	0.000	5.858	-
Subtotal			3.443	2.415		-		-		-		-	0.000	5.858	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Malaria Treatment Drug - Intravenous Artesunate	C/FFP	Amicas, LLC : MD	-	0.747		-		-		-		-	0.000	0.747	-
Subtotal			-	0.747		-		-		-		-	0.000	0.747	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Dengue Tetravalent Vaccine	TBD	WRAIR/AFRIMS : Silver Spring MD	3.440	0.883		-		-		-		-	0.000	4.323	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / Medical Materiel/Medical Biological Defense Equipment - Eng Dev	Project (Number/Name) 849 / Infec Dis Drug/Vacc Ed
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost				
Dengue Tetravalent Vaccine	C/TBD	BioPath : Philippines	7.655	1.090		-		-		-		-	0.000	8.745	-	
Malaria Prophylactic Drug - Tafenoquine	Various	DVC : Frederick MD	9.373	3.520		-		-		-		-	0.000	12.893	-	
Human Immunodeficiency Virus Vaccine (HIVV)	Various	Janssen Vaccines & Prevention B.V. : Netherlands	-	3.313		-		-		-		-	0.000	3.313	-	
Human Immunodeficiency Virus Vaccine (HIVV)	TBD	PPD : Wilmington, NC	-	1.662		-		-		-		-	0.000	1.662	-	
Subtotal			20.468	10.468		-		-		-		-	0.000	30.936	N/A	
Project Cost Totals			71.147	16.441		-		-		-		-	Continuing	Continuing	N/A	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 849 / <i>Infec Dis Drug/Vacc Ed</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Dengue Tetravalent Vaccine (DTV) Clinical Trials																												
Rapid Human Diagnostic Additional Panels																												
Malaria Prophylactic Drug – Tafenoquine Post FDA Approva...																												
Block 1 HIV Phase 2B Clinical Trial																												
Block 1 HIV Phase 3 Efficacy Clinical Trial																												
Malaria Treatment Drug – Intravenous Artesunate FDA Pos...																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604807A / <i>Medical Materiel/Medical Biological Defense Equipment - Eng Dev</i>	Project (Number/Name) 849 / <i>Infec Dis Drug/Vacc Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Dengue Tetravalent Vaccine (DTV) Clinical Trials	1	2011	4	2022
Rapid Human Diagnostic Additional Panels	1	2020	4	2022
Malaria Prophylactic Drug - Tafenoquine Post FDA Approval Marketing Studies	4	2019	4	2022
Block 1 HIV Phase 2B Clinical Trial	1	2017	4	2022
Block 1 HIV Phase 3 Efficacy Clinical Trial	4	2019	4	2022
Malaria Treatment Drug - Intravenous Artesunate FDA Post marketing commitments	4	2021	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	28.622	37.150	13.581	-	13.581	23.729	13.565	6.738	6.765	0.000	130.150
016: <i>Close Combat Capabilities ENG DEV</i>	-	25.767	35.000	11.160	-	11.160	21.790	11.624	4.777	4.782	0.000	114.900
CS2: <i>Render Safe Sets Kits and Outfits (RS-SKO)</i>	-	0.883	1.026	1.008	-	1.008	1.939	1.941	1.961	1.983	0.000	10.741
CS3: <i>Next Generation Advanced Bomb Suit (NGABS)</i>	-	1.972	1.124	1.413	-	1.413	-	-	-	-	0.000	4.509

A. Mission Description and Budget Item Justification

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

Project 016: Close Combat Capabilities, covers three programs: Next Generation Advanced Bomb Suit (NGABS), Explosive Ordnance Disposal Render Safe (EOD RS) and Enhanced Robotics Payload - Render Safe (ERP-RS). It provides for the Engineering and Manufacturing Development (EMD) and demonstration of capabilities needed for Explosive Ordnance Disposal. Explosive Ordnance Disposal Render Safe (EOD RS) provides for the Engineering and Manufacturing Development (EMD) and demonstration of capabilities needed for Explosive Ordnance Disposal (EOD) teams to Render Safe (RS) US and foreign ordnance and improvised explosive devices, enabling ground force commanders to retain freedom of maneuver and secure lines of communications in multi-domain operations (MDO). Technical refresh of capabilities ensures Army 2030 formations maintain overmatch capability. EOD RS-SKO equips EOD teams with low light visual augmentation system, electronic countermeasures, subsurface explosive and hazard detection, dismounted X-ray imager, X-ray generator, trace explosive, Chemical, Biological, Radiological, and Nuclear (CBRN), and drug detection, unmanned aerial system, power management, gamma and neutron search and detection, and render safe initiation. This project will continue to support cross-service initiatives to increase commonality among information reporting and control systems. Enhanced Robotics Payload - Render Safe is a suite of modular capabilities to provide an increased level of standoff, disruption capability, and dexterity to respond to current and emergent EOD, CBRN and Engineer requirements. The Tech Effects program is in response to Army priorities and guidance to support identified gaps for Army passive defense requirements. Tech Effects executes research, development, test, and evaluation (RDT&E) on passive defense capabilities, next generation devices, and technologies to support Army's ability to meet current and emerging requirements. Tech Effects integrates RDT&E prototypes with component programs for acquisition, sustainment and maintenance.

NGABS will increase the Warfighter lethality and mobility by optimizing Soldier protection for EOD personnel, while effectively managing all life cycle aspects of Personal Protective Equipment (PPE). Warfighter lethality is increased through bomb suit weight reduction utilizing extensive investments in protective material research and development. The result is material solutions that are lighter and are pieced together in a manner which increases Soldier mobility and longevity. EOD Soldier

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army Date: March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>
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situational awareness and exposure to ballistic threats is enhanced through the NGABS HUD which allows the Soldier increased visibility under various obscurants and low/no-light situations.

Project 415: This Project provides for Engineering Manufacturing and Development (EMD) for the next generation of capabilities to detect, identify and neutralize hybrid threats and explosive hazards such as Improvised Explosive Devices (IEDs) and landmines. These capabilities are a Family of Systems (FOS) encompassing handheld, vehicle mounted, small robotic mounted, aerial platform mounted and area access, and neutralization systems operating in manned, remotely controlled, semi-autonomous or fully autonomous modes. Continued development of this FOS is necessary to support Route Clearance Platoons located within both Engineer Companies and Brigade Engineering Battalion Brigade Combat Teams.

The Husky Mounted Detection System (HMDS) is a counter-explosive device capability that provides standoff detection and marking of metallic encased caches and metallic and low-metallic antitank landmines, unexploded ordnance, trigger mechanisms, and improvised explosive devices (IEDs) in support of route and area-clearance operations. HMDS is a mission equipment package mounted on the Husky route clearance vehicle. The program was restructured in September 2016 to align with emerging shallow buried Wire Detection (WD) capabilities integrated onto the HMDS Increment A1 configuration (includes Ground Penetrating Radar (GPR)). These changes are necessary to adapt to changing IED threats. WD Technology will be fully integrated through Engineering Change Proposals (ECPs) at the end of FY20. Prototypes developed under the concluded HMDS Increment A2 effort may be leveraged in development of future capabilities. Future capabilities may include detection of deep buried IEDs and caches, and semi-autonomous control of the Husky vehicle and HMDS from inside a follow-on vehicle.

Route Clearance & Interrogation System (RCIS) Type I consists of a semi-autonomous vehicle and includes designated control vehicles and Operator Control Units (OCUs) which provide a standoff capability to detect and neutralize the full spectrum of explosive hazards. Type I integrates a semi-autonomous kit onto a High Mobility Engineering Excavator (HMEE) for remote control from a Buffalo Mine Protected Clearance Vehicle (MPCV). RCIS Type I semi-autonomous kit will be integrated onto the HMEE and be capable of interrogating and classifying explosive hazards. An OCU will be integrated into a Buffalo MPCV for Type I. RCIS capabilities will be fielded to Route Clearance Squads and Engineer Platoons which includes Tele-operation, RADAR-based Follow-Me, LIDAR obstacle detection, onscreen predictive turning map, and customizable camera views in order to achieve the RCIS mission.

Project CS2: Project CS2: Explosive Ordnance Disposal Render Safe (EOD RS) provides for the Engineering and Manufacturing Development (EMD) and demonstration of capabilities needed for Explosive Ordnance Disposal (EOD) teams to Render Safe (RS) US and foreign ordnance and improvised explosive devices, enabling ground force commanders to retain freedom of maneuver and secure lines of communications in multi-domain operations (MDO). Technical refresh of capabilities ensures AimPoint formations maintain overmatch capability. EOD RS-SKO equips EOD teams with low light visual augmentation system, electronic countermeasures, subsurface explosive and hazard detection, dismounted X-ray imager, X-ray generator, trace explosive, Chemical, Biological, Radiological, and Nuclear (CBRN), and drug detection, unmanned aerial system, power management, gamma and neutron search and detection, and render safe initiation. This project will continue to support cross-service initiatives to increase commonality among information reporting and control systems.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	29.137	12.150	12.473	-	12.473
Current President's Budget	28.622	37.150	13.581	-	13.581
Total Adjustments	-0.515	25.000	1.108	-	1.108
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	25.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.515	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	1.108	-	1.108

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

Project: 016: *Close Combat Capabilities ENG DEV*

Congressional Add: *Prototype Integration for Multi-Domain Operations - Congressional Add*

Congressional Add: *Congressional Add: Prototype Integration*

Congressional Add Subtotals for Project: 016

Congressional Add Totals for all Projects

	FY 2022	FY 2023
	15.000	-
	-	25.000
Congressional Add Subtotals for Project: 016	15.000	25.000
Congressional Add Totals for all Projects	15.000	25.000

Change Summary Explanation

Increase is due to an increased and accelerated need at the Army Service Component Commands (ASCCs) based on increasing and accelerated threat capability. Increase allows accelerated capacity development for program/project management and for the industrial base allowing for accelerated research, development, testing, training, and fielding to the operational forces.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 016 / Close Combat Capabilities ENG DEV			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
016: Close Combat Capabilities ENG DEV	-	25.767	35.000	11.160	-	11.160	21.790	11.624	4.777	4.782	0.000	114.900
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 016 Close Combat Capabilities, covers three programs: Next Generation Advanced Bomb Suit (NGABS), Explosive Ordnance Disposal Render Safe (EOD RS) and Enhanced Robotics Payload - Render Safe (ERP-RS).

NGABS directly contributes to Soldier lethality and ground force commander freedom of maneuver by providing next generation sensor and optics in the cutting-edge Heads-Up-Display (HUD) while integrating the Government's latest investments in protective material for the modular, scalable NGABS bomb suit development. NGABS will increase the Warfighter survivability and mobility by optimizing Soldier protection for EOD personnel, while effectively managing all life cycle aspects of Personal Protective Equipment (PPE). Warfighter lethality is increased through bomb suit weight reduction utilizing extensive investments in protective material research and development. The result is material solutions that are lighter and are pieced together in a manner which increases Soldier mobility and longevity. EOD Soldier situational awareness and exposure to ballistic threats is enhanced through the NGABS HUD which allows the Soldier increased visibility under various obscurants and low/no-light situations. Funds were transferred from APE 0604808016 to APE 0604808CS3 to clearly define the functions that are being completed with the NGABS funding line.

Enhanced Robotics Payload - Render Safe (ERP-RS) will enable EOD teams to access, render safe, and dispose of explosive ordnances (EO) while removing Soldiers from the direct effects of explosive blast and fragmentation. ERP-RS consists of three modules that will mount on existing Host Unmanned Ground Vehicles (HUGVs) in EOD units: (1) Highly Dexterous Manipulation System that has increased lift capacity and dexterity over current manipulators, using dual arm manipulation, will contribute to access, render safe, and disposal of sensitive EO, (2) a Multi-Shot Disruptor Module that provides remote selectable and precise disruption of surface laid or suspended EO, and (3) a Precision Aim module to provide accurate disruption of surface laid or suspended EO with the Multi-Shot Disrupter Module. These ERP-RS capabilities will provide a level of access, render safe, and disposal of EO that would currently require a Soldier to expose themselves to explosive hazards.

Explosive Ordnance Disposal Render Safe (EOD RS) provides for the Engineering and Manufacturing Development (EMD) and demonstration of capabilities needed for Explosive Ordnance Disposal (EOD) teams to Render Safe (RS) US and foreign ordnance and improvised explosive devices, enabling ground force commanders to retain freedom of maneuver and secure lines of communications in multi-domain operations (MDO). Technical refresh of capabilities ensures Army 2030 formations maintain overmatch capability. EOD RS-SKO equips EOD teams with low light visual augmentation system, electronic countermeasures, subsurface explosive and hazard detection, dismounted X-ray imager, X-ray generator, trace explosive, Chemical, Biological, Radiological, and Nuclear (CBRN), and drug detection, unmanned aerial system, power management, gamma and neutron search and detection, and render safe initiation. This project will continue to support cross-service initiatives to increase commonality among information reporting and control systems. Funds were transferred from APE 0604808016 to APE 0604808CS2 in FY 2023.

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

	FY 2022	FY 2023	FY 2024
Title: SBIR/STTR Transfer	-	0.365	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC 638.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638.</p>				
<p>Title: Prototype Integration for Multi-Domain Operations</p> <p>Description: Integrating prototype efforts to support force protection and signature management related to critical mission threads, operational constructs (Multi-Domain Operations) and key weapon system including responding to impending Army requirements. Effort will support capability and capacity to meet Army strategic guidance in support of the National Defense Strategy and other related Army efforts.</p> <p>The Tech Effects program is in response to Army priorities and guidance to support identified gaps for Army passive defense requirements. Tech Effects executes research, development, test, and evaluation (RDT&E) on passive defense capabilities, next generation devices, and technologies to support Army's ability to meet current and emerging requirements. Tech Effects integrates RDT&E prototypes with component programs for acquisition, sustainment and maintenance.</p> <p>FY 2023 Plans: FY 2023 funding in the amount of \$10 million will continue the integration of prototype efforts to support force protection and signature management related to critical mission threads, operational constructs (Multi-Domain Operations) and key weapon systems. This effort supports the Secretariat and Global Security Initiatives in identified Army Research, Development, Test and Evaluation (RDTE) requirements to ensure capability, capacity and readiness of Army Military capabilities. Includes next generation devices and technologies to support Army's ability to meet current and emerging requirements, integrating RDTE prototypes with Component programs for acquisition, sustainment and maintenance. Funding includes supporting capability and capacity to meet Army strategic guidance in support of the National Defense Strategy, and other related Army efforts.</p> <p>FY 2024 Plans: Will research and prototype singular and hybrid signature management capabilities to meet Army guidance. Will test and evaluate previously developed prototypes within realistic operational environments. Will coordinate current and future priorities with Joint Staff J8, HQDA G/3/5/7 and TRADOC/CAC on investment pathways for technology development, insertion and/or integration. Will integrate best practices, technical innovations, and development pathways with key stakeholders across Joint Staff, Army, and other Service elements.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>		10.695	9.635	3.566

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Decrease in funding due to a reduction of research and prototyping singular hybrid signature management capabilities.				
Title: Enhanced Robotics Payload - Render Safe (ERP-RS)		-	-	7.594
Description: Develop a suite of three modular capabilities to provide an increased level of standoff, disruption capability, and dexterity to respond to current and emergent EOD, Chemical, Biological, Radiological and Nuclear (CBRN), and Engineer requirements.				
FY 2024 Plans: FY 2024 funding will be used to enter Milestone B to create integrated prototype within the Engineering and Manufacturing Development phase. Program will award contracts to continue development of the precision aim module and the multi-shot disruptor module for Phase 1 development to support force protection and provide the Warfighter with safe, standoff detection, and render safe capabilities against Explosive Ordnance. Program will also begin a competitive source selection effort for the Highly Dexterous Manipulation System.				
FY 2023 to FY 2024 Increase/Decrease Statement: Enhanced Robotics Payload - Render Safe is a new start in FY 2024.				
Title: Explosive Ordnance Disposal (EOD) Render Safe (RS)		0.072	-	-
Description: Render Safe (RS) procedures require technicians to employ a wide variety of capabilities and explosives.				
Accomplishments/Planned Programs Subtotals		10.767	10.000	11.160
		FY 2022	FY 2023	
Congressional Add: Prototype Integration for Multi-Domain Operations - Congressional Add		15.000	-	
FY 2022 Accomplishments: FY 2022 Congressional Add funding supported integrating additional prototype efforts to enable Army operational initiative, freedom of movement, and system survivability aligned to Army 6+2 modernization priorities. Integration provided enhanced force protection and signature management related to critical mission threads, operational constructs (Multi-Domain Operations) and key weapon systems. Provided research, development, test, evaluation, support and training of information operations related technology and activities. Continued development of multiple systems aligned to full-spectrum signature management in coordination with relevant stakeholders. Conducted Research, Development, Test and Evaluation efforts toward new systems, to include next generation efforts as recommended during the POM review.				
Congressional Add: Congressional Add: Prototype Integration		-	25.000	

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV

	FY 2022	FY 2023
FY 2023 Plans: FY2023 Congressional Add funding will provide research, development, test, evaluation, support, and procurement of information operations related technology and activities.		
Congressional Adds Subtotals	15.000	25.000

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• R63610: Render Safe Sets kits Outfits	84.000	-	0.000	-	0.000	13.749	10.617	12.646	12.657	Continuing	Continuing
• CS2: Render Safe Sets Kits and Outfits (RS-SKO)	0.883	1.026	1.008	-	1.008	1.939	1.941	1.961	1.983	0.000	10.741

Remarks

D. Acquisition Strategy

The Next Generation Advanced Bomb Suit (NGABS) Program utilizes a competitive, developmental, innovative and efficient Other Transaction Authority (OTA) in EMD through the Fort Belvoir Sensor Communication and Electronic Consortium (SCEC) which will result in a production ready prototype leading to a Production and Deployment (PD) phase for full capability while ensuring best value to the Army. Milestone (MS) B / Material Development Decision (MDD) occurred in FY 2018 and MS C is scheduled for FY 2022.

The Explosive Ordnance Disposal (EOD) Render Safe (RS) program utilizes existing government contract vehicles to acquire Electronic Countermeasure (ECM) prototype systems for testing and evaluation of the systems for down selection and inclusion in the capabilities package during Engineering and Manufacturing Development. The program will continue to use the existing government contract vehicles for the production and deployment phase as well as to continue the development of capabilities during the 5 phase technical refresh.

The Multi-Domain Operations (MDO) program utilizes existing government contract vehicles to integrate prototype efforts to support force protection and signature management related to critical mission threads, operational constructs and key weapons systems.

The Enhanced Robotics Payload - Render Safe (ERP-RS) will utilize existing and/or new government contracts to integrate technologies and test competitive prototypes of the Precision Aim Module and Multi-Shot Disruptor Module in Phase 1. New contracts are anticipated for the integration and test of the High Dexterous Manipulation System Module in Phase 2. The Phase 2 contracts allow for further assessment and understanding of performance and integration challenges of competitive prototypes. Existing government contracts will be utilized for the production and deployment of each module. Initial first article test samples will undergo IOT&E prior to full production.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604808A / Landmine Warfare/Barrier - Eng Dev				016 / Close Combat Capabilities ENG DEV							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-	-		0.365		-		-		-	Continuing	Continuing	Continuing
Subtotal			-	-		0.365		-		-		-	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prototype Integration for Multi-Domain Operations	TBD	TBD : TBD	10.535	10.695	Jan 2022	9.635	May 2023	3.566	Jan 2024	-		3.566	0.000	34.431	Continuing
ERP RS Development Contract	TBD	TBD : TBD	-	-		-		6.624	Mar 2024	-		6.624	0.000	6.624	-
Prototype Integration for Multi-Domain Operations - Cong Add	Option/IDIQ	Huntsville Alabama : Huntsville AL	15.000	15.000	Apr 2022	25.000	May 2023	-		-		-	0.000	55.000	-
Subtotal			25.535	25.695		34.635		10.190		-		10.190	0.000	96.055	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ERP RS	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	-	-		-		0.670	Oct 2023	-		0.670	0.000	0.670	-
EOD RS	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	0.072	0.072	Jun 2022	-		-		-		-	0.000	0.144	Continuing
Subtotal			0.072	0.072		-		0.670		-		0.670	0.000	0.814	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	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 Advanced Bomb Suit (NGABS)																												
NGABS Support Contract	█																											
Prototype Integration (PI) for Multi-Domain Operations (MDO)									█																			
Prototype Integration (PI) for Multi-Domain Operations (...)					█																							
ERP RS																												
ERP RS Phase I Development Contract									█																			
ERP RS Phase I Prototype Testing													█															
ERP RS Phase I Critical Design Review													█															
ERP RS Phase I Operational Assessment																	█											
ERP RS Milestone C																					▲							
ERP RS Phase I Multi-Shot Procurement																					█							
ERP RS Phase I PAM Procurement																					█							
ERP RS Phase I Initial Operational Test and Evaluation																									█			

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
ERP RS Phase I Material Release																																
ERP RS Phase I Initial Operational Capability																																
ERP RS Phase II EMD Source Selection																																
ERP RS Phase II Preliminary Design Review																																
ERP RS Phase II Prototype Testing																																
ERP RS Phase II Critical Design Review																																
ERP RS Phase II Operational Assessment																																
ERP RS Phase II Down-Selection																																
ERP RS Phase II Milestone C																																
ERP RS Phase II Procurement																																
ERP RS Phase II Initial Operational Test and Evaluation																																
ERP RS Phase II Material Release																																
Explosive Ordnance Disposal (EOD) Render Safe (RS)																																

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EOD RS Phase 0 Prototype Testing	■																											
EOD RS Phase 0 Solution Down Selection	▲																											
EOD RS Phase 0 Loadset Development		■	■	■																								
EOD RS SKO Phase 0 ECM Final Prototype Design Build		■	■	■																								
EOD RS Phase 0 ECM ECM Test and Evaluation			■	■																								
EOD RS Phase 0 ECM Critical Design Review				■																								
EOD RS Technical Refresh (Multi Phase)																												
EOD RS Initial Technical Refresh																												
EOD RS Technical Refresh Phase 1																												
EOD RS Technical Refresh Phase 2																												
EOD RS Technical Refresh Phase 3																												
EOD RS Technical Refresh Phase 4																												
EOD RS Technical Refresh Phase 5																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 016 / <i>Close Combat Capabilities ENG DEV</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Next Generation Advanced Bomb Suit (NGABS)	1	2017	4	2022
NGABS Materiel Development Decision (MDD)	2	2018	2	2018
NGABS OTA phase 1 (suit, sensors, HUD PDR/CDR)	4	2019	2	2020
NGABS OTA phase 2 (sensor, HUD CDR, suit HFE)	2	2020	4	2020
NGABS OTA phase 3 (integration, developmental test)	4	2020	3	2021
NGABS Support Contract	1	2022	1	2022
Prototype Integration (PI) for Multi-Domain Operations (MDO)	3	2023	3	2024
Prototype Integration (PI) for Multi-Domain Operations (MDO) - Cong Add	3	2022	3	2023
ERP RS	1	2025	4	2026
ERP RS Phase I Development Contract	2	2024	4	2024
ERP RS Phase I Prototype Testing	1	2025	3	2025
ERP RS Phase I Critical Design Review	4	2025	4	2025
ERP RS Phase I Operational Assessment	1	2026	2	2026
ERP RS Milestone C	4	2026	4	2026
ERP RS Phase I Multi-Shot Procurement	4	2026	3	2029
ERP RS Phase I PAM Procurement	4	2026	4	2029
ERP RS Phase I Initial Operational Test and Evaluation	2	2027	3	2027
ERP RS Phase I Material Release	3	2027	4	2027
ERP RS Phase I Initial Operational Capability	3	2028	3	2028
ERP RS Phase I Full Operational Capability	2	2030	2	2030
ERP RS Phase II EMD Source Selection	4	2024	2	2025
ERP RS Phase II Preliminary Design Review	3	2025	3	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 016 / <i>Close Combat Capabilities ENG DEV</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
ERP RS Phase II Prototype Testing	2	2026	3	2026
ERP RS Phase II Critical Design Review	4	2026	4	2026
ERP RS Phase II Operational Assessment	1	2027	2	2027
ERP RS Phase II Down-Selection	3	2027	3	2027
ERP RS Phase II Milestone C	4	2027	4	2027
ERP RS Phase II Procurement	1	2028	4	2033
ERP RS Phase II Initial Operational Test and Evaluation	3	2028	4	2028
ERP RS Phase II Material Release	4	2028	1	2029
ERP RS Phase II Initial Operational Capability	2	2029	2	2029
ERP RS Phase II Full Operational Capability	4	2033	4	2033
Explosive Ordnance Disposal (EOD) Render Safe (RS)	1	2020	4	2027
EOD RS Phase 0 Market Survey	4	2020	4	2020
EOD RS Phase 0 Development Contracts	4	2020	3	2021
EOD RS Phase 0 Prototype Testing	2	2021	1	2022
EOD RS Phase 0 ECM Preliminary Design Review	4	2021	4	2021
EOD RS Phase 0 Solution Down Selection	1	2022	1	2022
EOD RS Phase 0 Loadset Development	2	2022	4	2023
EOD RS SKO Phase 0 ECM Final Prototype Design Build	2	2022	4	2022
EOD RS Phase 0 ECM ECM Test and Evaluation	3	2022	4	2022
EOD RS Phase 0 ECM Critical Design Review	4	2022	4	2022
EOD RS Technical Refresh (Multi Phase)	1	2023	4	2028
EOD RS Initial Technical Refresh	1	2023	4	2023
EOD RS Technical Refresh Phase 1	1	2024	4	2024
EOD RS Technical Refresh Phase 2	1	2025	4	2025
EOD RS Technical Refresh Phase 3	1	2026	4	2026

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 016 / <i>Close Combat Capabilities ENG DEV</i>

Events	Start		End	
	Quarter	Year	Quarter	Year
EOD RS Technical Refresh Phase 4	1	2027	4	2027
EOD RS Technical Refresh Phase 5	1	2028	4	2028

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) CS2 / Render Safe Sets Kits and Outfits (RS-SKO)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
CS2: Render Safe Sets Kits and Outfits (RS-SKO)	-	0.883	1.026	1.008	-	1.008	1.939	1.941	1.961	1.983	0.000	10.741
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project CS2: Explosive Ordnance Disposal Render Safe (EOD RS) provides for the Engineering and Manufacturing Development (EMD) and demonstration of capabilities needed for Explosive Ordnance Disposal (EOD) teams to Render Safe (RS) US and foreign ordnance and improvised explosive devices, enabling ground force commanders to retain freedom of maneuver and secure lines of communications in multi-domain operations (MDO). Technical refresh of capabilities ensures Army 2030 formations maintain overmatch capability. EOD RS-SKO equips EOD teams with low light visual augmentation system, electronic countermeasures, subsurface explosive and hazard detection, dismounted X-ray imager, X-ray generator, trace explosive, Chemical, Biological, Radiological, and Nuclear (CBRN), and drug detection, unmanned aerial system, power management, gamma and neutron search and detection, and render safe initiation. This project will continue to support cross-service initiatives to increase commonality among information reporting and control systems. FY2024 request will continue support the yearly review of capabilities for tech refresh needs focusing on the threat overmatch or technology obsolescence of the fielded equipment.

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

	FY 2022	FY 2023	FY 2024
Title: Explosive Ordnance Disposal (EOD) Render Safe (RS)	0.883	0.989	1.008
FY 2023 Plans: FY 2023 funding will support the build of production representative systems and their technical evaluation. FY 2023 funding will also support the first phase of technical refresh of RS SKO capabilities to ensure AimPoint formations maintain overmatch capability.			
FY 2024 Plans: FY 2024 funding will support the tech refresh of the RS SKO capabilities to ensure Army 2030 formations maintain overmatch capability, address technology obsolescence and assess solutions to provide increased effectiveness of the RS SKO components by focusing on objective space requirements.			
FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 request has decreased to continue support the yearly review of capabilities for tech refresh needs.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	-	0.037	-
Description: Funding transferred in accordance with Title 15 USC 638.			
FY 2023 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) CS2 / Render Safe Sets Kits and Outfits (RS-SKO)
--	--	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC 638.			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638.			
Accomplishments/Planned Programs Subtotals	0.883	1.026	1.008

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 016: Close Combat Capabilities ENG DEV	25.767	35.000	11.160	-	11.160	21.790	11.624	4.777	4.782	0.000	114.900
• R63701: Render Safe Sets Kits Outfits	84.000	-	0.000	-	0.000	13.749	10.617	12.646	12.657	Continuing	Continuing

Remarks

D. Acquisition Strategy
The Explosive Ordnance Disposal (EOD) Render Safe (RS) program utilizes existing government contract vehicles to acquire RS SKO Kits. The program will continue to use the existing government contract vehicles for the production and deployment phase as well as to continue the development of capabilities during the 5-phase technical refresh.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) CS2 / Render Safe Sets Kits and Outfits (RS-SKO)
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	TBD : TBD	-	-		0.037		-		-		-	0.000	0.037	-
Subtotal			-	-		0.037		-		-		-	0.000	0.037	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Manufacturing	MIPR	U.S. ARMY TANK-AUTOMOTIVE & ARMAMENTS COMMAND : Warren, MI	-	0.269	Jun 2022	-		-		-		-	0.000	0.269	-
Subtotal			-	0.269		-		-		-		-	0.000	0.269	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EOD RS - Engineering Support	MIPR	DEVCOM C5ISR Center : Aberdeen Proving Ground (APG), MD	-	0.078	Sep 2022	0.579	Feb 2023	0.200	Nov 2023	-		0.200	Continuing	Continuing	-
EOD-RS - Engineering Support	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	-	0.300	May 2022	0.215	Oct 2022	0.684	Nov 2023	-		0.684	Continuing	Continuing	-
EOD-RS - Engineering Support	MIPR	Naval Air Warfare Center Weapons Division : Patuxent River, MD	-	0.236	Jun 2022	-		-		-		-	0.000	0.236	-
Subtotal			-	0.614		0.794		0.884		-		0.884	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) CS2 / Render Safe Sets Kits and Outfits (RS-SKO)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028																										
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																							
Explosive Ordnance Disposal (EOD) Render Safe (RS)																																																			
EOD RS Phase 0 Prototype Testing	■																																																		
EOD RS Phase 0 Solution Down Selecting	▲																																																		
EOD RS Phase 0 Loadset Development	■																																																		
EOD RS Phase 0 ECM Final Prototype Design Build	■																																																		
EOD RS Phase 0 ECM Test and Evaluation	■																																																		
EOD RS Phase 0 Critical Design Review	■																																																		
EOD RS Technical Refresh (Multi Phase)	■																																																		
EOD RS Initial Technical Refresh	■																																																		
EOD RS Technical Refresh Phase 1	■																																																		
EOD RS Technical Refresh Phase 2	■																																																		
EOD RS Technical Refresh Phase 3	■																																																		
EOD RS Technical Refresh Phase 4	■																																																		

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev		Project (Number/Name) CS2 / Render Safe Sets Kits and Outfits (RS-SKO)	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EOD RS Technical Refresh Phase 5																									Phase 5 Tech Refresh			

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) CS2 / <i>Render Safe Sets Kits and Outfits (RS-SKO)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Explosive Ordnance Disposal (EOD) Render Safe (RS)	1	2020	4	2025
EOD RS Phase 0 Market Survey	4	2020	4	2020
EOD RS Phase 0 Development Contracts	4	2020	3	2021
EOD RS Phase 0 Prototype Testing	2	2021	1	2022
EOD RS Phase 0 ECM Preliminary Design Review	4	2021	4	2021
EOD RS Phase 0 Solution Down Selecting	1	2022	1	2022
EOD RS Phase 0 Loadset Development	2	2022	4	2023
EOD RS Phase 0 ECM Final Prototype Design Build	2	2022	4	2022
EOD RS Phase 0 ECM Test and Evaluation	3	2022	4	2022
EOD RS Phase 0 Critical Design Review	4	2022	4	2022
EOD RS Technical Refresh (Multi Phase)	1	2023	4	2028
EOD RS Initial Technical Refresh	1	2023	4	2023
EOD RS Technical Refresh Phase 1	1	2024	4	2024
EOD RS Technical Refresh Phase 2	1	2025	4	2025
EOD RS Technical Refresh Phase 3	1	2026	4	2026
EOD RS Technical Refresh Phase 4	1	2027	4	2027
EOD RS Technical Refresh Phase 5	1	2028	4	2028

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) CS3 / Next Generation Advanced Bomb Suit (NGABS)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
CS3: Next Generation Advanced Bomb Suit (NGABS)	-	1.972	1.124	1.413	-	1.413	-	-	-	-	0.000	4.509
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding in this project supports the Soldier Lethality Cross Functional Team (CFT).

The NGABS program directly contributes to Soldier lethality and ground force commander freedom of maneuver by providing next generation sensor and optics in the cutting-edge Heads-Up-Display (HUD) while integrating the Government's latest investments in protective material for the modular, scalable NGABS bomb suit development. NGABS will increase the Warfighter survivability and mobility by optimizing Soldier protection for EOD personnel, while effectively managing all life cycle aspects of Personal Protective Equipment (PPE). Warfighter lethality is increased through bomb suit weight reduction utilizing extensive investments in protective material research and development. The result is material solutions that are lighter and are pieced together in a manner which increases Soldier mobility and longevity. EOD Soldier situational awareness and exposure to ballistic threats is enhanced through the NGABS HUD which allows the Soldier increased visibility under various obscurants and low/no-light situations.

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

	FY 2022	FY 2023	FY 2024
Title: Next Generation Advanced Bomb Suit (NGABS)	1.972	1.083	1.413
<p>Description: The objective of this effort is to increase the Warfighter lethality, modularity, and mobility, by optimizing Soldier protection and situational awareness for EOD personnel. The mission of this program is to enhance the tactical utility and applicability of this bomb suit concept by incorporating modularity/scalability and sensor technologies that are non-existent in legacy designs. This new, tailorable, full body protective system will provide a significantly increased capability at a reduced weight.</p> <p>FY 2023 Plans: During FY23, the NGABS program will accomplish Pre-Planned Product Improvements (P3I) that will focus on improving situational awareness and cooling system improvements that can be on-ramped onto the NGABS production contract. The TRADOC Proponent Office - Explosive Ordnance Disposal (TPO-EOD) has already identified the daylight camera, adding USB/HDMI port, smaller and higher resolution sensors, and the cooling system as candidates for the NGABS program to upgrade and improve capabilities.</p> <p>FY 2024 Plans: The NGABS program will continue Pre Planned Product Improvement (P3I) that will focus on improving situational awareness and reduce head/neck borne weight that can be on-ramped onto the NGABS production contract. For improving situational awareness,</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) CS3 / Next Generation Advanced Bomb Suit (NGABS)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
the NGABS program will continue to upgrade and improve the daylight camera, and to upgrade to smaller and higher resolution sensors. For reducing the head/neck borne weight the NGABS program will explore approaches to shift the weight of the NGABS helmet, to include all components, from the head/neck to the shoulders and/or hips. FY 2023 to FY 2024 Increase/Decrease Statement: The increase in funding from FY23 to FY24 is due to the implementation of the head/neck borne weight P3I scheduled for FY24.			
Title: SBIR/STTR Description: Funding transferred in accordance with Title 15 USC 638 FY 2023 Plans: Funding transferred in accordance with Title 15 USC 638 FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638	-	0.041	-
Accomplishments/Planned Programs Subtotals	1.972	1.124	1.413

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OMA - 121017000: Central Issue Facilities/Initial Issue: Organizational Clothing and Equip	-	-	17.205	-	17.205	-	-	-	-	0.000	17.205

Remarks

D. Acquisition Strategy
The Next Generation Advanced Bomb Suit (NGABS) Program utilizes a competitive, developmental, innovative and efficient Other Transaction Authority (OTA) in EMD through the Fort Belvoir Sensor Communication and Electronic Consortium (SCEC) which will result in a production ready prototype leading to a Production and Deployment (PD) phase for full capability while ensuring best value to the Army.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) CS3 / Next Generation Advanced Bomb Suit (NGABS)
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NGABS	Allot	PdM SPE : Fort Belvoir	-	0.338		-		-		-		-	0.000	0.338	Continuing
Program Management Support	Allot	PdM SPE : Fort Belvoir	-	-		0.256		0.303		-		0.303	0.000	0.559	Continuing
SBIR/STTR Transfer	TBD	To Be Determined : To Be Determined	-	-		0.041		-		-		-	0.000	0.041	Continuing
Subtotal			-	0.338		0.297		0.303		-		0.303	0.000	0.938	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NGABS - Production Prototype Development	C/FFP	TBD : Manufacturing Techniques Inc. (MTEQ), Lorton, VA	-	1.009		0.684		0.981		-		0.981	0.000	2.674	Continuing
Subtotal			-	1.009		0.684		0.981		-		0.981	0.000	2.674	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NGABS Support Costs	MIPR	TBD : Various	-	0.467		-		-		-		-	0.000	0.467	Continuing
Subtotal			-	0.467		-		-		-		-	0.000	0.467	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NGABS Test & Evaluation	Allot	TBD : Various	-	0.158		0.143		0.129		-		0.129	0.000	0.430	Continuing
Subtotal			-	0.158		0.143		0.129		-		0.129	0.000	0.430	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev			Project (Number/Name) CS3 / Next Generation Advanced Bomb Suit (NGABS)					
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	1.972	1.124	1.413	-	1.413	0.000	4.509	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) CS3 / Next Generation Advanced Bomb Suit (NGABS)	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	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 Reduce head/neck borne weight					NGABS Pre Planned Product Improvements																							
P3I Improving situational awareness					NGABS Pre Planned Product Improvements																							

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) CS3 / <i>Next Generation Advanced Bomb Suit (NGABS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
P3I Reduce head/neck borne weight	1	2023	4	2024
P3I Improving situational awareness	1	2023	4	2024

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	146.291	131.190	168.574	-	168.574	103.953	99.482	93.877	91.739	Continuing	Continuing
323: Common Hardware Systems	-	4.424	5.121	4.630	-	4.630	5.026	5.033	5.086	5.143	Continuing	Continuing
C29: Centralized Technical Support Facility (CTSF)	-	7.077	32.248	4.380	-	4.380	4.484	4.591	4.696	4.748	Continuing	Continuing
C34: Army Tac C2 Sys Eng	-	9.061	11.866	11.141	-	11.141	11.448	11.461	11.584	11.713	Continuing	Continuing
DD1: Unified Network Technology Trans & Integ (UNTTI)	-	-	-	7.898	-	7.898	4.455	4.549	4.398	4.237	0.000	25.537
EJ4: COMMAND POST COMPUTING ENVIRONMENT (CPCE)	-	33.835	27.995	45.489	-	45.489	27.707	27.740	28.036	28.348	Continuing	Continuing
EJ5: MOUNTED COMPUTING ENVIRONMENT (MCE)	-	21.076	-	-	-	-	-	-	-	-	Continuing	Continuing
EJ6: TACTICAL ENHANCEMENT	-	7.573	-	9.040	-	9.040	-	-	-	-	0.000	16.613
EK9: TACTICAL NETWORK OPERATIONS AND MANAGEMENT	-	3.243	3.400	49.577	-	49.577	25.357	26.111	26.651	27.326	0.000	161.665
EQ8: Mobile/Handheld Computing Environment (M/HHCE)	-	4.919	5.298	7.549	-	7.549	6.284	5.291	5.347	5.408	Continuing	Continuing
ER9: Expeditionary Army Command Post	-	46.080	31.463	28.870	-	28.870	19.192	14.706	8.079	4.816	0.000	153.206
EW3: Unit Task Reorganization (UTR) Development	-	9.003	13.799	-	-	-	-	-	-	-	Continuing	Continuing

Note
 Project EW3, Unit Task Reorganization (UTR) funding has been re-aligned to the Tactical Network Operations Management (TNOM) 654818 / EK9 funding line beginning in FY 2024.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army Date: March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>
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A. Mission Description and Budget Item Justification

A portion of this funding line is directly aligned to the Army Network Modernization Priority. This funding line supports the Army Network Modernization Strategy LOE 1, Unified Network, LOE 2 - Common Operating Environment and LOE 4 - Command posts.

Project 323, Common Hardware Systems (CHS) is an ACAT III program that is a key enabler of the Army Modernization Priorities in support of the Army's Network Modernization Strategy Lines of Effort: (1) Unified Network Transport, (2) Common Operating Environment, (3) Interoperability, and (4) Command Post Mobility and Survivability. CHS is a mandated Army Strategic Source, as annotated in AR 25-1 that acquires and sustains highly flexible, cost-effective, and simplified non-developmental solutions that integrate the latest and emerging commercial information technology onto the Converged Mission Command Network. Efforts are aligned to support the Network Cross-Functional Team (CFT) capability set approach to achieve network modernization strategy goals. This funding line also supports network solution procurement and sustainment for U.S. Army Reserves, U.S. Army National Guard, U.S. Navy, U.S. Air Force, U.S. Marine Corps, and other Federal agencies. The CHS-5 contract averages approximately 315 contract actions annually.

Project C29, the Central Technical Support Facility (CTSF), is the Army's single strategic facility responsible for executing Army Interoperability Certification (AIC) system of system verification/validation checkout, testing, and configuration management for the Army's LandWarNet Baseline. The Centralized Technical Support Facility (CTSF) funding line supports the Army's Network Modernization Strategy Line of Effort LOE 1B Network Enabling Functions.

Project C34, the Army Tac C2 Sys Eng project funds the PEO Command, Control, Communications-Tactical (PEO C3T) System-of-Systems engineering, Enterprise and Integration efforts. The system engineering efforts are to facilitate overall network interoperability of all the various programs that must be able to seamlessly connect together while addressing their individual distinct requirements. Efforts address continuing evolution of the network within the PEO C3T portfolio of technology across capability enhancement packages, in line with the Army's capability set strategy, to deliver efficient and effective cross-domain technical solution.

Project DD1, Unified Network Technology Transition and Integration (UNTTI) is an RDT&E initiative that enables transport agnostic, high-capacity and resilient tactical communications for expeditionary operations. UNTTI will transition new and improved capabilities with reduced Size, Weight, and Power, while increasing throughput, providing network resiliency through path diversity, and Low Probability of Intercept/Low Probability of Detection. This funding significantly increases the likelihood of successfully transitioning S&T funded projects into the tactical network baseline, by further integrating and testing system prototypes that have achieved Technical Readiness Level (TRL) 7 through prior 6.4 RDT&E funding. This ensures that S&T delivers a high return on investment by inserting enhanced capabilities in accordance with capability set fieldings. In addition, UNTTI resources validation and test efforts, which improve reliability, maintainability and supportability of Tactical Network equipped units. These improvements avoid future costs by mitigating single point failures and hardening the network which ultimately increases network resiliency and unit availability for contingency operations. This funding line is directly aligned to the Army's modernization efforts. Unified Network Technology Transition and Integration (UNTTI) is directly aligned to the Army Network Modernization Strategy Line of Effort 1 (LOE 1) Unified Network and LOE 4, Command Post Mobility and Survivability. These efforts support system development and demonstration, aimed at integration and testing to validate system prototypes meet requirements.

Project EJ4, the Command Post Computing Environment (CPCE) implements an integrated, interoperable, cyber-secure, software infrastructure that serves as the host for a unified set of multiple warfighting functional applications within the command post at echelons Battalion to Army Service Component Command (ASCC); eliminating "stove-piped" legacy systems, duplicative or redundant implementations, simplifying future application development efforts, and enhancing interoperability and data

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army Date: March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>
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sharing across multiple echelons. CPCE software infrastructure and applications reside on the Tactical Services Infrastructure (TSI) hardware and BCCS/TSI servers previously fielded under the TMC/MCS program of record. CPCE/TSI provides the software and hardware infrastructure to host capabilities, such as movement and maneuver applications, network enabling tools (i.e. Cyber Situational Understanding and Tactical Defensive Cyber Operation Infrastructure), collaboration tools (Wave and XMPP Chat Servers), and warfighting function applications. This software infrastructure provides the Army's Common Operating Picture (COP) solution, enabling interoperability between command posts, mounted platforms, and dismounted handheld devices while supporting collaboration with Joint and Unified Action partners. CPCE provides common look and feel (user interface), common data strategy, interoperable tactical messaging/ chat, and essential warfighting capabilities.

Project EJ5, the Mounted Computing Environment (MCE), is one of the six computing environments (CEs) formalized by the AAE under the Common Operating Environment (COE) initiative. MCE is now called, Mounted Mission Command - Software (MMC-S), an ACAT II program, after a successful Materiel Development Decision (MDD) briefing in Feb. 2020. MMC-S standardizes end-user environments and enables streamlined deployment of new warfighting applications while leveraging existing hardware under the Joint Battle Command - Platform program. Requirements for MMC-S are established in the AROC approved COE Information Systems Initial Capability Document (IS ICD) and the approved Mounted Computing Environment Requirements Definition Package (RDP). The MMC-S will provide incremental improvements with additional application capabilities over time, and will be interoperable with Command Post and Mobile/Handheld systems.

Project EJ6, This funding line is directly aligned to the Army Network Modernization Priority. Efforts are aligned to support the Army's capability set approach to achieve the network modernization strategy.

TROPO: Tactical Enhancement supports the evaluation and testing requirements for Troposcatter Transmission (TROPO) capabilities procured and fielded under the Signal Modernization (SIGMOD) funding line, B00010. TROPO will provide redundancy communications in a Satellite denied environment by providing Beyond Line of Sight (BLOS) capability over longer ranges and at higher throughput than the current BLOS System. TROPO extends the network by utilizing a significantly reduced SWaP radio verses the current system. TROPO will enable Army units to reduce reliance on costly satellite bandwidth.

COMMAND POST NETWORKING: Enables Command Post networking capabilities by providing communications solutions to enable a more survivable Command Post against near peer advisories. The solutions will utilize advanced waveform and antenna improvements to decrease radio frequency detection and interception in the battlefield and will be integrated onto the appropriate platforms to increase Command Post survivability.

STS: Tactical Enhancement supports the evaluation and testing requirements for Sustainment Transport System (STS) capabilities procured and fielded under the CSS Communications funding line, BD3501. STS is a data transport capability through satellite communications (SATCOM) and an integrated component of the Unified Network (UN) providing unclassified communications to US Army sustainment units in their support to the warfighter. STS provides network connectivity and enables a satellite communications pathway for logistics, financial management, personnel and health service support information to be exchanged on the battlefield across multiple echelons.

Project EK9, Tactical Network Operations Management (TNOM) supports development and testing of the Unified Network Operations (UNO). Unified Network Operations (UNO) is a software-centric suite of Command and Control capabilities, designed to consolidate existing Network Operations (NetOps) tools into a simplified user-friendly application for planning, managing, monitoring, configuring, and securing the Unified Network.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	
<p>The UNO Middle Tier Acquisition (MTA) Rapid Prototyping (RP) effort provides initial development and testing of UNO prototype capabilities, through Development Operations (DEVOPS), leveraging Soldier Touch Points (STPs) to obtain user feedback to improve the UNO capabilities. UNO MTA RP efforts are authorized, under the Army Acquisition Executive (AAE) Acquisition Decision Memorandum (ADM) signed 14 May 2019, with a total cost of \$85 million RDT&E funds from FY 2019 - FY 2024, for which authority was approved.</p> <p>On 28 June 2021, Army Futures Command (AFC) Commanding General (CG) signed a memorandum approving the UNO Information Systems - Initial Capabilities Document (IS-ICD), to develop a seamless end-to-end Unified Network from enterprise to tactical echelons enabling all warfighting functions. UNO capability will support achieving a unified network through the standardization of multiple tools across Tactical Networks and systems into an integrated, simple application.</p> <p>Project EQ8, Mobile/Handheld Computing Environment (M/HHCE), is one of the six computing environments (CEs) formalized by the Army Acquisition Executive (AAE) under the Common Operating Environment (COE) initiative and supports the Nett Warrior (NW) also known as the Ground Soldier Systems (GSS) program. The program leverages commercial smart devices and secure Army tactical radios, Commercial 4G/LTE/WIFI and cloud-based infrastructure to provide the dismounted leader an integrated mission command and situational awareness system for use during combat operations. The NW system provides leaders electronic real-time information on friendly positions; information about enemy activity and movement; navigational data and map imagery; a collaborative planning tool; and other mission related graphics which effectively puts the power of the entire Army tactical network in the hands of the dismounted leader. The NW hardware is the computational platform that other M/HHCE systems run their applications. The M/HHCE will provide incremental improvements with additional application capabilities over time, and will be interoperable with Command Post CE and Mounted CE systems.</p> <p>Project ER9, Command Post Integrated Infrastructure (CPI2), fields mobile Command Post nodes by integrating mission command solutions into vehicle platforms and mounted shelter systems to enhance the survivability and mobility of command post formations. CPI2 will replace selected elements of the legacy command post to provide improved expeditionary capability, survivability, agility, and scalability for command post formations at all echelons. By integrating mission command warfighting functions on to vehicle platforms, a dispersed command post construct will enable the battle staff to blend in with the overall maneuver formation while giving the commander the ability to synchronize the close fight on the move.</p> <p>Project EW3, Unit Task Reorganization (UTR) funding line supports the Army Network Plan Framework objective to deliver a Standards Based Network Architecture. This will enable modernizing the Mission Command Network through the coordination of a common set of network operations (NetOps) tools and infrastructure development supporting the unit communication staff's ability to conduct Network Planning, Network Provisioning, and Network Management, aligning with the Army's plan for a unified network. UTR provides an integrated planning tool suite; tools and technologies to provision and automate delivery of configurations; and replace stove-piped management systems with integrated tools providing detailed views of the network and its components. The UTR funding line, in accordance with the National Defense Authorization Act (NDAA) policy for MTA funding, is leveraged by the Unified Network Operations (UNO) MTA Rapid Prototyping program to achieve its required funding levels.</p> <p>The UTR funding has been re-aligned to the TNOM 654818 / EK9 funding line beginning in FY 2024.</p> <p>The total cost of the UNO Middle Tier of Acquisition effort is \$85 million RDT&E from FY19 to FY24. The UNO is fully funded across the Future Years Defense Program.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>
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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	155.017	111.690	111.612	-	111.612
Current President's Budget	146.291	131.190	168.574	-	168.574
Total Adjustments	-8.726	19.500	56.962	-	56.962
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.291			
• Congressional Rescissions	-	-			
• Congressional Adds	-	23.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-8.726	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	56.962	-	56.962
• FFRDC Transfer	-	-0.209	-	-	-

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

Project: C29: *Centralized Technical Support Facility (CTSF)*

Congressional Add: *Red Team Automation/Zero Trust Capabilities*

Congressional Add Subtotals for Project: C29

Congressional Add Totals for all Projects

	FY 2022	FY 2023
	-	23.000
Congressional Add Subtotals for Project: C29	-	23.000
Congressional Add Totals for all Projects	-	23.000

Change Summary Explanation

Project EK9, Tactical Network Operations Management (TNOM) funding increased by \$35.749 million to support Unified Network Operations (UNO) Information Systems - Initial Capabilities Document (IS-ICD) requirements for product development of key components of the Unified Network for Department of Defense Information Networks (DODIN) operations for tactical echelons. Project EJ4, Command Post Computing Environment (CPCE) funding increased by \$17.316 million for Tactical Data Fabric, Cloud Native environment migration and integration activities.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) 323 / Common Hardware Systems			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
323: Common Hardware Systems	-	4.424	5.121	4.630	-	4.630	5.026	5.033	5.086	5.143	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Common Hardware Systems (CHS) is an inactive ACAT III program that is a key enabler of the Army Modernization Priorities in support of the Army's Network Modernization Strategy Lines of Effort: (1) Unified Network Transport, (2) Common Operating Environment, (3) Interoperability, and (4) Command Post Mobility and Survivability. CHS is a mandated Army Strategic Source, as annotated in Army Regulation (AR) 25-1 Army Information Technology (IT) that acquires and sustains highly flexible, cost-effective, and simplified non-developmental solutions that integrate the latest and emerging commercial IT onto the Converged Mission Command Network. Efforts are aligned to support the Network Cross-Functional Team (CFT) capability set approach to achieve network modernization strategy goals. This funding line also supports network solution procurement and sustainment for U.S. Army Reserves, U.S. Army National Guard, U.S. Navy, U.S. Air Force, U.S. Marine Corps, and other Federal agencies. The CHS-5 contract averages approximately 315 contract actions annually.

CHS provides technical support, warranty support, system engineering and design, and end-of-life and configuration management services to ensure interoperability and integration of hardware throughout the computing infrastructure. CHS continuously analyzes and tracks hardware from cradle to grave; from emerging technology until end of life. The program conducts hardware evaluations that facilitate and simplify the selection of common hardware solutions across numerous Army programs, agencies, Joint Services, and other Federal Agencies including: Mission Command; Tactical Network; Tactical Radios; Intelligence Systems and Analytics; Aviation Systems; Counter-Rocket, Artillery, Mortar (C-RAM); Communication Electronics Command; Combat Capabilities Development Command (DEVCOM); Army National Guard and Reserves; Navy; Air Force; Marines; the Federal Bureau of Investigation; among others. CHS rapidly procures common hardware configurations across the Capabilities Sets, the sustainment community, and tactical programs that enable the continuous modernization in support of all four Army Network Modernization Lines of Effort and Network CFT requirements. CHS logistical services include the ability to add worldwide, 72-hour turn-around repair through strategically located support centers for tactical military units. These support centers provide tailorable supply chain and cybersecurity measures, customizable warranty management, maintenance and failure rate reporting, and technical support services to support specific Army program requirements.

CHS is a model for modern acquisition strategy that strengthens the U.S. cybersecurity supply chain and manages risk by providing hardware solutions including servers, storage, clients, networking devices, tactical radios, ruggedized platforms, hand-held end devices, operational transit cases, installation kits, and peripheral devices procured from a mix of small and large businesses. CHS partners with the CECOM Integrated Logistics Support Center (ILSC) to develop a model for sustaining Commercial Off The Shelf (COTS) IT using the Standard Army Supply System.

CHS supports Better Buying Power (BBP) initiatives by through volume discounting, economies of scale, the elimination of duplication of effort, reduced barriers to entry, price breaks, streamlined processes, reduced cycle times, and centralized contracting.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) 323 / Common Hardware Systems		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Title: Acquisition Support</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2023 Plans: Will continue acquisition support for CHS and customer programs. CHS rapidly procures common hardware configurations across all four Network Modernization Lines of Effort, Capability Sets, and Network Cross Functional Team (CFT). Supports tactical programs that enable the continuous modernization of a unified network requirements, the sustainment community, and DoD and Federal Government customers. PMO costs will be covered by OMA funding.</p> <p>FY 2024 Plans: Acquisition support for CHS and customer programs. CHS rapidly procures common hardware configurations across all four Network Modernization Lines of Effort, Capability Sets, and Network Cross Functional Team (CFT). Supports tactical/operational programs that enable the continuous modernization of a unified network requirements, the sustainment community, and DoD and Federal Government customers. PMO costs will be covered by OMA funding.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding remains consistent to meet Acquisition Support requirements.</p>		2.229	2.809	2.885
<p>Title: Technical and Test Support</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2023 Plans: CHS provides technical support, environmental and survivability testing, system design, end of life/configuration management, and strengthens cyber security/supply chain management across Army tactical programs to ensure interoperability and integration of hardware throughout the computing infrastructure. CHS conducts hardware evaluations that facilitate and simplify the selection of common hardware solutions across numerous Army programs and agencies.</p> <p>FY 2024 Plans: CHS provides technical support, environmental and survivability testing, system engineering and design, end of life/configuration management, and strengthens cyber security/supply chain management across Army tactical/operational programs to ensure interoperability and integration of hardware throughout the computing infrastructure. CHS conducts hardware evaluations that facilitate and simplify the selection of common hardware solutions across numerous Army programs and agencies.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Delta decrease is based on forecasted reduction in activities in this element.</p>		1.607	1.513	1.120
<p>Title: Logistical Service Support</p>		0.386	0.408	0.417

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) 323 / Common Hardware Systems		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Description: Funding is provided for the following effort.</p> <p>FY 2023 Plans: CHS logistical services include worldwide support with a 72-hour turnaround for repairs, tailorable supply chain and cybersecurity measures, manages customizable warranty, maintenance and failure rate reporting, and technical support services to support specific Army program requirements.</p> <p>FY 2024 Plans: CHS logistical services include worldwide support with a 72-hour turnaround for repairs, tailorable supply chain and cybersecurity measures, manages customizable warranty, maintenance and failure rate reporting, and technical support services to support specific Army program requirements.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding remains consistent to meet Logistical Service Support.</p>				
<p>Title: Contract Support Services</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2023 Plans: Contract Support Services are required to provide continuing expedited acquisition support for customer procurements.</p> <p>FY 2024 Plans: Contract Support Services are required to provide continuing expedited acquisition support for customer procurements.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding remains consistent to meet Contract Support Services.</p>		0.202	0.204	0.208
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638.</p>		-	0.187	-
Accomplishments/Planned Programs Subtotals		4.424	5.121	4.630

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) 323 / <i>Common Hardware Systems</i>

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

N/A

Remarks

D. Acquisition Strategy

CHS is currently executing an approved acquisition strategy to facilitate the procurement of commercial IT through a single step, full and open competition contract. The fifth generation of the contract (CHS-5) was awarded on 23 AUG 2018; 5 years/IDIQ. A single prime vendor was selected as the program integrator. The CHS-5 contract provides seamless, rapid, and consolidated procurement of commercial IT, customizable sustainment strategies, non-personal services, and continuous technology upgrades to support tactical/operational programs fielding schedules, configuration management, and ruggedization.

(CHS-6) request for proposal (RFP) was released on 7 OCT 2022 and is anticipated to be awarded by 1QFY24. Extensive market research was conducted to identify the acquisition strategy for this effort. The CHS PMO held frequent and open discussions with industry to ensure the requirements are clearly understood and feedback from hardware developers and manufacturers has been taken into consideration to maximize competition. The CHS PMO shaped the CHS-6 contract to allow all Federal Agencies with tactical requirements to achieve their missions and strategic initiatives by providing a rapid and streamlined process and access to critical Commercial Information Technology.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604818A / Army Tactical Command & Control Hardware & Software				323 / Common Hardware Systems								
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-	-		0.187	Apr 2023	-		-		-	0.000	0.187	-	
Subtotal			-	-		0.187		-		-		-	0.000	0.187	N/A	
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Acquisition Support	C/FP	Various : Various	11.089	2.229	Dec 2021	2.809	Dec 2022	2.885	Dec 2023	-		2.885	Continuing	Continuing	Continuing	
Logistical Service Support	C/FP	Various : Various	1.760	0.386	Dec 2021	0.408	Dec 2022	0.417	Dec 2023	-		0.417	Continuing	Continuing	Continuing	
Technical & Test Support	C/FP	Various : Various	6.362	1.607	Dec 2021	1.513	Dec 2022	1.120	Dec 2023	-		1.120	Continuing	Continuing	Continuing	
Subtotal			19.211	4.222		4.730		4.422		-		4.422	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Contract Support Services	SS/CR	APG, MD : APG, MD	0.200	0.202	Dec 2021	0.204	Dec 2022	0.208	Dec 2023	-		0.208	Continuing	Continuing	Continuing	
Subtotal			0.200	0.202		0.204		0.208		-		0.208	Continuing	Continuing	N/A	
Project Cost Totals			19.411	4.424		5.121		4.630		-		4.630	Continuing	Continuing	N/A	
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) 323 / Common Hardware Systems

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Technology Insertion & Technical Support (Adding New Har...	[Redacted]																											
CHS Website Technical Support and Maintenance	[Redacted]																											
Logistical Support	[Redacted]																											
CHS-5 Hardware Deliveries	[Redacted]																											
CHS-6 Pre-Contract Award	[Redacted]																											
CHS-6 Award	[Redacted]																											
CHS-6 Hardware Deliveries	[Redacted]																											



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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) 323 / Common Hardware Systems

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Technology Insertion & Technical Support (Adding New Hardware to Contract)	1	2007	4	2028
CHS Website Technical Support and Maintenance	4	2018	4	2028
Logistical Support	4	2018	4	2028
CHS-5 Hardware Deliveries	4	2018	4	2024
CHS-6 Pre-Contract Award	1	2020	1	2024
CHS-6 Award	1	2024	1	2024
CHS-6 Hardware Deliveries	2	2024	1	2034

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
C29: Centralized Technical Support Facility (CTSF)	-	7.077	32.248	4.380	-	4.380	4.484	4.591	4.696	4.748	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project C29, The Centralized Technical Support Facility (CTSF): The CTSF is the Army's premier test and certification facility for System of Systems interoperability, functioning as CIO/G6's designated independent test agent and Land/WarNet/Mission Command (LWN/MC) configuration manager. The Central Technical Support Facility's (CTSF) directed mission is to perform Army Interoperability Certification (AIC) testing and configuration management for all 23 operational through tactical level Command, Computing, Control, Communications, Cyber, Intelligence, Surveillance, and Reconnaissance (C5ISR) systems, Mission and Space systems, Aviation systems and other individual, family, and system of systems, applications, and hardware prior to release to the field. The CTSF accomplishes this through the enforcement of a standards based architecture while supporting the development and implementation of an integrated computing infrastructure and a converged network. The CTSF provides validated test data to the Department of the Army and Joint agencies to accredit interoperability certifications. The distributed test environment of the CTSF is accomplished through the Federation of Net-centric Sites (FaNS) construct. This FaNS construct addresses distributed integration development and testing using the core infrastructure of the CTSF to harness Army and Joint expertise/resources. Through these federated resources, the CTSF executes or supports interoperability development, integration and certification testing of the systems and system of systems in the Warfighter Mission Area, to include Network Evaluation spinouts, as they become part of the Army's LandWarNet. The cited work is consistent with Strategic Planning Guidance and the Army Modernization and Strategy Plan.

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

	FY 2022	FY 2023	FY 2024
Title: Army Interoperability Certification (AIC) Testing	1.888	3.232	1.873
Description: Conduct Army Interoperability Certification (AIC), planning/coordination/scheduling/ and reporting of Common Operating Environment (COE) and software block testing (local and distributed). Additionally, provide stakeholders data collection/data analysis/data dissemination/simulation/stimulation verification/validation in support of Army geospatial interoperability certification, system of system cybersecurity posture assessment and individual system cybersecurity policy adjustment. Manage the set-up, configuration, integration, operations and maintenance of the LandWarNet/Mission Command (LWN/MC) systems within the CTSF test environments. Function as the HQDA G-6's Independent Test Agent for Program Managers of LWN/MC systems that have an Acquisition Life Cycle requirement for testing interoperability of software and associated hardware prior to fielding to the Warfighter. Act as the central control node to synchronize the HQDA G-6 accredited Federation of Net-centric Sites (FaNS) distributed AIC testing environment. Report the results of Army Interoperability Certification tests to the HQDA G-6, PM, TRADOC and AFC communities.			
FY 2023 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Continue SWB11-12 test planning, test case development, test environment architecture set-up, for interoperability testing, Geospatial Information Systems (GIS) interoperability assessment, cybersecurity posture adjustment and assessment activities for the systems that comprise the Army's tactical software baselines. Conduct COE v3.0 planning, test case development and architecture set-up to support the technical standards update timelines for the Army's tactical software baseline. Conduct interoperability testing for the SWB11-12 and COE v3.0 systems that comprise the LWN/MC baseline to ensure the tactical integrated computing infrastructure is interoperable in a System of Systems (SoS) environment and to enable the HQDA G-6 to enforce a standards based architecture. Continue the virtualization build out and scale up of the test environment to support AIC testing. Partner with ATEC and AFC to leverage the CTSF assets in support of PMs' Operational Test activities.</p> <p>FY 2024 Plans: Continue SWB11-12 test planning, test case development, test environment architecture set-up, for interoperability testing, Geospatial Information Systems (GIS) interoperability assessment, cybersecurity posture adjustment and assessment activities for the systems that comprise the Army's tactical software baselines. Conduct COE v3.0 planning, test case development and architecture set-up to support the technical standards update timelines for the Army's tactical software baseline. Conduct interoperability testing for the SWB11-12 and COE v3.0 systems that comprise the LWN/MC baseline to ensure the tactical integrated computing infrastructure is interoperable in a System of Systems (SoS) environment and to enable the HQDA G-6 to enforce a standards based architecture. Continue the virtualization build out and scale up of the test environment to support AIC testing. Partner with ATEC and AFC to leverage the CTSF assets in support of PMs' Operational Test activities.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to efficiencies related to modernization effort and reduction in requirement to conduct two simultaneous interoperability tests for the SWB11-12 and COE v3.0 systems that comprise the LWN/MC baseline to ensure the tactical integrated computing infrastructure is interoperable in a System of Systems (SoS) environment.</p>				
<p>Title: Engineering Services</p> <p>Description: Provide network engineering support to establish and maintain tactical architectures on the CTSF test floors and to deploying/fielded units at training centers around the world (JRTC, NTC, JMRC). System engineering support provides hardware virtualization, Army End Point Security System (AESS) support, system validation and integration support to numerous PMs on the integration and risk reduction labs, and assists Army programs with interoperability assessments and AIC rehearsal. Modify and merge army data products for CTSF test architectures. Continuously seek emerging markets. Develop/Maintain Applications for CTSF Configuration Tracking System Version 4 (CMTSv4).</p> <p>FY 2023 Plans: Provide Network support for integration and test floors, network support to fielded units, and systems engineering and analysis support to system of systems integration activities. Enhance the Security posture of the CTSF by ensuring the latest Information</p>		0.195	0.199	0.203

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Assurance Vulnerability Alerts (IAVAs) and Security Technical Implementation Guides (STIGs) are implemented as required by Risk Management Framework (RMF). Integrate and implement Army End Point Security System (AESS) technology, assist PMs in the development of AESS policies. Plan and conduct engineering evaluations for AIC testing and data collection in the Joint Warfighter Assessment (JWA)/Capability Integration Evaluation (CIE) to leverage the operational environment and JWA/ CIE resources. Work with Network Cross Functional Team on Network modernization and Integrated Tactical Network (ITN) design and testing. Assist integration and test architectures to include Program of Record (POR) and non-POR Soldier radio waveforms to provide PMs and Material Developers testing in realistic environments. Support Army Test and Evaluation Command (ATEC) and Army Futures Command interoperability assessments of Cross-Functional Team (CFT) solutions. Continue efforts to implement an AIC Secret Releasable test environment network that integrates Army and the Unified Action Partners (UAP).</p> <p>FY 2024 Plans: Continue to provide Network support for integration and test floors, network support to fielded units, and systems engineering and analysis support to system of systems integration activities. Enhance the Security posture of the CTSF by ensuring the latest Information Assurance Vulnerability Alerts (IAVAs) and Security Technical Implementation Guides (STIGs) are implemented as required by Risk Management Framework (RMF). Integrate and implement Army End Point Security System (AESS) technology, assist PMs in the development of AESS policies. Plan and conduct engineering evaluations for AIC testing and data collection in the Joint Warfighter Assessment (JWA)/Capability Integration Evaluation (CIE) to leverage the operational environment and JWA/ CIE resources. Work with Network Cross Functional Team on Network modernization and Integrated Tactical Network (ITN) design and testing. Assist integration and test architectures to include Program of Record (POR) and non-POR Soldier radio waveforms to provide PMs and Material Developers testing in realistic environments. Support Army Test and Evaluation Command (ATEC) and Army Futures Command interoperability assessments of Cross-Functional Team (CFT) solutions. Continue efforts to implement an AIC Secret Releasable test environment network that integrates Army and the Unified Action Partners (UAP).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase reflects planned lifecycle effort.</p>				
Title: Configuration Management		1.432	1.858	1.910
Description: As the CTSF Configuration Management Office, provide CM functional and physical configuration management and change management to the CTSF Army Interoperability Certification test floor environment. Additionally, as the Army Configuration Management Office (ACMO), establish and maintain oversight control of the Army Master Library for the Army Interoperability Certified Fielded Baseline (AICFB). Archive system software and data products, correlated with their associated documentation, for the Army LandWarNet Mission Command Baseline (ALWNMCB), a subset of the AICFB. Establish and maintain the configuration and change management to the AICFB and the ALWNMCB for Lifecycle Software Management (LCSM). Provide support to the Army Staff (ARSTAF), Material Developers (MATDEV), Project Managers (PM), and System				

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Owners (SO) through the orderly management of product configuration information and product change management (ChM), which enables capability revisions, improved reliability and maintainability, and extended life-cycle. Maintain and improve the Configuration Management Tracking System version 3 (CMTSIII), the Army's authoritative database management system (DBMS) for configuration management (CM) of the systems comprising Coalition Interoperability Assurance and Validation (CIAV), and the Warfighter Mission and Business Mission Areas of the Army Information Technology (IT) portfolio. Assist the HQDA G-6 conduct accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations.</p> <p>FY 2023 Plans: Provide CM functional and physical configuration management and change management to the CTSF Army Interoperability Certification test floor environment. Provide CM functional and physical configuration management and change management to the AICFB, to include archiving the required system software, data products and documentation, while correlating the relevant data within the CMTSIII DBMS for visibility to users Army wide. Provide baseline reconciliation to the four quarterly HQDA G6 AICFB reports, identifying to commanders and their G-3/G-6 staff the Army's AIC certified, Interoperability Capability and Limitations assessed, AIC waived, and AIC exempted system software that is authorized to connect to the Army's network. Assist the HQDA G-6 AICFB in conducting accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations.</p> <p>FY 2024 Plans: Continue to provide CM functional and physical configuration management and change management to the CTSF Army Interoperability Certification test floor environment. Provide CM functional and physical configuration management and change management to the AICFB, to include archiving the required system software, data products and documentation, while correlating the relevant data within the CMTSIII DBMS for visibility to users Army wide. Provide baseline reconciliation to the four quarterly HQDA G6 AICFB reports, identifying to commanders and their G-3/G-6 staff the Army's AIC certified, Interoperability Capability and Limitations assessed, AIC waived, and AIC exempted system software that is authorized to connect to the Army's network. Assist the HQDA G-6 AICFB in conducting accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase reflects planned lifecycle effort.</p>				
Title: Management Operations/Program Office		0.406	0.387	0.394
Description: Provide management operations consisting of planning, programming and executing funds; planning and programming for required personnel; planning, programming and executing contracts supporting AIC testing processes; identifying reimbursable tests and collecting/allocating appropriate funds; planning and programming logistics activities, managing/controlling/documenting physical assets and inventories; and perform oversight and coordination of physical security with hosting installation.				

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>FY 2023 Plans: Program and execute funding. Plan and program manpower, identify contracting requirements and develop strategy for implementation in conjunction with CECOM Acquisition Center. Track testing schedule, prepare/coordinate/track customer funding for AIC testing activities and infrastructure support. Continue to provide field support coordination for unit training and exercises upon request. Maintain existing infrastructure; continue to enhance physical security, access control, force protection, Continuity Of Operations (COOP) and Emergency Action Plan (EAP) activities and exercises. Continue inventory accountability programs and asset control.</p> <p>FY 2024 Plans: Continuation of programming and execution of funding. Plan and program manpower, identify contracting requirements and develop strategy for implementation in conjunction with CECOM Acquisition Center. Track testing schedule, prepare/coordinate/track customer funding for AIC testing activities and infrastructure support. Continue to provide field support coordination for unit training and exercises upon request. Maintain existing infrastructure; continue to enhance physical security, access control, force protection, Continuity Of Operations (COOP) and Emergency Action Plan (EAP) activities and exercises. Continue inventory accountability programs and asset control.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase reflects planned lifecycle effort.</p>			
<p>Title: Modernization</p> <p>Description: Technical modernization FY22-23 effort for Army Interoperability Certification (AIC) to enhance CTSF testing capabilities. Estimated cost of modernization is approximately \$6M in investment with virtualization efforts and test automation. Funding provided for hardware & software integration for virtualization and automation, software licensing, and labor and other supporting integration efforts.</p> <p>FY 2023 Plans: Continuation of the automation and virtualization efforts to support the technical modernization of AIC testing. Funding provided for purchase of hardware & software integration, virtualization and automation, software licensing and labor and other integration efforts.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Effort for Army Interoperability Certification (AIC) modernization initial phase to enhance CTSF testing capabilities anticipated to be completed by the end of FY23.</p>	3.156	3.234	-
<p>Title: SBIR/STTR</p> <p>FY 2023 Plans:</p>	-	0.338	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638			
<i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	7.077	9.248	4.380

	FY 2022	FY 2023
<i>Congressional Add:</i> Red Team Automation/Zero Trust Capabilities	-	23.000
<i>FY 2023 Plans:</i> Red Team Automation/Zero Trust Capabilities		
Congressional Adds Subtotals	-	23.000

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

Remarks

D. Acquisition Strategy

Transition from executing a single test event at a time to multiple simultaneous test events using new universal mission threads, providing speed and efficiency to the test/acquisition timeline. Execute system of systems interoperability testing and certification through the use of Government and Systems Engineering and Technical Analysis (SETA) contract personnel experienced in product development and interoperability testing. Testing and certification occurs in a cyclical fashion, with an expectation of an annual Software Block/Capability Set test followed with cyclical multiple test events to ensure integrity of software baselines to the Warfighter. Engineering Services provides strategic integration of software into a system of systems/family of systems environment to support interoperability testing. Establish and maintain Configuration Management and version control of the Army's Interoperable Battle Command LandWarNet Baseline. Distributed testing capability uses local assets and leverages other federated test facilities to create synergy and realize efficiencies.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Various : Various	-	-		0.338		-		-		-	0.000	0.338	-
Subtotal			-	-		0.338		-		-		-	0.000	0.338	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CECOM Matrix	Allot	Program and Budget Analysis Support : Fort Hood, TX/ Aberdeen Proving Grounds, MD	5.847	0.145		0.148		0.151		-		0.151	0.000	6.291	-
ISSA/Training/TDY	Allot	Site Support Activities : Fort Hood, TX	0.980	0.337		0.165		0.168		-		0.168	0.000	1.650	-
Supplies	C/UCA	Management Operations, Logistics Support : Fort Hood, TX	1.628	0.098		0.074		0.075		-		0.075	0.000	1.875	-
Moving Cost	Allot	Management Operations, Logistics Support : Fort Hood, TX	0.002	0.001		-		-		-		-	0.000	0.003	-
Subtotal			8.457	0.581		0.387		0.394		-		0.394	0.000	9.819	N/A

Remarks
Under "open-the-door" cost model, all In-house support efforts are included under Test & Evaluation.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CECOM RS3	C/CPFF	Test, Configuration Management : Fort Hood, TX	20.580	0.473	Apr 2022	1.813	Apr 2023	0.443		-		0.443	0.000	23.309	-
CECOM GSA BMO SB SITE SUPPORT SERVICES	C/T&M	Facilities, Maintenance, Security : Fort Hood, TX	13.765	1.415	Mar 2022	1.421	Apr 2023	1.430		-		1.430	0.000	18.031	-
In-House Support	Allot	Test : Fort Hood, TX	13.960	1.451		1.675		1.587		-		1.587	0.000	18.673	-
Equipment/Instrumentation	C/UCA	Test Equipment Infrastructure : Fort Hood, TX	3.204	0.001		0.382		0.526		-		0.526	0.000	4.113	-
Modernization	MIPR	Test, Configuration Management : Fort Hood, TX	1.328	3.156		3.232		-		-		-	0.000	7.716	-
Red Team Automation/ Zero Trust Capabilities	Various	Cyber Security : unknown	-	-		23.000		-		-		-	0.000	23.000	-
Subtotal			52.837	6.496		31.523		3.986		-		3.986	0.000	94.842	N/A

Remarks
 ARL Matrix effort became a "reimbursable" effort under Open-the-Door cost model effective in FY17; no longer "Direct" funded.
 ISSA no longer funded at CTSF level.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	61.294	7.077	32.248	4.380	-	4.380	0.000	104.999	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Baseline Updates 1st QTR FY22	■																											
22.1 Universal Test Environment AIC Test event		■	■																									
Baseline Updates 3rd QTR FY22			■																									
22.2 Universal Test Environment AIC Test event				■																								
Configuration Management (CM)	■				■																							
	Configuration Management (continuous)																											
Engineering Services (ES) Test and Integration	■				■																							
	Test Engineering & Integration (continuous)																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C29 / Centralized Technical Support Facility (CTSF)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
20.1 Universal Test Environment AIC Test event	2	2020	2	2020
Baseline Updates 3rd QTR FY20	2	2020	3	2020
20.2 Universal Test Environment AIC Test event	4	2020	4	2020
Baseline Updates 1st QTR FY21	4	2020	1	2021
21.1 Universal Test Environment AIC Test event	2	2021	2	2021
Baseline Updates 3rd QTR FY21	2	2021	3	2021
21.2 Universal Test Environment AIC Test event	4	2021	4	2021
Baseline Updates 1st QTR FY22	4	2021	1	2022
22.1 Universal Test Environment AIC Test event	1	2022	2	2022
Baseline Updates 3rd QTR FY22	2	2022	3	2022
22.2 Universal Test Environment AIC Test event	3	2022	4	2022
Configuration Management (CM)	1	2019	4	2022
Engineering Services (ES) Test and Integration	1	2019	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) C34 / Army Tac C2 Sys Eng			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
C34: Army Tac C2 Sys Eng	-	9.061	11.866	11.141	-	11.141	11.448	11.461	11.584	11.713	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 the Army Network Modernization Strategy Lines of Effort (LOEs) 1-4 (Unified Network, Common Operating Environment, Interoperability, and Command Post Mobility & Survivability). Project C34, Army Tactical Command and Control Systems Engineering supports the Army's Network Modernization Strategy and coordinates technical efforts across and outside of PEO Command, Control, Communications-Tactical (PEO C3T) to ensure integration with the current and future Mission Command Network. Project C34 provides technical support for programs aligned with LOEs 1 through 4 that inform the design and solutions with specific emphasis on the ability for the different efforts to be integrated and interoperable with one another. Efforts support Army Modernization priorities including Army Unified Network Plan, Multi-Domain Operations, Joint All Domain Command and Control (JADC2), Data Modernization and emerging data-centric requirements.

Project C34, Army Tactical Command and Control Systems Engineering: This project funds the PEO C3T System of Systems (SoS) engineering and integration, experimentation, acquisition management, testing, fielding and sustainment support to ensure interoperability and affordability within the PEO C3T portfolio. The effort focuses on SoS Engineering and Integration for the Mission Command Network with increased emphasis on immediate Warfighter needs as well as leveraging emerging technologies.

Fiscal Year 2024 will focus on the continued development, implementation and integration of the Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance, and Reconnaissance (C5ISR) network architectures. This includes maturing the technology enhancement roadmap for SoS capability evolution across the PEO C3T portfolio that incorporates Cross Functional Team initiatives; network integration support and design products for system validation experimentation and integration testing including N-CFT led activities; integration of tactical networked capabilities for all Mission Command Network systems and integration events; integration of tactical information assurance solutions and security measures for consistent cyber protection; and support to N-CFT evaluations.

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

	FY 2022	FY 2023	FY 2024
Title: System of Systems (SoS) Developmental Test and Integration Test Support across tactical C2 systems	0.976	1.362	1.312
Description: Funds support the following effort:			
FY 2023 Plans: Continue to provide the infrastructure and support to conduct integration testing and systems engineering for C3T systems, products, technical insertions, and systems under evaluation, ensuring integration of capabilities across the network. Funds include sustainment of increased level of integration testing and required maintenance to support data-centric network design.			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Funds also include continued participation as part of the Army Interoperability Certification (AIC) Federated Net-centric Sites (FaNS) facility.</p> <p>FY 2024 Plans: Continue to provide the infrastructure and support to conduct integration testing and systems engineering for C3T systems, products, technical insertions, and systems under evaluation, ensuring integration of capabilities across the network. Funds include sustainment of increased level of integration testing and required maintenance to support data-centric network design. Funds also include continued participation as part of the Army Interoperability Certification (AIC) Federated Net-centric Sites (FaNS) facility.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease accounts for leveraging planned capabilities provided by CIO and Enterprise Cloud Management Activity (ECMA) enabling DevSecOps which reduces some of the hardware and software requirements necessary to conduct integration testing.</p>				
<p>Title: Conduct and Support System of Systems (SoS) Interoperability Engineering</p> <p>Description: Funds support the following efforts:</p> <p>FY 2023 Plans: Across the Army Unified Network and Mission Command applications within and external to PEO C3T, provide integration support for testing, exercises and experimentation. Identify critical integrated test points, monitor developmental testing at integration points, develop event architectural data processes and products, and facilitate the transition of Network capabilities to the warfighter. Provide technical support to exercises and demonstrations of Army modernization initiatives. Develop integration testing strategies designed to enhance Development Security Operations (DEVSECOPS) implementation and more expeditious testing cycles.</p> <p>FY 2024 Plans: Across the Army Unified Network and Mission Command applications within and external to PEO C3T, provide integration support for testing, exercises and experimentation. Identify critical integrated test points, monitor developmental testing at integration points, develop event architectural data processes and products, and facilitate the transition of Network capabilities to the warfighter. Provide technical support to exercises and demonstrations of Army modernization initiatives. Develop integration testing strategies designed to enhance Development Security Operations (DEVSECOPS) implementation and more expeditious testing cycles.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase due to inflation.</p>		3.021	2.468	2.585
<p>Title: Development and Implementation of Tactical Information Assurance (IA)</p>		0.403	1.284	1.293

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Description: Funds support the following efforts:</p> <p>FY 2023 Plans: Continue to implement ARCYBER, CIO, G6 and CYBERCOM guidance for execution of Cyber Security policies and procedures at the tactical level. Continue to document the current tactical network security architecture with the goal of developing recommendations to eliminate inconsistencies/duplications, increasing the security posture, decreasing complexity of operations, and decreasing costs. Support planning of tactical implementation of integrated security approaches for the Army Unified Network. This includes support for incorporation of DoD-driven Zero Trust principles.</p> <p>FY 2024 Plans: Continue to implement ARCYBER, CIO, G6 and CYBERCOM guidance for execution of Cyber Security policies and procedures at the tactical level. Continue to document the current tactical network security architecture with the goal of developing recommendations to eliminate inconsistencies/duplications, increasing the security posture, decreasing complexity of operations, and decreasing costs. Support planning of tactical implementation of integrated security approaches for the Army Unified Network. This includes support for incorporation of DoD-driven Zero Trust principles.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase due to inflation.</p>				
<p>Title: System of Systems (SoS) Engineering and Integration Evolution of the Network</p> <p>Description: Funds support the following efforts:</p> <p>FY 2023 Plans: Continue technical implementation of cross-PEO System of Systems Engineering and Integration analysis and processes to ensure successful development and engineering of current and future systems for Unified Network. Includes SoS engineering design for capabilities planned to field in FY 2025 and FY 2027 to include Program of Record and emerging Network Modernization technologies. Continue to deliver engineering products to support strategic decisions or address operational technical challenges.</p> <p>FY 2024 Plans: Continue technical implementation of cross-PEO System of Systems Engineering and Integration analysis and processes to ensure successful development and engineering of current and future systems for Unified Network. Includes SoS engineering design for capabilities planned to field in FY 2025 and FY 2027 to include Program of Record and emerging Network Modernization technologies. Continue to deliver engineering products to support strategic decisions or address operational</p>		1.561	1.812	1.666

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
technical challenges.				
FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to reduction in development and delivery of engineering products.				
Title: System of Systems Development		2.875	3.407	3.184
Description: Funds support the following efforts:				
FY 2023 Plans: Continue to develop System-of-Systems Engineering tools, standards and interfaces to support DoD-driven initiatives. Tool development and implementation improves technical integration across the Army Unified Network. Tools also support integration of technical, logistics and business data for improved trade studies in support of programmatic decisions.				
FY 2024 Plans: Continue to develop System of Systems Engineering tools, standards and interfaces to support DoD-driven initiatives. Tool development and implementation improves technical integration across the Army Unified Network. Tools also support integration of technical, logistics and business data for improved trade studies in support of programmatic decisions.				
FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to reduction in development of SoS Engineering tools.				
Title: Mission Command Network Synchronization and Integration Support		0.225	1.100	1.101
Description: Funds are for the following effort:				
FY 2023 Plans: Continue the support of current force and the development of future force C5ISR across the tactical network to ensure all Assistant Secretary of the Army (Acquisition, Logistics & Technology) (ASA(ALT)) programs are synchronized and redundancies and overlapping capabilities are reduced across the network and in synchronization with Army Modernization priorities and Cross Functional Team activities. Develop effective engineering strategies to integrate tactical applications for use across the Mission Command network to include support to the Common Operating Environment Technical Authority. Continue to perform network planning and integration activities across all cross-domain system-of-systems future capabilities and technologies. Develop or support development of networking documentation and standards identification that defines integration of evolving Capability Set systems. Provide technical support to exercises and demonstrations of Army modernization initiatives such as Mission Partner Environment SEC/REL implementation and Army Futures Command (AFC) Project Convergence.				
FY 2024 Plans: Continue the support of current force and the development of future force C5ISR across the tactical network to ensure all				

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Assistant Secretary of the Army (Acquisition, Logistics & Technology) (ASA(ALT)) programs are synchronized and redundancies and overlapping capabilities are reduced across the network and in synchronization with Army Modernization priorities and Cross Functional Team activities. Develop effective engineering strategies to integrate tactical applications for use across the Mission Command network to include support to the Common Operating Environment Technical Authority. Continue to perform network planning and integration activities across all cross-domain system-of-systems future capabilities and technologies. Develop or support development of networking documentation and standards identification that defines integration of evolving Capability Set systems. Provide technical support to exercises and demonstrations of Army modernization initiatives such as Mission Partner Environment SEC/REL implementation and Army Futures Command (AFC) Project Convergence.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase due to inflation.</p>				
<p>Title: SBIR/STTR Transfer</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC 638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638</p>		-	0.433	-
Accomplishments/Planned Programs Subtotals		9.061	11.866	11.141
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
Not applicable for this item.				
D. Acquisition Strategy				
<p>This project provides the technical and programmatic disciplines required for systems engineering and integration, experimentation, acquisition management, testing, interoperability, support to fielding and sustainment. It will focus on System of Systems (SoS) Systems Engineering and Integration for the tactical network with increased emphasis on immediate Warfighter needs as well as leveraging emerging technologies. Efforts align to support the acquisition strategies of the programs that must connect to the network.</p>				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	TBD : TBD	-	-		0.433		-		-		-	0.000	0.433	-
Subtotal			-	-		0.433		-		-		-	0.000	0.433	N/A

Remarks
Decrease to funding transfer in FY23 in accordance with Title 15 USC 638

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Tactical Info/Network Synchronization/SoS Dev	C/CPFF	Bowhead : APG MD	10.507	0.879	Jan 2022	1.794	Nov 2022	1.945	Nov 2023	-		1.945	Continuing	Continuing	Continuing
SoS Development	Various	Various : APG, MD	5.590	1.950	Dec 2021	3.279	Oct 2022	2.699	Oct 2023	-		2.699	Continuing	Continuing	Continuing
SoS Eng and Integ of the Network	SS/FP	MITRE : Aberdeen Proving Ground, MD/ Eatontown, NJ	111.401	1.561	Jan 2022	1.245	Oct 2022	1.666	Oct 2023	-		1.666	Continuing	Continuing	Continuing
System of Systems (SoS) Interoperability Engineering	C/CPFF	CACI : APG, MD	-	2.389	Apr 2022	1.792	Nov 2022	1.886	Nov 2023	-		1.886	Continuing	Continuing	Continuing
SoS Developmental Test and Integration Test Support	C/Various	Various : Various	-	0.976	Mar 2022	1.362	Nov 2022	1.312	Nov 2023	-		1.312	Continuing	Continuing	Continuing
Tactical Information	TBD	Various : Various	-	0.404	Feb 2022	1.284	Oct 2022	0.709	Oct 2023	-		0.709	Continuing	Continuing	Continuing
Subtotal			127.498	8.159		10.756		10.217		-		10.217	Continuing	Continuing	N/A

Remarks
Increases due to allocation of requirements to Project C34 as funding source. Decreases due to reduction in planned System of Systems Engineering support, development of tools and required hardware and software necessary to conduct integration testing.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 of Systems (SoS) Interoperability Engineering	MIPR	MATRIX - C5ISR : Aberdeen Proving Ground, MD	14.946	0.677	Jan 2022	0.677	Nov 2022	0.698	Oct 2023	-		0.698	0.000	16.998	Continuing
Network Synchronization	MIPR	MATRIX - C5ISR : Aberdeen Proving Ground, MD	-	0.225	Dec 2021	-		0.226	Oct 2023	-		0.226	0.000	0.451	-
Subtotal			14.946	0.902		0.677		0.924		-		0.924	0.000	17.449	N/A

Remarks
Support costs capture Matrix labor associated with Integration and Test Support among PORs.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	142.444	9.061	11.866	11.141	-	11.141	Continuing	Continuing	N/A

Remarks
FY22 updated for actual execution. Increases in FY24 due to allocation of requirements to Project C34 as funding source.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
System of Systems Solutions Network Integration/Validation																												
Network Analysis																												
System of Systems System Engineer, Integration, and Deve...																												
System of System Solutions Support																												
SoS CDR 23	1 CDR																											
SoS PDR 25					4 PDR																							
SoS CDR 25									7 CDR																			
SoS PDR 27													10 PDR															
SoS CDR 27																	13 CDR											
System of System Integration Risk Reduction																												
Integration Test Support SoS RR																												
AIC 2			2 AIC																									
AIC SoS RR 2	AIC RR																											
AIC 3					3 AIC																							

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
AIC SoS RR 3					■																								
AIC 4								▲ 5 AIC																					
AIC SoS RR 4								■																					
AIC 5										▲ 6 AIC																			
AIC SoS RR 5								■																					
AIC 6												▲ 8 AIC																	
AIC SoS RR 6										■																			
AIC 7														▲ 9 AIC															
AIC SoS RR 7												■																	
AIC 8																▲ 11 AIC													
AIC SoS RR 8												■																	
AIC 9																		▲ 12 AIC											
AIC SoS RR 9																■													

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
AIC 10																					▲ 14 AIC											
AIC SoS RR 10																					■											
AIC 11																					▲ 15 AIC											
AIC SoS RR 11																					■											
AIC 12																					▲ 16 AIC											
AIC SoS RR 12																					■											

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System of Systems Solutions Network Integration/Validation	1	2022	4	2028
System of Systems System Engineer, Integration, and Development	1	2022	4	2028
System of System Solutions Support	1	2022	4	2028
SoS PDR 23	3	2021	3	2021
SoS CDR 23	3	2022	3	2022
SoS PDR 25	3	2023	3	2023
SoS CDR 25	3	2024	3	2024
SoS PDR 27	3	2025	3	2025
SoS CDR 27	3	2026	3	2026
System of System Integration Risk Reduction	1	2022	4	2028
Integration Test Support SoS RR	3	2022	4	2028
AIC 2	3	2022	3	2022
AIC SoS RR 2	2	2022	3	2022
AIC 3	2	2023	2	2023
AIC SoS RR 3	2	2023	2	2023
AIC 4	4	2023	4	2023
AIC SoS RR 4	4	2023	4	2023
AIC 5	2	2024	2	2024
AIC SoS RR 5	2	2024	2	2024
AIC 6	4	2024	4	2024
AIC SoS RR 6	4	2024	4	2024
AIC 7	2	2025	2	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) C34 / Army Tac C2 Sys Eng
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Events	Start		End	
	Quarter	Year	Quarter	Year
AIC SoS RR 7	2	2025	2	2025
AIC 8	4	2025	4	2025
AIC SoS RR 8	4	2025	4	2025
AIC 9	2	2026	2	2026
AIC SoS RR 9	2	2026	2	2026
AIC 10	4	2026	4	2026
AIC SoS RR 10	4	2026	4	2026
AIC 11	2	2027	2	2027
AIC SoS RR 11	2	2027	2	2027
AIC 12	4	2027	4	2027
AIC SoS RR 12	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) DD1 / Unified Network Technology Trans & Integ (UNTTI)
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
DD1: <i>Unified Network Technology Trans & Integ (UNTTI)</i>	-	-	-	7.898	-	7.898	4.455	4.549	4.398	4.237	0.000	25.537
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Unified Network Technology Trans & Integ (UNTTI) is a new start within the Army Tactical Command & Control Hardware & Software program in FY 2024.

A. Mission Description and Budget Item Justification

This funding line is a new start in FY24. It is directly aligned to the Army priority for network modernization and supports the Army's strategy for establishing a Unified Network. Unified Network Technology Transition and Integration (UNTTI) is directly aligned to the Army Network Modernization Strategy Line of Effort 1 (LOE 1) Unified Network and LOE 4 Command Post Mobility and Survivability.

UNTTI is an RDT&E initiative enabling transport agnostic, high-capacity and resilient tactical communications for expeditionary operations. UNTTI efforts support system/subsystem development and demonstration, aimed at integration, maturation, evaluation and testing to validate system prototypes meet requirements. In FY2024, the UNTTI efforts include TEM Projects - Pathway Diversity (Automatic-PACE software), Line of Sight (LOS) - Command Post Networking, and Satellite Communications (SATCOM) - Modem Virtualization. These technologies support new and improved capabilities with reduced Size, Weight, and Power, while increasing throughput, providing network resiliency and Low Probability of Intercept/Low Probability of Detection.

The Program Executive Office Command, Control, Communications-Tactical (PEO C3T) is responsible for prioritizing, programming, managing and executing the projects detailed below and ensuring these funds are prioritized to support the Army modernization priorities and prototyping. The Network Cross Functional Team (N-CFT), Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) Center, Army Capability Network (ACM) Networks and Services (N&S) support the prioritization of technology demonstrations, focused evaluations, and expert analyses to inform future requirements, mature technologies, and deliver new capabilities. These projects inform technology integration and support user assessments and rapidly transition to appropriate programs.

UNTTI procures, modifies, integrates and tests system prototypes to insert enhanced capabilities in accordance with Army modernization priorities such as Capability Set fieldings. UNTTI supports developing technical, logistics, training, and other acquisition documentation to assist with the transition, insertion, and integration of efforts across PM Tactical Network. In addition, UNTTI resources validation and test efforts which improves reliability, maintainability, and supportability of Tactical Network equipped units. These improvements avoid future costs by mitigating single point failures and hardening the network which ultimately improves network and cyber resiliency and unit availability for contingency operations.

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

	FY 2022	FY 2023	FY 2024
Title: Systems Engineering and Program Management	-	-	0.752

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) DD1 / Unified Network Technology Trans & Integ (UNTTI)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Description: Includes overall management of program execution, major events, reporting, funding execution, and contract management. Includes participation in program planning and Integrated Product Team meetings with key stakeholders including the Network Cross Functional Team (N-CFT), Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) Center, Army Capability Network (ACM) Networks and Services (N&S), etc.</p> <p>FY 2024 Plans: Funds matrix and contractor personnel labor and travel requirements. Includes program oversight, systems engineering and technical control, risk management, documentation, and fielding support for UNTTI efforts.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: New start. Increase is due to emerging requirement.</p>				
<p>Title: TEM Projects - Pathway Diversity</p> <p>Description: TEM Projects - Pathway Diversity is a user configurable software solution that enables the network to be optimized based on real-time battlefield conditions. This software increases network resiliency and leverages multiple transports to send/ receive increased throughput simultaneously.</p> <p>FY 2024 Plans: Funds improve the usability, security, and performance aspects of the software based on FY23 small-scale operational feedback. Funds prototype procurement/modification, complete a large-scale pilot event, incorporating new transport systems (mesh SATCOM, LOS, etc.), RHN(s), and select Units (ESB-E or DIV focus) to understand integration and performance at scale.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: New start. Increase supports evaluating solutions at scale.</p>		-	-	2.417
<p>Title: Line of Sight (LOS) - Command Post Networking</p> <p>Description: Line of Sight (LOS) - Command Post Networking is a radio solution capable of functioning in multiple operating environments and can switch radio frequencies based on the physical environment with limited user interaction. This system provides more resilient communications for use between command post nodes and supports Command Post Integrated Infrastructure (CPI2).</p> <p>FY 2024 Plans: Funds will be used for prototype procurement/modification, to conduct required cyber assessments and Information Assurance certifications, and testing to MIL-STD-810H (Environmental) and MIL-STD-461G (Electromagnetic Interference).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>		-	-	0.754

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) DD1 / Unified Network Technology Trans & Integ (UNTTI)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
New start. Required testing to support integration into CPI2.				
Title: Satellite Communications (SATCOM) - Modem Virtualization		-	-	3.975
Description: Satellite Communications (SATCOM) - Modem Virtualization funds prototyping efforts focused on satellite communications (SATCOM) terminal and modem technologies to increase resiliency through multi-orbit, multi-constellation efforts while reducing system Size, Weight, and Power and leveraging COTS hardware platforms.				
FY 2024 Plans: Funds will be used for prototype procurement/modification, to complete certification requirements (commercial and/or military), MIL-STD testing, terminal and system integration, and Risk Reduction events leading towards a Unit Experimentation and will provide the required technical expertise to plan/execute integration and experimentation events.				
FY 2023 to FY 2024 Increase/Decrease Statement: New start. Testing and certification required to validate new SATCOM technologies for Army use.				
Accomplishments/Planned Programs Subtotals		-	-	7.898
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
UNTTI related technologies will be pursued via competitively awarded contracts using best value source selection procedures. These technologies will be matured, demonstrated, tested, and evaluated in realistic environments. Selected technologies will integrate into existing programs as a modernization effort. The Integrated Product Team of key stakeholders including the Network Cross Functional Team (N-CFT), Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) Center, Army Capability Network (ACM) Networks and Services (N&S) determine technologies for further evaluation to close capability gaps.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604818A / Army Tactical Command & Control Hardware & Software				DD1 / Unified Network Technology Trans & Integ (UNTTI)							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering/ Program Management	C/T&M	Various : APG	-	-		-		0.752	Feb 2024	-		0.752	0.000	0.752	-
Subtotal			-	-		-		0.752		-		0.752	0.000	0.752	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TEM Projects - Pathway Diversity	SS/FFP	CloudJuncxion : APG	-	-		-		1.208	Feb 2024	-		1.208	0.000	1.208	-
Satellite Communications (SATCOM) - Modem Virtualization	SS/FFP	Various : To be determined	-	-		-		1.988	Feb 2024	-		1.988	0.000	1.988	-
Subtotal			-	-		-		3.196		-		3.196	0.000	3.196	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TEM Projects - Pathway Diversity	SS/FFP	CloudJuncxion : APG	-	-		-		1.209	Feb 2024	-		1.209	0.000	1.209	-
Line of Sight (LOS) - Command Post Networking	SS/FFP	Various : To be determined	-	-		-		0.754	Feb 2024	-		0.754	0.000	0.754	-
Satellite Communications (SATCOM) - Modem Virtualization	SS/FFP	Various : To be determined	-	-		-		1.987	Feb 2024	-		1.987	0.000	1.987	-
Subtotal			-	-		-		3.950		-		3.950	0.000	3.950	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software			Project (Number/Name) DD1 / Unified Network Technology Trans & Integ (UNTTI)					
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	-	-	7.898	-	7.898	0.000	7.898	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) DD1 / Unified Network Technology Trans & Integ (UNTTI)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Systems Engineering and Program Management									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
SEPm									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
TEM Projects									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
TEM Projects									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Pathway Diversity									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Pathway Diversity									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Line of Sight (LOS)									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
LOS									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Command Post Networking	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
Command Post Networking	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
Satellite Communications (SATCOM)	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
Satellite Communications (SATCOM)	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
Modem Virtualization	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
Modem Virtualization	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) DD1 / <i>Unified Network Technology Trans & Integ (UNTTI)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Systems Engineering and Program Management	2	2024	1	2029
TEM Projects	2	2024	1	2029
Pathway Diversity	2	2024	2	2025
Line of Sight (LOS)	2	2024	1	2029
Command Post Networking	2	2024	2	2026
Satellite Communications (SATCOM)	2	2024	1	2029
Modem Virtualization	2	2024	2	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EJ4: COMMAND POST COMPUTING ENVIRONMENT (CPCE)	-	33.835	27.995	45.489	-	45.489	27.707	27.740	28.036	28.348	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is directly aligned with the Army Network Modernization Strategy.

CPCE software provides the Commander the ability to understand, visualize, and direct the operational environment allowing them to plan and execute the mission scenario. CPCE enables the Commander to execute the mission scenario by providing a tailorable operational picture leveraging common data; the ability to collaborate within and external to the unit leveraging voice, video, and chat; the ability to plan through Wargaming leveraging Artificial Intelligence technology; and provides access to All Domain Networks, nonrecurring engineering of Cross Domain Solutions for Mission Partner Environment, data, information, and compute resources by leveraging Cloud Services

Command Post Computing Environment (CPCE) capabilities provide an available, reliable, and resilient infrastructure which unifies data and services within the Command Post. CPCE implements an integrated, interoperable, cyber-secure, software infrastructure that serves as the host for a unified set of multiple warfighting functional applications within the command post at echelons Battalion to Army Service Component Command; eliminating "stove-piped" systems, duplicative or redundant implementations, simplifying future application development efforts, and provides key improvements in interoperability and data sharing across multiple echelons.

CPCE software infrastructure and applications reside on Tactical Server Infrastructure (TSI) hardware as well as previously fielded servers. The TSI provides the converged computing and data storage hardware/software required to host the tactical Computing Environments, their supported Warfighter Functional Area applications, integration of Cross Domain Solutions for Mission Partner Environment, COE Cross-Cutting Capabilities and enables collaborative work environment.

FY2024 funding provides the Tactical Data Fabric; Convergence of Warfighting functions through the integration of intelligence, logistics, engineering, aviation, and fires applications, to include accelerated delivery of a combat power tool that enables a unit's logistical status and logistical running estimate; support to exercises and experiments through Developmental Operations (DevOps) engagements and Soldier Touch Points with Combatant Commands (COCOMs) to inform the implementation of the logistics application, Tactical Data Fabric and Cloud Native Mission Command; and Integration of Science and Technology (S&T) Efforts that support geospatial, planning, logistics, and predictive logistics war fighting capabilities. Funding also provides for Developmental and Operational testing of CPCE.

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

	FY 2022	FY 2023	FY 2024
Title: SW Dev - Core Infrastructure	28.348	22.668	35.556

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: Provides the core software infrastructure that serves as the host for multiple warfighting functional applications within the command post at echelons Battalion to Army Service Component Command, eliminating "stove-piped" systems, duplicative or redundant implementations, simplifying future application development efforts, and enhancing interoperability and data sharing across multiple echelons. Core software development efforts include the development of Tactical Data Fabric and Sustainment capabilities; a tailorable operational picture leveraging the Tactical Data Fabric; Improved Geospatial capabilities; Improved system administration tools, Integration of user feedback from Developmental Operations (DevOps) engagements, Soldier Touch Points with Combatant Commands (COCOMs), Tactical Data Fabric and Cloud Native Mission Command development efforts and backwards compatibility to previously fielded enduring systems. Software development efforts will focus on designing the system to reduce the training burden on the Soldier, and improvements to the CPCE Software Development Kit (SDK) that enable convergence of warfighting functions.</p> <p>FY 2023 Plans: CPCE Increment 2 efforts focus on warfighting function / enduring system convergence, the implementation of Data Fabric, ensuring that CPCE software is cloud-enabled to enhance SW deployment, training, and operational system use. Convergence during FY23 includes the addition of Sustainment capabilities. Continue maturation of S&T efforts. Core infrastructure improvements continue in support of Capability Set 23 and enable convergence. This includes continued integration of the latest commercial software solutions and updates, and improved collaboration tools.</p> <p>FY 2024 Plans: CPCE Increment 2 will focus on delivering Tactical Data Fabric and Sustainment capabilities, enhancing collaboration capabilities, migrating CPCE to a "Cloud Native" environment, and integrating transitioned Science & Technology (S&T) capabilities to include information trust capabilities as well as geospatial planning tools. FY2024 will also include addressing interoperability requirements, improving interoperability with Joint Services and Coalition partners and convergence of warfighting functions. Convergence of warfighting functions include new Intelligence applications onto CPCE; new engineering capabilities; and will accomplish convergence of Air Defense and Air Space Coordination capabilities and accelerated delivery of a combat power tool that enables a unit's logistical status and sustainment running estimate. In addition, efforts will focus on integration of user feedback from exercises and experiments through Developmental Operations (DevOps) engagements, Soldier Touch Points with Combatant Commands (COCOMs), U.S. Army Pacific (USARPAC) and U.S. Army Europe and Africa (USAREUR-AF) on the Tactical Data Fabric, Logistics Command and Control (C2) capabilities and Cloud Native Mission Command development efforts. CPCE Increment 3 development will begin in FY2024.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase in funding due to planned development efforts in support of Tactical Data Fabric and Sustainment capabilities, "Cloud Native" environment migration, integration tasks required to support convergence stakeholders, integration of S&T information</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
trust capabilities as well as geospatial planning tools, and integration of user feedback, data analytics, and collaboration applications.				
<p>Title: Hardware/Software Integration</p> <p>Description: The Tactical Server Infrastructure (TSI) server stacks hosts multiple software services including but not limited to: SQL, Chat, Active Directory, Microsoft Exchange, SharePoint, Defensive Cyber Operations (DCO) tools, and CPCE. Primary Hardware/Software integration tasks include developing the automation that reduces the time it takes to set up, manage and ensure updated security postures for the TSI environment on a recurring basis.</p> <p>FY 2023 Plans: HW/SW integration efforts will continue as the program will be conducting formal Operational Assessment of CPCE Increment 2, which will include multiple converging capabilities including data fabric, S&T technologies, and external warfighting functions. The TSI baseline for CPCE Increment 2 will be developed, including automated deployment of scripts and documentation. Integration of warfighter applications into the CPCE Increment 2 software and/or direct inject into the TSI hardware will be accomplished in FY23, in order to meet Army Network Modernization Strategy goals for Line of Effort 2, and Capability Set 23.</p> <p>FY 2024 Plans: In FY2024 the Hardware/Software integration effort will focus on transitioning the current TSI hardware configurations to a Server Edge Node configuration which supports cloud objectives as established in the Army Unified Network Strategy. In addition the FY2024 integration effort will focus on improving system automation to enable it to run on any server type.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase commensurate with the planned scope of work to meet HW/SW integration requirements in FY24.</p>		1.100	1.136	1.192
<p>Title: Test and Evaluation</p> <p>Description: CPCE/TSI will complete Developmental Testing (DT), and multiple Integration and Risk Reduction events in FY24 as part of the Integrated Test Strategy for CPCE Increment 2. These events will culminate in the CPCE Increment 2 software initial release/TSI Operational Test in FY24 that will inform a fielding decision.</p> <p>FY 2023 Plans: CPCE/TSI will complete Developmental Testing (DT), and multiple Integration and Risk Reduction events in FY23 as part of the Integrated Test Strategy for CPCE Increment 2. These events will culminate in the CPCE Increment 2/TSI Operational Test that will inform a fielding decision.</p> <p>FY 2024 Plans:</p>		1.267	1.027	6.288

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>CPCE will complete an Operational Test for CPCE Increment 2, Software Acceptance Tests, multiple Developmental Tests, multiple Soldier Touch Points, Cloud Native Mission Command Tests and Army Interoperability Certification test events. In addition to CPCE testing, the TSI hardware will complete multiple Soldier Touch Points and Developmental Tests as well as support the CPCE Operational Test.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase due to number of test and evaluations events planned for FY24: Operational Test for CPCE Increment 2 final release; Soldier Touch Points for the TSI Hardware and CPCE Increment 2 and Cloud Native Mission Command testing.</p>				
<p>Title: Program Management</p> <p>Description: Program management includes efforts related to the management and operations of the Product Management office. Includes matrix and contractor personnel, program planning meetings, IPTs, and market research activities related to the potential adoption of new technology solutions into the CPCE baseline.</p> <p>FY 2023 Plans: Program office management of engineering, logistics teams, SW development, system engineering, exercise support, and testing remains a requirement in FY23. This support includes personnel covered by Functional Support Agreements between PM Mission Command and various Government support agencies such as the Army Research and Development Center (ARDEC), and U.S. Army Combat Capabilities Development Command (DEVCOM).</p> <p>FY 2024 Plans: Program office management of engineering, logistics teams, SW development, system engineering, exercise support, and testing remains a requirement in FY24. This support includes personnel covered by Functional Support Agreements between PM Mission Command and various Government support agencies such as the U.S. Army Combat Capabilities Development Command (DEVCOM) Armaments Center. and the U.S Army Communications and Electronics Command (CECOM) Software Engineering Center (SEC).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase due to program management matrix and SETA support required for increase in planned FY24 software development and testing efforts.</p>		3.120	2.141	2.453
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 Plans:</p>		-	1.023	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638			
<i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	33.835	27.995	45.489

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

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• B70000: COE Tactical Server Infrastructure (TSI)	99.858	90.387	77.999	-	77.999	81.654	80.548	80.533	80.508	Continuing	Continuing

Remarks
Related to CPCE is the Tactical Server Infrastructure (TSI) funding line, B70000, which funds computer hardware and software servers/hosting platforms for CPCE software.

D. Acquisition Strategy
The initial Increment of CPCE (CPCE Inc 0) and TSI capabilities are based on Minimum Essential Capability (MEC) requirements specified in the Army's Directed Requirements for Command Post capabilities. The subsequent increments of CPCE and TSI requirements are codified within Joint Capabilities Integration and Development System (JCIDS) documents including the COE Information System Initial Capabilities Document (COE IS ICD), CPCE Requirements Definition Package (RDP) and TSI RDP. These JCIDS documents comprise an Information Technology (IT) Box construct, valid in five (5) year blocks. Each IT Box is revised/renewed for a follow-on 5-year block.

Requirements are further codified in Mission Command Center of Excellence (MCCoE) Capability Drop (CD) documents that contain Warfighting Function Operational Need summaries and detailed requirements sponsored by respective Army Centers of Excellence. In addition to these documents, CPCE will also incorporate technical requirements from other sources such as PEO C3T technical working groups (TWGs), Network Cross Functional Team (N-CFT) Capability Set design goals and directives, Cyber COE TWGs, user feedback resulting from Development Operations (DevOps) as Operational Incident Tickets (OIT), and emerging/future warfighting functional requirements already in draft form. As the capabilities continue to evolve, those capabilities are captured in the form of CDs to adapt to changes in the field.

The acquisition strategy for CPCE/TSI program is based upon the concept of Buy and Adapt, whereby the Government procures commercial technology and adapts it to meet specific Government requirements. CPCE/TSI consists of the integration of Commercial off the Shelf (COTS) hardware components, COTS software, and sequentially developed additional software capabilities.

CPCE Increment 0 brought the core software infrastructure and initial movement and maneuver capabilities. Increment 1 met the requirements of the CPCE Requirements Definition Package and Capability Drop 1 and focused on enhancements to Increment 0 and enabling system convergence. CPCE Increment 2 will bring

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) EJ4 / <i>COMMAND POST COMPUTING ENVIRONMENT (CPCE)</i>
<p>enhancements to existing capabilities, in addition to introducing new capabilities like Tactical Data Fabric, Logistics, additional convergence of warfighting functions and Cloud Native Mission Command. Future CPCE design and development will focus on Agile development and transition to user centric self-service architecture that is underpinned by the Tactical Data Fabric. CPCE capabilities will achieve Cloud Native Mission command while continuing warfighting function convergence. CPCE will also set the framework of self-service and data analytics functionality, nonrecurring engineering of Cross Domain Solutions for Mission Partner Environment, and continue addressing mission partner objectives outlined in the Army Unified Network Strategy.</p> <p>CPCE/TSI is an Acquisition Category II program structured in Increments delivering capability every two years. Each Increment contains an initial (year one) and final (year two) capability release. In Increment 0 and Increment 1, Full Deployment Decisions were made on initial (year one) capability releases. In coordination with the Operational Test communities, the CPCE Increment 2 acquisition approach was restructured so the Full Deployment Decision will be based on the final capability release.</p> <p>The Product Management Office delivers the CPCE core infrastructure (underlying basis for convergence), Movement & Maneuver capabilities, and Logistics Command and Control (C2) capabilities. The Program Management Office continues to fund developmental and convergence work that enhances the capabilities of the core infrastructure to align with integration efforts, while external organizations such as other Army Programs of Record and S&T organizations fund the development of specific warfighting capabilities and technologies for integration into the core framework. Testing is conducted continually with a culminating Operational Test prior to deployment decisions. Operational testing includes the core framework and all capabilities integrated since the prior release.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PM Support (Gov't-Matrix)	IA	Various Matrix Orgs incl CECOM SEC, ILSC, PRD, et al) : APG, MD	7.290	1.193	Oct 2021	1.175	Nov 2022	0.960	Nov 2023	-		0.960	Continuing	Continuing	-
PM Support (SETA Contractor)	C/FFP	Multiple incl CACI and others : APG, MD	21.435	1.927	Nov 2021	0.966	Nov 2022	1.493	Nov 2023	-		1.493	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	NA : NA	-	-		1.023		-		-		-	0.000	1.023	-
Subtotal			28.725	3.120		3.164		2.453		-		2.453	Continuing	Continuing	N/A

Remarks
Increase due to program management matrix and SETA support required for increase in planned FY24 core software development and testing efforts.

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development - Core Infrastructure	Option/ Various	ARDEC, CCDC, Systematic : Picatinny, NJ APG, MD Centerville, VA	194.298	28.348	Nov 2021	22.668	Nov 2022	35.556	Nov 2023	-		35.556	Continuing	Continuing	-
Hardware / Software Integration	IA	Various Matrix Orgs incl CECOM SEC, ARDEC, ILSC, PRD, et al) : APG Md	27.047	1.100	Dec 2021	1.136	Feb 2022	1.192	Feb 2023	-		1.192	Continuing	Continuing	-
Subtotal			221.345	29.448		23.804		36.748		-		36.748	Continuing	Continuing	N/A

Remarks
SW Development - Core Infrastructure increase in funding due to increase in planned development efforts to support Tactical Data Fabric and Sustainment capabilities, "Cloud Native" environment migration, integration tasks required to support convergence stakeholders, and integration of user feedback.
HW/SW Integration decrease commensurate with the planned scope of work to meet HW/SW integration requirements in FY24.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 and Conduct Tests and Assessments	MIPR	Multiple Test Agencies : Multiple Locations (Primary APG)	24.397	1.267	Oct 2021	1.027	Feb 2022	6.288	Dec 2023	-		6.288	Continuing	Continuing	-
Subtotal			24.397	1.267		1.027		6.288		-		6.288	Continuing	Continuing	N/A

Remarks
Increase due to number of test and evaluations events planned for FY24: Operational Test for CPCE Increment 2 final release; Soldier Touch Points for the TSI Hardware and CPCE Increment 2 and Cloud Native Mission Command testing.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	274.467	33.835	27.995	45.489	-	45.489	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software		Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Integrate Program of Record Functionality	[Redacted]																											
CPCE PoR Test & Integration	[Redacted]																											
Developmental Test Increment 1	[Redacted]																											
Fielding Decision Increment 1	[Redacted]																											
CPCE Increment 2 Design	[Redacted]																											
CPCE Increment 2 Development & Integration	[Redacted]																											
Developmental Test Increment 2	[Redacted]																											
CPCE Inc 2 Soldier Touch Point #1	[Redacted]																											
CPCE Increment 2 CDR	[Redacted]																											
CPCE Inc 2 Soldier Touch Point Cloud Enabled Mission Command	[Redacted]																											
CPCE Inc 2 Software Subsystem Acceptance Test	[Redacted]																											
CPCE Inc 2 Soldier Touch Point Tactical Data Fabric	[Redacted]																											
CPCE Inc 2 Solder Touch Point #2	[Redacted]																											


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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CPCE Increment 2 Operational Test									■ Inc 2 OT																			
Fielding Decision Increment 2									▲ 3 Fielding Decision																			
CPCE Increment 3 Design									■ Inc 3 Design																			
CPCE Increment 3 Development & Integration									■ Inc 3 Development & Integration																			
Developmental Test Increment 3													■ Increment 3 Developmental Test															
CPCE Increment 3 CDR													▲ 4 CPCE Inc 3 CDR															
CPCE Increment 3 Operational Test																	■ Inc 3 OT											
Fielding Decision Increment 3																	▲ 5 Fielding Decision											
CPCE Increment 4 Design																	■ Inc 4 Design											
CPCE Increment 4 Development & Integration																	■ Inc 4 Development & Integration											
Development Test Increment 4																					■ Increment 4 Developmental Test							
CPCE Increment 4 CDR																					▲ 6 CPCE Inc 4 CDR							
CPCE Increment 4 Operational Test																									■ Inc 4 OT			

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software		Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Fielding Decision Increment 4																									 Fielding Dec			

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Integrate Program of Record Functionality	2	2019	4	2028
CPCE PoR Test & Integration	1	2018	4	2028
CPCE Increment 1 Design	3	2019	2	2020
CPCE Increment 1 Development & Integration	2	2020	4	2021
Developmental Test Increment 1	3	2020	3	2022
CPCE Increment 1 Operational Assessment	3	2021	4	2021
Fielding Decision Increment 1	1	2022	1	2022
CPCE Increment 2 Design	1	2022	4	2022
CPCE Increment 2 Development & Integration	3	2022	3	2024
Developmental Test Increment 2	3	2022	3	2024
CPCE Inc 2 Soldier Touch Point #1	4	2022	1	2023
CPCE Increment 2 CDR	2	2023	2	2023
CPCE Inc 2 Soldier Touch Point Cloud Enabled Mission Command	2	2023	2	2023
CPCE Inc 2 Software Subsystem Acceptance Test	3	2023	3	2023
CPCE Inc 2 Soldier Touch Point Tactical Data Fabric	3	2023	4	2023
CPCE Inc 2 Solder Touch Point #2	2	2024	2	2024
CPCE Increment 2 Operational Test	2	2024	3	2024
Fielding Decision Increment 2	4	2024	4	2024
CPCE Increment 3 Design	1	2024	3	2025
CPCE Increment 3 Development & Integration	2	2024	3	2026
Developmental Test Increment 3	2	2025	2	2026
CPCE Increment 3 CDR	3	2025	3	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ4 / COMMAND POST COMPUTING ENVIRONMENT (CPCE)
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Events	Start		End	
	Quarter	Year	Quarter	Year
CPCE Increment 3 Operational Test	2	2026	2	2026
Fielding Decision Increment 3	4	2026	4	2026
CPCE Increment 4 Design	1	2026	2	2027
CPCE Increment 4 Development & Integration	1	2026	2	2028
Development Test Increment 4	1	2027	1	2028
CPCE Increment 4 CDR	3	2027	3	2027
CPCE Increment 4 Operational Test	2	2028	3	2028
Fielding Decision Increment 4	3	2028	3	2028

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>				Project (Number/Name) EJ5 / <i>MOUNTED COMPUTING ENVIRONMENT (MCE)</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EJ5: <i>MOUNTED COMPUTING ENVIRONMENT (MCE)</i>	-	21.076	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning with FY 2023, the Army has realigned MCE RDT&E funding for the development of the Mounted Mission Command - Software (MMC-S) from this line to the Joint Battle Command - Platform (JBC-P) RDTE line (PE 0604805A/Proj 593). These funds will support continued MMC-S development as part of the MMC Family of Systems (MMC FoS) strategy for modernizing and replacing the JBC-P capability. Consolidating the RDTE funding enables agile development and flexibility in support of the MMC FoS.

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Network Modernization Strategy LOE 2, Common Operating Environment (COE).

The Mounted Computing Environment (MCE) supports LOE 2 by providing:

- Critical Interoperability features that bridge the communications gap between the Command Post Computing Environment (CPCE) and Mobile Handheld Computing Environment (Nett Warrior)
- Data mediation, message format translation, and waveform exchanges across all CEs delivering improved information dissemination
- Mounted Common Operating Picture (COP) data sources, shared blue / red situational awareness, and Position / Location Information across the CEs
- Common, reusable services that enable Warfighting Function (WfF) convergence for rapid capability development and delivery with reduced costs for external PORs
- Mounted platform data sensor collection, processing, and disbursement applications that enable and enhance WfFs on the battlefield
- Foundational Cross-Cutting Capabilities (CCCs) that integrate with Joint C5ISR and strike capabilities

The MCE, which is one of six Computing Environments (CE) under the COE, internally develops and hosts applications (apps) developed by programs external to Project Manager Mission Command (PM MC) to provide robust WfF capabilities. MCE RDTE funding is executed to develop Mounted Mission Command-Software (MMC-S) (described below) to enable these convergence efforts.

Requirements for MMC-S (MCE) are established in the Army Requirements Oversight Council (AROC)-approved COE Information Systems Initial Capability Document (IS ICD) and the MCE Requirements Definition Package (RDP). MMC-S will support the next-generation network, transceiver, and more mature cross-Computing Environment (CE) interfaces.

At the Materiel Development Decision (MDD) review, the Milestone Decision Authority (MDA) signed an Acquisition Decision Memorandum (ADM) in June 2020 designating MMC-S as an ACAT II program of record (POR) under the MCE RDP.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)
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MMC-S employs a Developmental Operations (DevOps) process to incrementally develop capability to satisfy Warfighter requirements and inform fielding decisions. DevOps activities will incorporate new capabilities and enhancements driven by the RDP and based on user feedback. Furthermore, MMC-S will provide the foundation to support third-party application convergence onto the MMC-S baseline. MMC-S utilizes the Android Tactical Assault Kit (TAK), which is a geospatial infrastructure and military situational awareness application that allows for precision targeting, surrounding land formation intelligence, situational awareness, navigation, and data sharing.

FY 2023 MCE RDTE funding has been realigned to JBC-P (PE 0604805A, Proj 593). These funds will support continued MMC-S development as part of the MMC Family of Systems (MMC FoS) strategy for modernizing and replacing the JBC-P capability. Consolidating the RDTE funding enables agile development and flexibility in support of the MMC FoS.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Software Development</p> <p>Description: MMC-S provides an integrated mission command capability across Platforms, through all echelons, delivering simplicity, intuitiveness, core services and applications, a common look and feel, and functionality across all Warfighting Functions (WfF); Fires, Logistics, Intelligence, and Maneuver. Software development is focused on enhanced situational awareness functions, cross-cutting data exchange services, and Mission Command applications displayed on the next-generation common geospatial solution [map] through a graphical user interface that delivers a "common look and feel" across the CEs.</p>	17.707	-	-
<p>Title: Software/Systems Engineering</p> <p>Description: Perform Software and Systems Engineering (SE) in support of the development of MMC-S (MCE) capabilities, applications and services, to include, but not limited to, executing engineering studies, software architecture development, system analysis, technical readiness assessments, technical exchange meetings and events, and development of related reports and deliverables described in the MCE RDP. SEs will coordinate the development of common infrastructure components with CPCE and M/HHCE to define and incorporate the COE cross-cutting capabilities.</p>	0.972	-	-
<p>Title: Test and Evaluation</p> <p>Description: Test and evaluation (T&E) efforts consist of planning and execution for required test events to inform fielding decisions and ensure the safe delivery of capability to the Warfighter. T&E events include: Development Operations (DevOps), Developmental Tests (DT), Software Assurance Tests, CS23 Integration Events, Risk Reduction Tests, Operational Demonstrations (Op Demos), Army Interoperability Certification (AIC) , Security Control Assessment-Validation, and Initial Operational Test and Evaluation (IOT&E).</p>	1.683	-	-
<p>Title: PM Support (Matrix & Contractor)</p> <p>Description: Program management includes overall management of program execution, major text events, reporting, technical support, and logistical support. Includes participation in program planning meetings, Integrated Project Teams, Technical</p>	0.714	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Exchange Meetings, stakeholder management, 3rd party application convergence, and Science and Technology efforts and convergence. These efforts are continuous for the life of the program. They are not tied to specific versions of MMC-S.				
Accomplishments/Planned Programs Subtotals		21.076	-	-
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
<p>MMC-S is the Army's initiative to provide simple and intuitive Mission Command on-the-Move (MCoTM) and situational awareness down to the platoon level. It is standards based, protected, and supports incremental improvements and WfF app capability enhancements. MMC-S leverages existing JBC-P hardware and network, and is deployed as a SW only upgrade to replace JBC-P SW. The MMC-Software will exploit the MMC-Transport (BFT 3 network) and hardware capability-maturation, continuously enhancing capabilities, security, and network resiliency that outpaces adversarial countermeasures and threats. MMC-S provides a common user-experience that enables leaders to lead and fight their formations from anywhere on the battlefield. MMC-S serves as the data mediator between disparate CEs, the Command Post Computing Environment (CPCE) and the Mobile Handheld Computing Environment (Nett Warrior), enabling seamless Mission Command and Common Operating Picture (COP) generation across all three CEs.</p> <p>MMC-S utilizes an incremental development approach, leveraging DevOps, to ensure capability is delivered quickly, satisfies requirements, and addresses Warfighter feedback. This agile development process injects enhancements into the baseline software, making it easier and faster to incorporate technological advances. The product office conducts commercial software assessments to determine applicability and suitability for inclusion in the MMC-S baseline.</p> <p>Software development increments and fielding decisions are agile and are programmatically aligned with the two-year Army Capability Sets within the five-year Requirements Development Package (RDP; i.e. - IT Box). MMC-S is developed in Capability Assessment Packages (CAP), which are small groupings of requirements and capability that are manageable, tailorable, and scalable to meet Warfighter needs. The CAPS are developed by the Lead Systems Integrator (LSI) in three to twelve month timeframes. Collections of CAPs form MMC-S Engineering Releases (ER) / Capability Drops (CDs), which build upon one another leading to a complete incremental release (i.e. version 3.1). Incremental releases will be fielded with the Army Capability Sets. Full Deployment Decision (FDD) for MMC-S v3.1 is scheduled for 4QFY23. FDD for MMC-S v3.2 is scheduled for 4QFY24, aligned to CS25. FDD for MMC-S v3.3 is scheduled for 4QFY26, aligned to CS27.</p> <p>At the Materiel Development Decision (MDD) review, the Milestone Decision Authority (MDA) signed an Acquisition Decision Memorandum (ADM) in June 2020 designating MMC-S as an ACAT II program of record (POR) under the MCE RDP.</p>				

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	EJ5 / <i>MOUNTED COMPUTING ENVIRONMENT (MCE)</i>

Beginning with FY 2023, the Army has realigned MCE RDT&E funding for the development of the Mounted Mission Command - Software (MMC-S) from this line to the JBC- P RDTE line (PE 0604805A/Proj 593). These funds will support continued MMC-S development as part of the MMC Family of Systems (MMC FoS) strategy for modernizing and replacing the JBC-P capability. Consolidating the RDTE funding enables agile development and flexibility in support of the MMC FoS.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604818A / Army Tactical Command & Control Hardware & Software				EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Support (Matrix & Contractor)	Various	PM Mission Command : Aberdeen Proving Ground, MD	6.143	0.714	Nov 2021	-		-		-		-	Continuing	Continuing	-
Subtotal			6.143	0.714		-		-		-		-	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	Various	PM Mission Cmd, Multiple Matrix Orgs and SW Dev Contractors : Aberdeen Proving Ground, MD	46.255	17.707	Dec 2021	-		-		-		-	Continuing	Continuing	-
Software/Systems Engineering	Various	PM Mission Cmd, Multiple Matrix Orgs and SW Dev Contractors : Aberdeen Proving Ground, MD	21.540	0.972	Nov 2021	-		-		-		-	Continuing	Continuing	-
Subtotal			67.795	18.679		-		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test, Evaluation and Integration	MIPR	Multiple Test Agencies; Multiple Locations : Aberdeen Proving Ground, MD	8.995	1.683	Nov 2021	-		-		-		-	Continuing	Continuing	-
Subtotal			8.995	1.683		-		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army							Date: March 2023				
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)				
	Prior Years	FY 2022	FY 2023		FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	82.933	21.076	-		-	-	-	Continuing	Continuing	N/A	

Remarks
 Beginning with FY 2023, the Army has realigned MCE RDT&E funding for the development of the Mounted Mission Command - Software (MMC-S) from this line to the JBC- P RDTE line (PE 0604805A/Proj 593). These funds will support continued MMC-S development as part of the MMC Family of Systems (MMC FoS) strategy for modernizing and replacing the JBC-P capability. Consolidating the RDTE funding enables agile development and flexibility in support of the MMC FoS.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MMC-S v3.1 Arch, System Engr & Development																												
MMC-S v3.1 Critical Design Review (CDR)	1																											
MMC-S v3.2 Arch, System Engr & Development																												
Continued MMC-S Efforts funded via JBC-P RDTE (0604805A/593)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ5 / MOUNTED COMPUTING ENVIRONMENT (MCE)

Note
Beginning with FY 2023, the Army has realigned MCE RDT&E funding for the development of the Mounted Mission Command - Software (MMC-S) from this line to the JBC- P RDTE line (PE 0604805A/Proj 593). These funds will support continued MMC-S development as part of the MMC Family of Systems (MMC FoS) strategy for modernizing and replacing the JBC-P capability. Consolidating the RDTE funding enables agile development and flexibility in support of the MMC FoS.

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) EJ5 / <i>MOUNTED COMPUTING ENVIRONMENT (MCE)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MMC-S v3 Test & Integration	3	2017	4	2018
MMC-S v3.1 Arch, System Engr & Development	1	2019	4	2022
MMC-S v3 Customer Test	1	2019	1	2019
MMC-S Materiel Development Decision (MDD) Briefing	2	2020	2	2020
N-CFT's ITN 19 Experimentation Event	2	2020	2	2020
MMC-S v3.1 Critical Design Review (CDR)	1	2022	1	2022
MMC-S v3.2 Arch, System Engr & Development	4	2022	4	2022
Continued MMC-S Efforts funded via JBC-P RDTE (0604805A/593)	1	2023	4	2027

Note

Beginning with FY 2023, the Army has realigned MCE RDT&E funding for the development of the Mounted Mission Command - Software (MMC-S) from this line to the JBC- P RDTE line (PE 0604805A/Proj 593). These funds will support continued MMC-S development as part of the MMC Family of Systems (MMC FoS) strategy for modernizing and replacing the JBC-P capability. Consolidating the RDTE funding enables agile development and flexibility in support of the MMC FoS.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EJ6: TACTICAL ENHANCEMENT	-	7.573	-	9.040	-	9.040	-	-	-	-	0.000	16.613
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Network Modernization Priority and supports the Army's strategy for Logistics Transport Convergence. Efforts are aligned to support the Network-Cross Functional Team capability set approach to achieve the network modernization strategy.

TROPO: Tactical Enhancement supports the evaluation and testing requirements for Troposcatter Transmission (TROPO) capabilities procured and fielded under the Signal Modernization (SIGMOD) funding line, B00010. TROPO will provide redundancy communications in a Satellite Denied environment by providing improved Line of Sight and Beyond Line of Sight (BLOS) radio systems. Enables Mission Command in a Satellite Denied environment by providing BLOS capability over longer ranges and at higher throughput than the current BLOS System. TROPO extends the network by utilizing a significantly reduced SWaP radio versus the current system. TROPO will enable Army units to reduce reliance on costly satellite bandwidth.

COMMAND POST NETWORKING: Enables Command Post networking capabilities by providing communications solutions to enable a more survivable Command Post against near peer advisories. The solutions will utilize advanced waveform and antenna improvements to decrease radio frequency detection and interception in the battlefield and will be integrated onto the appropriate platforms to increase Command Post survivability.

STS: The Sustainment Transport System (STS) is a data transport capability through satellite communications (SATCOM) and an integrated component of the Unified Network providing unclassified communications to U.S. Army sustainment units in their support to the Warfighter. STS provides network connectivity and enables a SATCOM pathway for logistics, financial management, personnel, and health service support data to be exchanged on the battlefield between multiple echelons and enterprise data sources. The STS provides critical connectivity on the battlefield where the Integrated Tactical Network (ITN) and other communication systems do not extend to dispersed and forward deployed sustainment units.

STS is comprised of one SATCOM System to enable Beyond Line of Sight (BLOS) communication and enterprise access. Each SATCOM System is accompanied by Line of Sight (LOS) radio systems to extend service to distant enclaves, and Wireless Network Access (Wi-Fi) to connect subscriber computers within a local enclave. STS will be acquired as three Programs of Record (PORs) beginning in FY23: STS SATCOM (ACAT II), STS Wi-Fi (ACAT II), and STS LOS (ACAT III). FY24 funding supports the execution of an Initial Test and Evaluation (IOT&E) for each STS POR in FY24.

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

	FY 2022	FY 2023	FY 2024
Title: Customer Test for TROPO systems	6.100	-	-
Description: Funds support TROPO Customer Test and associated support.			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Title: Command Post Networking Description: Funds support Command Post Networking		1.473	-	-
Title: STS SATCOM Test and Evaluation Description: These funds will be used to conduct an Initial Test and Evaluation (IOT&E) of the STS SATCOM System in order to facilitate integration into the Unified Network. This Acquisition Strategy enables the integration of proven Commercial-Off-The-Shelf (COTS) capabilities into existing Tactical Network nodes to expand and enhance network capacity and user access. The STS SATCOM capability will be acquired as an ACAT II program to replace legacy equipment in the field as a distinct Major Capability Acquisition program, starting with a Milestone C Determination in 2QFY23. FY 2024 Plans: FY24 funding supports STS SATCOM Systems product development consisting of test assets that will be used during initial engineering tests and Army Test and Evaluation Command (ATEC) evaluation of the STS capabilities/requirements including integration into the Unified Network. Test and evaluation will include verification/validation of the approved capabilities/requirements in the Bridge to Future Networks (BFN) Capability Production Document (CPD) Rev 2 (dated 23 May 2022). In addition, this funds ATEC personnel conducting the evaluation, any test tools and test range time that may be needed to conduct these tests, and associated travel costs. This funding will also be used to conduct a cyber assessment of STS SATCOM and will include Red Team Penetration Testing. FY 2023 to FY 2024 Increase/Decrease Statement: Increase is due to execution of IOT&E of the STS SATCOM System and any necessary modifications discovered during Operational Test.		-	-	3.500
Title: STS Wi-Fi Test and Evaluation Description: These funds will be used to conduct an Initial Test and Evaluation (IOT&E) of the STS Wi-Fi System in order to facilitate integration into the Unified Network. This Acquisition Strategy enables the integration of proven Commercial-Off-The-Shelf (COTS) capabilities into existing Tactical Network nodes to expand and enhance network capacity and user access. The STS SATCOM capability will be acquired as an ACAT II program to replace legacy equipment in the field as a distinct Major Capability Acquisition program, starting with a Milestone C Determination in 2QFY23. FY 2024 Plans: FY24 funding supports STS Wi-Fi System product development consisting of test assets that will be used during initial engineering tests and Army Test and Evaluation Command (ATEC) evaluation of the STS capabilities/requirements including integration into the Unified Network. Test and evaluation will include verification/validation of the approved capabilities/requirements in the		-	-	2.640

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Bridge to Future Networks (BFN) Capability Production Document (CPD) Rev 2 (dated 23 May 2022). In addition, this funds ATEC personnel conducting the evaluation, any test tools and test range time that may be needed to conduct these tests, and associated travel costs. This funding will also be used to conduct a cyber assessment of STS Wi-Fi and will include Red Team Penetration Testing.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase is due to execution of IOT&E of the STS Wi-Fi System and any necessary modifications discovered during Operational Test.</p>			
<p>Title: STS LOS Test and Evaluation</p> <p>Description: These funds will be used to conduct an Initial Test and Evaluation (IOT&E) of the STS LOS System in order to facilitate integration into the Unified Network. This Acquisition Strategy enables the integration of proven Commercial-Off-The-Shelf (COTS) capabilities into existing Tactical Network nodes to expand and enhance network capacity and user access. The STS SATCOM capability will be acquired as an ACAT III program to replace legacy equipment in the field as a distinct Major Capability Acquisition program, starting with a Milestone C Determination in 2QFY23.</p> <p>FY 2024 Plans: FY24 funding supports STS LOS System product development consisting of test assets that will be used during initial engineering tests and Army Test and Evaluation Command (ATEC) evaluation of the STS capabilities/requirements including integration into the Unified Network. Test and evaluation will include verification/validation of the approved capabilities/requirements in the Bridge to Future Networks (BFN) Capability Production Document (CPD) Rev 2 (dated 23 May 2022). In addition, this funds ATEC personnel conducting the evaluation, any test tools and test range time that may be needed to conduct these tests, and associated travel costs. This funding will also be used to conduct a cyber assessment of STS LOS and will include Red Team Penetration Testing.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase is due to execution of IOT&E of the STS LOS System and any necessary modifications discovered during Operational Test.</p>	-	-	2.900
Accomplishments/Planned Programs Subtotals	7.573	-	9.040

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• B00010: Signal Modernization Program	140.036	167.058	161.585	-	161.585	200.354	201.162	201.292	200.467	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2024</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• BD3513: CSS SATCOM	73.110	60.879	56.804	-	56.804	67.703	68.014	68.180	68.405	0.000	463.095

Remarks

B00010: OPA funding line for Signal Modernization (SIGMOD): TROPO
 BD3513: OPA funding line for CSS SATCOM: STS SATCOM, STS Wi-Fi, STS LOS

D. Acquisition Strategy

These funds will be used to conduct Initial Operational Tests and Evaluation (IOT&E) of STS SATCOM, STS LOS, and STS Wi-Fi Systems in order to facilitate integration into the Unified Network. This Acquisition Strategy enables the integration of proven Commercial-Off-The-Shelf (COTS) capabilities into existing Tactical Network nodes to expand and enhance network capacity and user access. The STS capabilities will be acquired as ACAT II and ACAT III programs to replace legacy equipment in the field as three distinct Major Capability Acquisition programs, starting with Milestone C Determinations in 2QFY23.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TROPO Customer Test	MIPR	ATEC : Aberdeen Proving Ground, MD	-	6.100	Apr 2022	-		-		-		-	0.000	6.100	-
Command Post Networking	C/Various	Various : Various	-	1.473	Sep 2022	-		-		-		-	0.000	1.473	-
STS SATCOM Test and Evaluation	MIPR	ATEC : Aberdeen Proving Ground, MD	-	-		-		3.500	Feb 2024	-		3.500	0.000	3.500	-
STS Wi-Fi Test and Evaluation	MIPR	ATEC : Aberdeen Proving Ground, MD	-	-		-		2.640	Feb 2024	-		2.640	0.000	2.640	-
STS LOS Test and Evaluation	MIPR	ATEC : Aberdeen Proving Ground, MD	-	-		-		2.900	Feb 2024	-		2.900	0.000	2.900	-
Subtotal			-	7.573		-		9.040		-		9.040	0.000	16.613	N/A

Remarks
TROPO Customer Test will be a Soldier Touch Point (STP) in March 2023, to evaluate multiple industry solutions. This will be supported and instrumented by Army Test and Evaluation Command (ATEC).

STS SATCOM Test and Evaluation: FY24 funding supports STS SATCOM System product development consisting of test assets that will be used during initial engineering tests and Army Test and Evaluation Command (ATEC) evaluation of the STS capabilities/requirements including integration into the Unified Network. Test and evaluation will include verification/validation of the approved capabilities/requirements in the Bridge to Future Networks (BFN) Capability Production Document (CPD) Rev 2 (dated 23 May 2022). In addition, this funds ATEC personnel conducting the evaluation, any test tools and test range time that may be needed to conduct these tests, and associated travel costs. This funding will also be used to conduct a cyber assessment of the STS SATCOM System and will include Red Team Penetration Testing.

STS Wi-Fi Test and Evaluation: FY24 funding supports STS Wi-Fi System product development consisting of test assets that will be used during initial engineering tests and ATEC evaluation of the STS capabilities/requirements including integration into the Unified Network. Test and evaluation will include verification/validation of the approved capabilities/requirements in the Bridge to Future Networks (BFN) Capability Production Document (CPD) Rev 2 (dated 23 May 2022). In addition, this funds ATEC personnel conducting the evaluation, any test tools and test range time that may be needed to conduct these tests, and associated travel costs. This funding will also be used to conduct a cyber assessment of the STS Wi-Fi System and will include Red Team Penetration Testing.

STS LOS Test and Evaluation: FY24 funding supports STS Line of Sight System product development consisting of test assets that will be used during initial engineering tests and the full ATEC evaluation of the STS capabilities/requirements including integration into the Unified Network. Test and evaluation will include verification/validation of the approved capabilities/requirements in the Bridge to Future Networks (BFN) Capability Production Document (CPD) Rev 2 (dated 23 May 2022). In addition, this funds ATEC personnel conducting the evaluation, any test tools and test range time that may be needed to conduct these tests, and associated travel costs. This funding will also be used to conduct a cyber assessment of the STS LOS System and will include Red Team Penetration Testing.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army							Date: March 2023				
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT				
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	7.573	-	9.040	-	9.040	0.000	16.613	N/A		

Remarks

FY24 funding supports the Initial Tests and Evaluation (IOT&E) of STS SATCOM, Wi-Fi, and LOS systems to verify/validate the approved capabilities/requirements in the Bridge to Future Networks (BFN) Capability Production Document (CPD) Rev 2 (dated 23 May 2022). This funding will support the integration of STS to function as a System of Systems including satellite time on Ka, Ku, and X bands. Test and evaluation personnel, instrumentation, data collection, travel, and analysis will also be supported. This funding will also be used to conduct a cyber assessment of the STS programs and will include Red Team Penetration Testing.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Customer Test for TROPO	[Redacted]				Customer Test for TROPO																							
IOC for TROPO									1 IOC TROPO																			
Command Post Networking					[Redacted]																							
IOT&E for STS SATCOM System									[Redacted]																			
IOT&E for STS Wi-Fi System									[Redacted]																			
IOT&E for STS LOS System									[Redacted]																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EJ6 / TACTICAL ENHANCEMENT

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Customer Test for TROPO	3	2022	3	2023
IOC for TROPO	3	2024	3	2024
Command Post Networking	4	2022	2	2023
IOT&E for STS SATCOM System	2	2024	2	2024
IOT&E for STS Wi-Fi System	2	2024	2	2024
IOT&E for STS LOS System	2	2024	2	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EK9: TACTICAL NETWORK OPERATIONS AND MANAGEMENT	-	3.243	3.400	49.577	-	49.577	25.357	26.111	26.651	27.326	0.000	161.665
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project EK9, Tactical Network Operations Management (TNOM) funding increased from \$3.400 million in FY 2023 to \$49.577 million in FY 2024. The increase is partially the result of a funding realignment from the Unit Task Reorganization (UTR) 0604818A / EW3 funding line to TNOM. UTR 0604818A / EW3 prior year funding, per Congressionally authorized Middle Tier Acquisition (MTA) Authority, was leveraged for the Unified Network Operations (UNO) MTA Rapid Prototyping requirements to achieve necessary funding levels from FY 2019 - FY 2024. In FY 2024, the UTR 0604818A / EW3 funding is re-aligned to TNOM 0604818A / EK9 (\$13.828 million).

In addition to the UTR 0604818A / EW3 re-alignment, additional program funding increases support the approved UNO Information Systems - Initial Capabilities Document (IS-ICD) requirements (\$35.749 million) beginning in FY 2024. The increased funding supports the transition of the UNO prototyping activities towards development of fully integrated Unified Network (UN) capabilities in support of the UNO IS-ICD requirements.

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Network Modernization strategy and is the lynchpin of the Army Unified Network Plan.

Unified Network Operations (UNO) is foundational to Army network modernization efforts that enhance network security, resiliency, and data exchange, and to the service's Unified Network (UN) vision - which integrates and converges enterprise and tactical networks. UNO is a software-centric suite of applications, designed to replace and consolidate existing Network Operations (NetOps) tools. UNO applications when integrated, will provide a simple user-friendly capability for planning, managing, monitoring, configuring, and securing the network. UNO provides fully integrated Network and Enterprise Management Systems (NM/EMS) and Identity Credential Management (ICAM), an important tool in achieving a Zero Trust environment.

UNO management systems design and plan the network, including configuration, operation, and maintenance functions. The iterative UNO software will development approach will fully integrate cybersecurity capabilities and information dissemination management/content sharing (IDM/CS), including Army Zero Trust initiatives, to enable network mission command functions across the Enterprise and Tactical network environments.

UNO is a software-centric suite of applications, designed to replace and consolidate existing Network Operations (NetOps) tools that, when integrated, provide a simple, singular user-friendly capability for planning, managing, monitoring, configuring, and securing the UN. UNO provides fully integrated Network and Enterprise Management Systems (NM/EMS) to design and plan the network, including model and simulation, configuration, operation, and maintenance functions. UNO will develop and fully integrate cybersecurity capabilities and information dissemination management/content sharing (IDM/CS), including Army Zero Trust initiatives, to enable network mission command functions across the Enterprise and Tactical network environments.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT

The UNO rapid prototyping phase provides initial software development and prototyping of UNO capabilities through Development, Security, and Operations (DevSecOps), leveraging Integrated Tactical Network (ITN) and Capability Set (CS) schedules to conduct Soldier Touch Points (STPs) and obtain user feedback used to improve UNO. The Army Acquisition Executive (AAE) Acquisition Decision Memorandum (ADM) signed 14 May 2019 authorized the use of a Middle Tier Acquisition (MTA) pathway for Rapid Prototyping from FY 2019 - FY 2024. The total cost of the UNO MTA Rapid Prototyping effort is \$85 million RDT&E.

The UNO prototyping activities will transition to development of fully integrated UN capabilities in support of the UNO Information Systems - Initial Capabilities Document (IS-ICD), approved by the Army Future's Command (AFC) memorandum signed 28 June 2021. This phase of development expands UNO capabilities in support of a UN across Enterprise and Tactical networks and systems beginning in FY 2024. This phase of development will continue the DevSecOps approach for iterative software development, incorporating user feedback through STPs. In 3Q FY 2023, the program anticipates receiving authorization for initial software development of UNO IS-ICD requirements for tactical users to begin in FY 2024.

FY 2024 funding supports the completion of the UNO Middle Tier Acquisition (MTA) Rapid Prototyping phase with development of the UNO prototype v1.1 to support the overarching 2-year CS cycle for FY 2023. The development of the UNO prototype v1.1 builds on current prototype efforts to provide simplified NetOps capabilities across the tactical network, incorporating requirements stemming from CS initiatives and directed requirements.

Additionally, FY 2024 funding supports the initial development, testing, and integration of the UNO IS-ICD initial capability software release to support key components of the UN.

The total cost of the UNO Middle Tier of Acquisition effort is \$85 million RDT&E from FY19 to FY24. The UNO is fully funded across the Future Years Defense Program.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Title: Management Services</p> <p>Description: Management Services provides Program Management Office (PMO) activities (e.g., contract(s) management, acquisition efforts, costs, program management) to ensure the program maintains cost, schedule, and performance parameters.</p> <p>FY 2024 Plans: Management Services funds will provide for PMO support activities to the Unified Network Operations (UNO) program, to include contracts management, logistical support, program and business management functions.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Management Services funds were previously supported within the Unit Task Reorganization (UTR) 0604818A/EW3 funding line. Beginning in FY 2024, UTR funds have been realigned to TNOM 0604818A/EK9.</p>	-	-	2.466

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Additionally, Management Services funds increased to provide additional PMO support activities to establish and manage development and integration contracts, provide additional logistical support and program management for development of UNO IS-ICD software releases.				
<p>Title: Product Development</p> <p>Description: Product Development provides software development of Unified Network Operations (UNO) capabilities. UNO Middle Tier Acquisition (MTA) Rapid Prototyping provides Network Planning and Network Management capabilities to support multiple weapon systems (e.g., tactical radios, Satellite Communications (SATCOM), Line of Sight (LOS), and Beyond Line of Sight (BLOS)). Network Planning includes the development of automated analysis processes, improved planning accuracy, and simplified configuration operations. Network Management includes the management, network status, and monitoring capabilities to allow users the ability to adjust the network to meet mission requirements. Network Planning and Network Management prototypes provide a consistent look and feel with embedded training.</p> <p>UNO IS-ICD requirements will expand UNO capabilities to provide the key components of the UN. These components include streamlined and enhanced Network Planning and Device Configuration and Network Management and Monitoring tools and, enhanced security and data exchange capabilities, including Zero Trust. These components provide standardized, tailorable, and scalable capabilities across the UN.</p> <p>FY 2023 Plans: FY 2023 funding will support UNO MTA Rapid Prototyping (RP) efforts of UNO via NetOps capabilities that build upon current efforts, expand those efforts to address CSA priorities, and include emerging capability requirements stemming from Network CFT initiatives and directed requirements. Funding will also support development, assessments, and deliveries of integrated capabilities to plan, install, operate, maintain, and secure the Army's end-to-end network in support of the commander's mission priorities.</p> <p>The UNO MTA RP will support prototyping of NetOps capabilities that enable command and control of the Tactical Network which will provide simplicity via a Common Operating Picture (COP), a flexible framework enabling rapid integration of future commercial/ government tools, and reliable network information to the Soldiers.</p> <p>The Network Planner and Network Management capabilities will support Network CFT initiatives and directed requirements utilizing the adapt and buy approach, as well as modernization, put forth by Army leadership.</p> <p>The UNO MTA RP will continue product development of the simplified Network Planner functionality, which enables automated NetOps capabilities to plan, manage and operate the Tactical Network via user workflows and reduces the cognitive burden to</p>		3.243	3.276	41.088

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT

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

the Soldiers. Will continue development of Radio Planning capabilities in order to plan and create configuration files for emerging Integrated Tactical Network (ITN) radios and waveforms.

The UNO MTA RP will continue product development of the simplified Network Management functionality, which enables the management and troubleshooting of the network elements that comprise the Tactical Network by monitoring local nodes for network health status, performance, location, and security, in addition to displaying monitored data to the local operator.

FY 2024 Plans:

Product Development funds will provide for iterative software development of UNO capabilities.

UNO MTA Rapid Prototyping product development includes software development of Network Planning and Network Management capabilities for the delivery of UNO prototype v1.1 software to support the overarching 2-year CS cycle for FY 2023 - FY 2024.

Product Development supports the transition from rapid prototyping to fully integrated UNO capabilities in FY 2024 to support the UNO IS-ICD requirements. UNO IS-ICD product development includes software development of integrated Network and Enterprise Management Systems (NM/EMS), cybersecurity, and information dissemination management/content sharing (IDM/CS), including Zero Trust.

UNO IS-ICD requirements will leverage and enhance existing prototypes to delivery NetOps tools/capabilities to develop and maintain critical situational awareness (SA) in all operational environments. NM/EMS software development results in designing, planning, configuration, operation, and maintenance functions (e.g., network and transports systems, cryptographic devices, servers, clients, end user devices, applications, and services).

Cybersecurity capabilities will address cyber defense of the network that are threat agnostic; integrated with cyberspace operations, intelligence, and other information related capabilities to establish cyberspace defense in depth.

IDM/CS provides information management planning; information discovery/delivery management; storage/cataloging of available information; and system administration functions.

FY 2023 to FY 2024 Increase/Decrease Statement:

Product Development funds for Network Management prototypes were previously supported within the Unit Task Reorganization (UTR) 0604818A/EW3 funding line. Beginning in FY 2024, UTR funds have been realigned to Tactical Network Operations Management (TNOM) 0604818A/EK9.

FY 2022	FY 2023	FY 2024

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Product Development funds increased to support the transition from rapid prototyping to software development of fully integrated UNO capabilities to meet UNO IS-ICD requirements beginning in FY 2024.				
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC 638</p> <p>FY 2023 Plans: FY 2023 SBIR / STTR Transfer.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2023 SBIR / STTR Transfer.</p>		-	0.124	-
<p>Title: Training Development</p> <p>Description: Training Development provides development of training materials in support of Unified Network Operations (UNO) Information Systems - Initial Capabilities Document (IS-ICD) requirements. Training development includes classroom training curriculums and subsequent training materials required to support Soldier training, allowing for maximum competency when operating UNO capabilities.</p> <p>FY 2024 Plans: Training Development funds will provide for development of training materials beginning in FY 2024 to support UNO IS-ICD requirements. Training development will support the iterative software development process and Development, Security, and Operations (DevSecOps) activities, including Soldier Touch Points (STPs) throughout the development cycle.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Training funds increased to support development of training curriculums and training materials required to support the DevSecOps approach, including STPs, throughout the software development cycle for UNO software releases.</p>		-	-	1.509
<p>Title: Test & Evaluation</p> <p>Description: Test & Evaluation provides funding to support testing and evaluation of Unified Network Operations (UNO) capabilities; ensures necessary certifications required to operate UNO capabilities across Army networks to support Department of Defense Information Networks (DODIN) operations are attained; ensures UNO capabilities are well integrated and interoperable across the Army's Unified Network (UN).</p> <p>FY 2024 Plans: Test & Evaluation funds will provide for the test and evaluation of UNO capabilities, acquiring the necessary certifications to operate UNO capabilities across Army networks for DODIN operations, and will ensure UNO capabilities are integrated and</p>		-	-	4.514

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
interoperable across the Army's UN. This includes the Office of the Director, Operational Test and Evaluation (DOT&E) and Army Test and Evaluation Center (ATEC) support, test lab and equipment (hardware/software), development test activities (quarterly software testing, annual Formal Qualification Testing (FQT) and cybersecurity testing), operational Soldier Touch Points (STPs), cybersecurity and penetration testing during STPs, testing range coordination, network configuration, and test documentation.			
FY 2023 to FY 2024 Increase/Decrease Statement: Test & Evaluation funds increased to support testing and certification of fully integration Network and Enterprise Management System (NM/EMS) software, cybersecurity capabilities, and information dissemination management and content sharing (IDM/CS) to support UNO software releases.			
Accomplishments/Planned Programs Subtotals	3.243	3.400	49.577

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• EW3: Unit Task Reorganization (UTR) Development	9.003	13.799	0.000	Base	OCO	Total	-	-	-	-	Continuing

Remarks
In accordance with National Defense Authorization Act (NDAA) funding policy for Middle Tier Acquisition (MTA) programs, Unified Network Operations (UNO) MTA Rapid Prototyping leverages funds from Unit Task Reorganization (UTR) 0604818A/EW3 and Tactical Network Operations Management (TNOM) 0604818A/EK9 to achieve its required funding levels.

UTR 0604818A/EW3 funding has been re-aligned to TNOM 0604818A/EK9 beginning in FY 2024.

D. Acquisition Strategy
Tactical Network Operations Management (TNOM) supports software development and integration of the Unified Network Operations (UNO) capabilities. Authority granted by the Army Acquisition Executive (AAE) Acquisition Decision Memorandum, signed 14 May 2019, approved the use of the Middle Tier Acquisition (MTA) pathway for Rapid Prototyping to develop and prototype the Network Operations (NetOps) solution. The UNO MTA Rapid Prototyping effort develops and delivers prototype capabilities to tactical users for experimentation, leveraging user feedback, to further refine UNO capability requirements. UNO MTA Rapid Prototyping follows the Army's Development, Security, and Operations (DevSecOps) approach to develop, assess, adjust, and deliver enhanced capabilities to the operational force in the shortest time possible, while mitigating cost, schedule, and performance risks early in the UNO program life cycle. In alignment with the MTA authority, UNO MTA Rapid Prototyping will continue to develop and deliver prototypes culminating with the development and testing of the UNO prototype v1.1 to support Capability Set (CS) FY 2023.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	EK9 / <i>TACTICAL NETWORK OPERATIONS AND MANAGEMENT</i>

On 28 June 2021, Army Futures Command (AFC) signed a memorandum approving the UNO Information Systems - Initial Capabilities Document (IS-ICD) which supports the Army Modernization Strategy to provide a NetOps framework that synchronizes and achieves a seamless end-to-end Unified Network (UN) from enterprise to tactical echelons enabling all warfighting functions. UNO IS-ICD requirements (Lower-Tier Tactical (LTT), Upper-Tier Tactical (UTT), Identity, Credential and Access Management (ICAM), Strategic, Installation, and Data Fabric) will serve as the key component of the UN construct to provide a standardized suite of tailorable and scalable NetOps tools/capabilities that are shared/common across the UN that increase simplicity, reduce critical operations task gaps, and create an affordability profile that is sustainable.

In 3Q FY 2023, the program anticipates receiving authorization for initial development of the UNO IS-ICD requirements for tactical users beginning in FY 2024. This strategy supports the transition of the UNO prototyping activities towards development of fully integrated Unified Network (UN) capabilities.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Various : Various	-	-		-		2.466	Nov 2023	-		2.466	0.000	2.466	-
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.124		-		-		-	0.000	0.124	-
Subtotal			-	-		0.124		2.466		-		2.466	0.000	2.590	N/A

Remarks
 Management Services funds were previously supported within the Unit Task Reorganization (UTR) 0604818A/EW3 funding line. Beginning in FY 2024, UTR funds have been realigned to TNOM 0604818A/EK9.

Management Services funds increased to provide additional PMO support activities to establish and manage development and integration contracts, provide additional logistical support and program management for development of UNO IS-ICD software releases.

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
UNO Software Development	C/Various	Various : Various	13.287	3.243	Apr 2022	3.276	Jan 2023	41.088	Nov 2023	-		41.088	0.000	60.894	-
Subtotal			13.287	3.243		3.276		41.088		-		41.088	0.000	60.894	N/A

Remarks
 Product Development funds for Network Management prototypes were previously supported within the Unit Task Reorganization (UTR) 0604818A/EW3 funding line. Beginning in FY 2024, UTR funds have been realigned to Tactical Network Operations Management (TNOM) 0604818A/EK9.

Product Development funds increased to include the iterative software development to meet UNO IS-ICD requirements for the development of UNO software releases.

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Training Development	Various	To Be Determined : To Be Determined	-	-		-		1.509	Mar 2024	-		1.509	0.000	1.509	-
Subtotal			-	-		-		1.509		-		1.509	0.000	1.509	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT
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Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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
Support costs increased to support development of training curriculums and training materials required to support the DevSecOps approach, including STPs, throughout the software development cycle for UNO software releases.

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Test and Evaluation	Various	To Be Determined : To Be Determined	-	-		-		4.514	Apr 2024	-		4.514	0.000	4.514	-
Subtotal			-	-		-		4.514		-		4.514	0.000	4.514	N/A

Remarks
Test & Evaluation funds increased to support testing and certification of fully integration Network and Enterprise Management System (NM/EMS) software, cybersecurity capabilities, and information dissemination management and content sharing (IDM/CS) to support UNO software releases.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	13.287	3.243	3.400	49.577	-	49.577	0.000	69.507	N/A

Remarks
Tactical Network Operations Management (TNOM) funding increased from \$3.400 million in FY 2023 to \$49.577 million in FY 2024 as a result of re-alignment of \$13.828 million from the Unit Task Reorganization (UTR) 0604818A / EW3 funding line. Additionally, program funding increased by \$35.749 million to support the Unified Network Operations (UNO) Information Systems - Initial Capabilities Document (IS-ICD) requirements beginning in FY 2024.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UNO CS21 Software Development	[Blue bar]																											
	Software Development																											
UNO v1.0 Transition to Capability Set (CS) 21	[Blue triangle 1]																											
	UNO v1.0 Transition to CS21																											
UNO CS23 Software Development	[Blue bar]																											
	Software Development																											
UNO v1.1 Transition to CS23									[Blue triangle 2]																			
									UNO v1.1 Transition to CS23																			
UNO RP MTA Authority	[Blue bar]																											
	UNO RP MTA Authority																											
UNO RP MTA Transition Decision									[Blue triangle 3]																			
									UNO RP MTA Transition Decision																			
UNO IS-ICD Dev Contract Award (Pre-Decisional)									[Blue triangle 4]																			
									UNO IS-ICD Dev Contract Award (Pre-Decisional)																			
UNO IS-ICD Software Release 1 Iterative Software Develop...									[Blue bar]																			
									UNO IS-ICD Software Release 1 Iterative Software Development and Testing																			
UNO IS-ICD Software Release 1 Decision													[Blue triangle 5]															
													UNO IS-ICD Software Release 1 Decision															
UNO IS-ICD Software Release 2 Iterative Software Develop...													[Blue bar]															
													UNO IS-ICD Software Release 2 Iterative Software Development and Testing															
UNO IS-ICD Software Release 2 Decision																	[Blue triangle 6]											
																	UNO IS-ICD Software Release 2 Decision											
UNO IS-ICD Software Release 3 Iterative Software Develop...																	[Blue bar]											
																	UNO IS-ICD Software Release 3 Iterative Software Development											
UNO IS-ICD Software Release 3 Decision																					[Blue triangle 7]							
																					UNO IS-ICD Software Release 3 Decision							

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software		Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UNO IS-ICD Software Release 4 Iterative Software Develop...																												
UNO IS-ICD Software Release 4 Decision																												

UNO IS-ICD Software Release 4 Iterst

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UNO IS-ICD Software R

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EK9 / TACTICAL NETWORK OPERATIONS AND MANAGEMENT

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
UNO CS21 Software Development	3	2019	1	2022
UNO v1.0 Transition to Capability Set (CS) 21	1	2022	1	2022
UNO CS23 Software Development	2	2021	2	2024
UNO v1.1 Transition to CS23	1	2024	1	2024
UNO RP MTA Authority	3	2019	3	2024
UNO RP MTA Transition Decision	2	2024	2	2024
UNO IS-ICD Dev Contract Award (Pre-Decisional)	3	2024	3	2024
UNO IS-ICD Software Release 1 Iterative Software Development and Testing	2	2024	2	2025
UNO IS-ICD Software Release 1 Decision	2	2025	2	2025
UNO IS-ICD Software Release 2 Iterative Software Development and Testing	3	2025	2	2026
UNO IS-ICD Software Release 2 Decision	2	2026	2	2026
UNO IS-ICD Software Release 3 Iterative Software Development and Testing	3	2026	2	2027
UNO IS-ICD Software Release 3 Decision	2	2027	2	2027
UNO IS-ICD Software Release 4 Iterative Software Development and Testing	3	2027	2	2028
UNO IS-ICD Software Release 4 Decision	2	2028	2	2028

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EQ8: <i>Mobile/Handheld Computing Environment (M/HHCE)</i>	-	4.919	5.298	7.549	-	7.549	6.284	5.291	5.347	5.408	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project EQ8 - The Common Operating Environment (COE) is an approved set of computing technologies and standards that enables secure and interoperable applications to be developed and executed rapidly across a variety of computing environments. The Mobile/Handheld Computing Environment (M/HHCE) is one of the six computing environments under the COE, which provides the standards for all Army hand-held applications enabling the use of common End User Devices by Soldiers, thereby eliminating redundant devices and reducing the Soldiers' load.

Nett Warrior (NW) and Integrated Visual Augmentation System (IVAS) are the instantiation of the M/HHCE and comply with the technical standards documented by the M/HHCE and provide the dismounted common computational platform for other products relevant to dismounted Soldiers. Through compliance with the M/HHCE, software applications from other programs are integrated with the NW and IVAS systems, reducing the need for duplicate hardware resulting in reduced Soldier Load. The M/HHCE is directly aligned to the Army Network Modernization Strategy Line of Effort (LOE) 1 (Unified Network). M/HHCE also supports the Army Network Modernization Strategy LOE 2 (Common Operating Environment). These efforts are aligned to the Army's Tactical Network Capability Set development and fielding plans by utilizing (1) interoperable data, message, and waveforms, (2) sensors and applications that enable operations across domains and automated tools to aid decision-making and (3) integration with Joint C4ISR and strike capabilities. NW leverages commercial smart phone devices and secure Army tactical radios to provide the dismounted leader an integrated mission command and situational awareness capability for use during combat operations. NW applied feedback from conventional and Special Operations units to procure and implement Secret and Secure But Unclassified (SBU) networking equipment for BCTs and the Security Force Assistance Brigades to enable faster, more flexible Mission Command data exchanges with Joint and Coalition forces while maintaining the existing integrated mission command capability with Mounted CE (e.g., Joint Battle Command - Platform (JBC-P)) system. NW uses Commercial-Off-The-Shelf (COTS) and Non-Developmental (NDI) computational & communication equipment to create a robust and flexible Integrated Tactical Network that enables faster and more accurate decision making in fights at the tactical level.

Requirements for the M/HHCE are established in the Army Requirements Oversight Council (AROC) approved COE Information Systems Initial Capability Document (IS ICD), the M/HHCE Requirements Definition Package (RDP), and the NW Capability Development Document in lieu of Capability Production Document. M/HHCE is a signature effort under the Network CFT (Common Operating Environment focused on dismounted Soldier). The Network CFT is one of the six Army modernization priorities per Army Modernization Strategy 2019. M/HHCE employs a Developmental Operations (DevOps) process to incrementally develop capability over time to satisfy requirements and meet fielding decisions. FY2024 funding will continue DevOps activities to incorporate new capability and enhancements based on user feedback, as well as lay the groundwork to support migration of third-party applications onto the M/HHCE software baselines. Additionally, FY 2024 funding provides for integration/test equipment and risk reduction events, as well as funding to integrate with the Enhanced Night Vision Goggle - Binocular (ENVG-B) and on-body processing.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Title: Test and Evaluation</p> <p>Description: Test and evaluation efforts include the planning and conduct of combined COE events with Command Post/Mounted Computing Environment, Software Acceptance Testing, System Integration Events, Risk Reduction Events, Security Penetration Testing and Operational Assessment like annual Army Expeditionary Warrior Experiment (AEWE) to gain Soldier Touch point feedback on new capabilities.</p> <p>FY 2023 Plans: Conduct NW test and 3rd party applications evaluation for technical verification at developmental test events and user verification. Support NW as a baseline JWA system including: Brigade level support, equipping, training, and spares for NW; conduct yearly environmental testing; and Information Assurance penetration prevention testing for new commercial smart devices, software and accessories. Support Army Expeditionary Warrior Experiment (AEWE) assessments to gain Soldier touch point feedback on emerging dismounted capabilities.</p> <p>FY 2024 Plans: Conduct NW test and 3rd party applications evaluation for technical verification at developmental test events and user verification. Support NW as a baseline ITN/mobile CE system including conduct yearly environmental testing and Information Assurance penetration prevention testing for new commercial smart devices, software, and accessories. Support annual DevOps operational assessments to gain Soldier touch point feedback on emerging dismounted capabilities.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY24 funding increase due to inflation.</p>		0.498	1.020	1.210
<p>Title: Hardware and Software Integration and Evaluation for Capability Improvements</p> <p>Description: Hardware and Software Integration and Evaluation for Capability Improvements</p> <p>FY 2023 Plans: Evaluate next End User Devices (EUD) and associated hardware components to stay aligned with commercial and Army evolving requirements. Provide NW software / hardware updates to support incorporation of 3rd party software applications onto NW EUD platform, Army Interoperability Certification (AIC) and cyber security testing. Support DARPA integration and transition of future technologies. Update software to M/HHCE standards as revised to maintain compliance with COE. Start DARPA SHARE multi-level security integration on EUD. Integrate PANTHER (SBIR) capability within NW to provide non-GPS based approach for determining approximate position location information. Supports development, evaluation, and integration efforts for robotics controllers configurable to the mobile handheld computing environment.</p> <p>FY 2024 Plans:</p>		1.907	1.385	2.031

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Evaluate next End User Devices (EUD) and associated hardware components to stay aligned with commercial and Army evolving requirements. Provide NW software / hardware updates to support incorporation of 3rd party software applications onto NW EUD platform and cyber security testing. Support Defense Advanced Research Projects Agency (DARPA) integration and transition of future technologies. Update software to M/HHCE standards as revised to maintain compliance with COE. Continue DARPA SHARE network server reduction infrastructure transition capability. Continue integration of PANTHER (SBIR) into NW, PANTHER leverages terrain features and EUD camera to provide a non-GPS based approach for determining a user's location. Continue integration and certification testing of ISW Multi-Mode Body Area Network chipsets/packaging within NW system. Supports development, evaluation, and integration efforts for robotics controllers configurable to the mobile handheld computing environment.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase in FY24 funding due to ramp-up of effort relating to ISW Multi-Mode Body Area Network integration and test; introduction of auxiliary processor for AI/ML leader decision-making tool and heads-up display testing quantities</p> <p>Title: Software Development & Integration</p> <p>Description: Funding is provided for the following efforts.</p> <p>FY 2023 Plans: Evaluate next generation NW / ATAK map engines and Operating System (OS) trade studies software development efforts with NW. Update NW Software Development Kit (SDK) with new functionality. Continue software upgrades to ITN component software based on security and operational requirements.</p> <p>Continue incorporating the Army's Common Operating Environment (COE) Cross-Cutting Capabilities into NW software to support CS25 ITN. Continue development of NW's next generation Service Oriented Architecture and Tactical Assault Kit plug-ins. Complete NW tactical cloud IL5 ecosystem (SBU) to IL6 (to handle up to secret) integration efforts to allow for over the air updates to fielded NW systems for STIG compliance, OS, application updates and remote troubleshooting.</p> <p>Complete transition from S&T, in conjunction with IVAS program, of Leader Planning & Decision Tools (Semi-Automated Route planning tool) and Remote Aerial Sensing capabilities to further integrate RF Sensing network traffic and visualizing radio frequency emitters in the battlespace NW & IVAS from CDC-Soldier Center Sensored Soldier Science and Technology TTA.</p> <p>FY 2024 Plans: Evaluate next generation NW / Android Team Awareness Kit (ATAK) map engines and Operating System (OS) trade studies software development efforts with</p>		2.267	1.962	3.290

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>NW. Update NW Software Development Kit (SDK) with new functionality. Continue software upgrades to ITN component software based on security and operational requirements.</p> <p>Continue incorporating the Army's Common Operating Environment (COE) Cross-Cutting Capabilities and Mobile HH RDP into NW software to support Capability Set (CS) 25 ITN. Complete NW tactical cloud IL5 ecosystem (SBU) to IL6 (to handle up to secret) integration efforts to allow for over the air updates to fielded NW systems for Security Technical Implementation Guide (STIG) compliance, OS, application updates and remote troubleshooting.</p> <p>Support for emerging Mobile Handheld Computing Environment (CE) RDP (Requirements Definition Package) supporting CS25-CS29 next iteration of software requirements.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase in FY24 funding due to increase in FTEs; inflation; emerging Mobile Handheld CE RDP (Requirements Definition Package) (supporting CS25-29) next iteration software requirements.</p>				
<p>Title: Conduct SEPM Support to NW</p> <p>Description: Conduct Systems Engineering and Program Management Support to Nett Warrior</p> <p>FY 2023 Plans: Continue to conduct government systems / software engineering and program management support for NW program. Will collect input from Soldiers to improve NW and IVAS size, weight, power, fightability, safety and effectiveness via surveys. Will manage system configuration, and execute test, development and integration planning including investigation and analysis of emerging innovative commercial technologies to reduce the size, weight, power, cost, and increase NW and IVAS, and ITN functionality.</p> <p>FY 2024 Plans: Continue to conduct government systems / software engineering and program management support for NW program. Will collect input from Soldiers to improve NW and IVAS size, weight, power, lethality, safety and effectiveness via surveys. Will manage system configuration, and execute test, development and integration planning including investigation and analysis of emerging innovative commercial technologies to reduce the size, weight, power, cost, and increase NW, IVAS and ITN functionality.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase in FY24 funding due to inflation.</p>		0.120	0.298	0.677
<p>Title: M/HHCE Governance</p> <p>Description: Development of the M/HHCE standards and M/HHCE governance.</p>		0.127	0.440	0.341

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>FY 2023 Plans: Continue to provide Mobile Handheld Computing Environment (M/HHCE) governance and standards development for external program integration with NW and IVAS to eliminate separate handheld devices and reduce Soldier load. Maintain compliance with overarching COE standards to support CS25 ITN.</p> <p>FY 2024 Plans: Continue to provide Mobile Handheld Computing Environment (M/HHCE) governance and standards development for external program integration with NW and IVAS to eliminate separate handheld devices and reduce Soldier load. Maintain compliance with overarching COE standards to continue support of CS25 ITN.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease in FY24 funding due to reduction in labor.</p>			
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638.</p>	-	0.193	-
Accomplishments/Planned Programs Subtotals	4.919	5.298	7.549

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
			Base	OCO	Total						
• R80501: <i>Ground Soldier System</i>	150.244	124.953	167.129	-	167.129	177.429	173.950	174.046	174.024	Continuing	Continuing

Remarks

D. Acquisition Strategy

To capitalize on commercial industry's investment in advanced smart device technology as well as innovation and changes within Army, Nett Warrior (NW) and IVAS require annual RDT&E funding for integration and evaluation of new technology. Through this process and at low cost, the Army is able to integrate and evaluate for combat utility the hundreds of millions spent in product development by the major commercial device manufactures. The NW program provides situational awareness and mission command to dismounted combat leaders through secure smart devices, a central power source, cables and the Integrated Tactical Network (ITN). NW system is currently the central element within the Mobile Handheld Computing Environment (Mobile HHCE) that other programs host their software. The Mobile HHCE

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) EQ8 / <i>Mobile/Handheld Computing Environment (M/HHCE)</i>
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is one of the six computing environments within the Army Common Operating Environment. NW and IVAS fund development and evaluation of new technology and software integration through a combination of competitively awarded contracts and Other Transaction Authorities (OTAs). Various existing follow on procurement contracts are utilized to procure a combination of COTs and GOTs equipment to include supporting services. Now in production, NW seeks operational feedback and uses the DevOps process to identify and implement new capabilities. M/HHCE standards are updated annually under the M/HHCE governance process.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
2040 / 5				PE 0604818A / Army Tactical Command & Control Hardware & Software					EQ8 / Mobile/Handheld Computing Environment (M/HHCE)						
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering & Program Management Support	Various	Various : Various	8.151	0.120	Sep 2022	0.298	Sep 2023	0.677	Sep 2024	-		0.677	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.193	Mar 2023	-		-		-	Continuing	Continuing	-
Subtotal			8.151	0.120		0.491		0.677		-		0.677	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware/Software Integration & Evaluation	Various	Various : Various	14.696	1.907	Jun 2022	1.385	Apr 2023	2.031	Apr 2024	-		2.031	Continuing	Continuing	-
MHH Governance	MIPR	Various : Various	10.645	0.127	Jan 2022	0.440	Jan 2023	0.341	Jan 2024	-		0.341	Continuing	Continuing	-
Subtotal			25.341	2.034		1.825		2.372		-		2.372	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 and Integration	Various	Various : Various	6.981	2.267	Jul 2022	1.962	Apr 2023	3.290	Apr 2024	-		3.290	Continuing	Continuing	-
Subtotal			6.981	2.267		1.962		3.290		-		3.290	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	Various	Various : Various	7.364	0.498	Jun 2022	1.020	Jul 2023	1.210	Jul 2024	-		1.210	Continuing	Continuing	-
Subtotal			7.364	0.498		1.020		1.210		-		1.210	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023					
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)					
	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	47.837	4.919		5.298		7.549		-		7.549	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NW V3.0.7.3 (SBU) & V4.0.7.3 (Secret) S/W dev/integrate/...																												
NW V3.0.8.3 (SBU) & V4.0.8.3 (Secret) S/W dev/integrate/...																												
Dev/integrate Next Gen EUD: Multi-Domain (SBU & Secret o...																												
System Testing & Solder Test Point assessment (next gen EUD)																												
NW V5.0.1 (SBU / Secret combined) S/W dev/integrate/test...																												
NW V5.0.2 (SBU / Secret combined) S/W dev/integrate/test...																												
NW V5.0.3 (SBU / Secret combined) S/W dev/integrate/test...																												
NW V5.0.4 (SBU / Secret combined) S/W dev/integrate/test...																												
3 Party Integration (tied into yearly NW drops)																												
SLAD Security Penetration Yearly assessment (March / April)																												
AEWE Down select, Tech Integration, User Assessment capa...																												
PANTHER SBIR (GPS denied Position Location) Integration ...																												
Sensored Soldier Leader Planning (Routes) Spiral 1 Integ...																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)
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Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Sensored Soldier Remote Sensing Spiral 1 RF emitters Int...																												
Sensored Soldier Leader Planning & Decision Tool Spiral ...																												
Sensored Soldier Remote Sensing Spiral 2 Integration/Tes...																												
Sensored Soldier Leader Planning & Decision Tool Spiral ...																												
Sensored Soldier Remote Sensing Spiral 3 Integration /Te...																												
DARPA SHARE network server architecture integration with EUD																												
Extended NW Tactical Cloud ecosystem form IL5 (SBU) to I...																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NW V3.0.5.3 (SBU) & V4.0.5.3 (Secret) S/W dev/integrate/test (M/HHCE & CS21 ITN)	1	2020	3	2020
Galaxy S20 TE EUD & Case (support part CS21 & CS23): Development / integration	2	2020	4	2020
NW System Testing & Solder Test Point assessment (S20 device)	1	2021	1	2021
NW Integration & test events with SBCT to support ITN assessment	4	2020	4	2021
NW V3.0.6.3 (SBU) & V4.0.6.3 (Secret) S/W dev/integrate/test (M/HHCE & CS21 ITN)	3	2020	3	2021
NW V3.0.7.3 (SBU) & V4.0.7.3 (Secret) S/W dev/integrate/test (M/HHCE & CS23 ITN)	3	2021	3	2022
NW V3.0.8.3 (SBU) & V4.0.8.3 (Secret) S/W dev/integrate/test (M/HHCE & CS23 ITN)	3	2022	3	2023
Dev/integrate Next Gen EUD: Multi-Domain (SBU & Secret one device) (CS25 & CS27)	2	2023	4	2023
System Testing & Solder Test Point assessment (next gen EUD)	4	2023	3	2024
NW V5.0.1 (SBU / Secret combined) S/W dev/integrate/test (M/HHCE & CS25 ITN)	3	2023	3	2024
NW V5.0.2 (SBU / Secret combined) S/W dev/integrate/test (M/HHCE & CS25 ITN)	3	2024	3	2025
NW V5.0.3 (SBU / Secret combined) S/W dev/integrate/test (M/HHCE & CS27 ITN)	3	2025	3	2026
NW V5.0.4 (SBU / Secret combined) S/W dev/integrate/test (M/HHCE & CS27 ITN)	3	2026	3	2027
3 Party Integration (tied into yearly NW drops)	1	2020	4	2028
SLAD Security Penetration Yearly assessment (March / April)	2	2021	3	2028
AEWE Down select, Tech Integration, User Assessment capability (Yearly)(May-Feb)	3	2020	4	2026
Integration Dismounted Assured PNT Gen 1.x with NW	1	2020	4	2021
PANTHER SBIR (GPS denied Position Location) Integration w/ NW & Soldier Touch Pt	2	2021	1	2024
Sensored Soldier Leader Planning (Routes) Spiral 1 Integr /Testing (NW/IVAS tie)	1	2022	3	2023
Sensored Soldier Remote Sensing Spiral 1 RF emitters Integr/Testing (NW/IVAS tie)	1	2022	3	2023
Sensored Soldier Leader Planning & Decision Tool Spiral 2 Integr/Testing (NW/IVA)	1	2024	3	2025
Sensored Soldier Remote Sensing Spiral 2 Integration/Testing (NW/IVAS tie)	1	2024	3	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EQ8 / Mobile/Handheld Computing Environment (M/HHCE)
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Events	Start		End	
	Quarter	Year	Quarter	Year
Sensored Soldier Leader Planning & Decision Tool Spiral 3 Integr/Testing (NW/IVA)	1	2027	3	2028
Sensored Soldier Remote Sensing Spiral 3 Integration /Testing (NW/IVAS tie)	1	2027	3	2028
Intra Soldier Wireless (ISW) software routing manager on EUD	1	2021	3	2021
DARPA SHARE network server architecture integration with EUD	1	2023	4	2025
Extended NW Tactical Cloud ecosystem form IL5 (SBU) to IL6 (Secret)	2	2022	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) ER9 / Expeditionary Army Command Post			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
ER9: Expeditionary Army Command Post	-	46.080	31.463	28.870	-	28.870	19.192	14.706	8.079	4.816	0.000	153.206
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Command Post Integrated Infrastructure (CPI2) is executed in a two Increment approach. Increment 0 focused on development and test of a CPI2 capability on the Family of Medium Tactical Vehicles (FMTV) at Brigade Combat Team level and Division Main. In addition, Increment 0 performed experimentation with a Stryker based Mobile Command Group (MCG). Increment 0 entered Milestone C, 18 June 2022. Increment 1 expands the CPI2 capability from FMTV to formation appropriate vehicle platforms for development of the Stryker Mission Command Platform (MCP), Armored Multi-Purpose Vehicle (AMPV) MCP, Joint Light Tactical Vehicle (JLTV) MCP, and Command Post Support Vehicle (CPSV).

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Network, Modernization Priority 1. This funding line is directly aligned to the Army Network Modernization Strategy Line of Effort (LOE) #4 Command Post.

The Command Post Integrated Infrastructure (CPI2) program addresses the Army requirements for more mobile, scalable, interoperable, and agile command posts. Currently fielded command posts are too large and take too long to setup and teardown making them vulnerable to near peer detection and targeting technologies. By integrating mission command warfighting functions onto formation appropriate vehicle platforms, a dispersed command post construct will enable the battle staff to blend in with the overall maneuver formation while giving the commander the ability to synchronize the close fight on the move. This dispersed mobile command post consists of MCP, CPSV and MCG. The MCP is a formation appropriate vehicle that provides digital workstations for all mission command warfighting functions. The CPSV is the hub of the dispersed Command Post; it hosts mission command servers, radios, local area network components and a secure wireless capability. Specific to Corps/Div, CPI2 will provide a MCG hosted on formation appropriate platforms for Corps and Div. The MCG provides Commanders and Staff with the ability to employ high priority functions while on the move.

Increment 0 focused on prototype development for MCP and CPSV capability for two Brigade Combat teams (BCT's), a Division Main, and a Division MCG. Increment 0 capability design and development for the CPI2 MCP and CPSV on the FMTV platforms and shelter systems provides mobile capability and increased survivability to the command post. The MCP, CPSV, and Division Main/MCG prototypes were evaluated and tested via 3 Operational Assessments (OA) which provided soldier feedback and helped to inform the Increment 0 Milestone C decision (approved 18 June 2022) for a limited production set of 5 BCTs.

Increment 1 initiated at Milestone B (ADM signed 12 June 2021); expands on the development and prototype/testing of the MCP/CPSV/MCG from FMTV to the formation-appropriate platforms (Stryker, AMPV and JLTV) that were not designed in Increment 0. These combined capabilities will enable the Army to employ command posts across the operational spectrum, from early entry to major combat operations that will resolve current command post issues with set up and tear down, survivability, mobility, suitability and footprint. The prototypes will be tested and will inform platform production decisions to align with CPI2 fielding's in future years.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post

FY 2024 funding will execute Increment 1 efforts for the design, development, prototyping, and testing of CPI2 MCP/CPSV capabilities on formation appropriate platforms for Stryker, AMPV and JTLV. Funding also provides for acquisition of equipment to support product development, platform vehicle testing, logistical support and program management.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Product Development</p> <p>Description: Includes the costs for design/integration/fabrication and prototyping of MCP, CPSV, and MCG platforms. These prototypes address capability gaps identified in current Army Command Post formations. Also includes equipment and ancillary items necessary to prototype a distributed CPI2 capability.</p> <p>FY 2023 Plans: FY 2023 funds executed the design engineering, and prototype development of Mission Command Platforms and Command Post Support Vehicles for formation appropriate platforms (APMV, JLTV, Stryker) through their existing platform contracts.</p> <p>FY 2024 Plans: FY 2024 funds support the Inc 1 design, engineering and prototype development of Mission Command Platforms and Command Post Support Vehicles for formation appropriate platforms (Stryker, AMPV and JLTV) through their existing platform contracts. Includes costs for development of a Towable Expeditionary Shelter Family of Systems for support to Division and Corps echelon.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease is attributed to the last year of product development of the Stryker MCP, AMPV MCP, JLTV MCP, and JLTV CPSV.</p>	36.056	18.714	17.252
<p>Title: Support Costs</p> <p>Description: Program costs for training and development of data packages.</p> <p>FY 2023 Plans: Funding supports updates necessary to technical data packages, training for test events, as well as maintenance for the platforms in the CPI2 Division formation.</p> <p>FY 2024 Plans: Funding supports Increment 1 updates to technical data packages, training for test events, as well as support to the Soldier Touch Points at CPI2 Division formation.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase aligned to the requirement for Stryker Tech Data Package, new operator's and maintenance manuals, Soldier Touch points at CPI2 Division formation and continued experimentation.</p>	3.472	3.175	3.800
<p>Title: Systems Test and Evaluation</p>	1.964	4.646	5.023

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: Costs required for test activities to inform CPI2 solution set.</p> <p>FY 2023 Plans: Conduct test events for formation appropriate vehicles (APMV, JLTV). Conduct Developmental Testing sessions to determine the preparedness and investigate potential issues for the Limited User Test (LUT) event. Conduct the Safety Testing to receive Material Release and support the LUT Event on FMTV based MCP, CPSV to inform a Milestone C in FY24.</p> <p>FY 2024 Plans: Conduct Increment 1 test events for formation appropriate vehicles (Stryker, APMV, JLTV) to obtain approval for production orders. Conduct the Safety Testing on the FMTV A2 Vehicle platform.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: System test and evaluation increase is aligned to number of test activities for the Stryker, AMPV, and JLTV designs, as well as the Safety Testing on the FMTV A2 vehicle platform.</p>			
<p>Title: Program Office Management</p> <p>Description: Contractor/Matrix Labor support and program travel.</p> <p>FY 2023 Plans: Contract and Matrix personnel to support CPI2 in achieving mission requirements to include managing multiple design/prototyping efforts, test events and training.</p> <p>FY 2024 Plans: Contract and Matrix personnel to support CPI2 Increment 1 in achieving mission requirements to include managing multiple design/prototyping efforts, test events and training.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease is aligned to shift to Increment 1 production.</p>	4.588	3.780	2.795
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>	-	1.148	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638.			
Accomplishments/Planned Programs Subtotals	46.080	31.463	28.870

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	
			Base	OCO	Total					Complete	Total Cost
• B29801: CPI2	49.410	60.455	78.512	-	78.512	105.739	90.936	90.979	91.057	Continuing	Continuing

Remarks

CPI2 OPA funding will support a contract with Industry to produce Mission Command Platform, Command Post Support Vehicle and Mobile Command Group capability. Funds will support acquisition of components (Voice, Wireless, Power Solutions, Heating/Cooling, and Shelter Systems) to issue to prime contract as government furnished equipment for production of the CPI2 capability. The CPI2 OPA line does not include any funding for procurement of the FMTV, Stryker, AMPV or JLTV vehicle platforms, that funding resides with the programs of record for each vehicle platform.

D. Acquisition Strategy

The CPI2 Materiel Development Decision (MDD) Acquisition Decision Memorandum (ADM) was signed on 21 June 2018 and directed CPI2 to be executed in two Increments. Increment 0 designed and delivered an initial capability of CPI2 for 5 Brigade Combat Teams (BCT) in alignment with a signed Directed Requirement (Dec 2017); utilizing the Army Family of Medium Tactical Vehicles (FMTV) as the primary mover. Increment 1 will expand on Inc 0 to deliver CPI2 to a select 86 Army units and 1 training set per approved Capability Development Document (CDD) signed April 2020. Inc 1 expands CPI2 capability beyond FMTV to Stryker, AMPV and JLTV vehicle platforms.

Increment 0 transitioned from design and development to production at a successful MS C on 18 June 2022. The RDTE efforts for Increment 0 (FY19-22) developed a Mission Command Platform (MCP) and a Command Post Support Vehicle (CPSV) hosted on the Family of Medium Tactical Vehicles (FMTV) platforms and associated shelter systems to generate a more mobile, survivable command post. The capability for the MCP and CPSV was tested via Operational Assessments (OA) with two Brigade Combat Team (BCTs) in May and July 2021, and one Division Main in Oct 2021. The results from these events provided data necessary to inform an Increment 0 Milestone C decision, which authorized the production of FMTV based MCP and CPSV for 5 BCTs. The Division Main and MCG serve to provide a baseline for user inputs for any future CPI2 CDD updates. Any production decisions for Division and MCG would be addressed in the Increment 1 Milestone C (2QFY24).

Increment 1 will execute requirements of the CDD to replace designated legacy command post systems at Corps, Division, Brigades, Battalions and select Multi-Functional Support Brigades (MFSB). The approved Increment 1 Milestone B (Acquisition Decision Memorandum signed June 2021) authorized CPI2 to begin prototype development not addressed in Increment 0; specifically for design and test of Stryker, JLTV and AMPV vehicle platforms for formation appropriate MCP, CPSV and MCG. CPI2 will award funds on existing Programs of Record (PoR) managed contracts for the design/development of these platforms. CPI2 will fund testing of the CPI2 capability on the Stryker, AMPV and JLTV platforms in coordination with their program offices to ensure that the platforms can go into production for alignment with CPI2 future fielding schedule.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / <i>Army Tactical Command & Control Hardware & Software</i>	Project (Number/Name) ER9 / <i>Expeditionary Army Command Post</i>

The Increment 1 Milestone C decision (2QFY24) will initiate LRIP production and fielding of CPI2 FMTV based platforms and shelter systems. CPI2 will pursue a full and open award to contract with industry for the engineering, installation and production of the MCP/CPSV/MCG solution for vehicle platforms and shelter systems. An operational test will be conducted to assess CPI2 on the FMTV platform prior to a Full Rate Production decision. CPI2 will be responsible for delivering CPI2 equipment to the vendor for installation. Vehicle platforms will be supplied to CPI2; funded and provided by the existing Army vehicle PoR contracts. Due to the varying timelines for development of the formation appropriate platforms (Stryker, AMPV, JLTV); each PoR will assess the CPI2 solution via their individual Functional Qualification Test (FQT). Upon successful test, the CPI2 product office will go forward to the CPI2 Milestone Decision Authority (MDA) to request authority to expand the CPI2 capability to Stryker, AMPV and JLTV platforms executed via Engineering Change Proposal (ECP) to the CPI2 installation vendor.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post
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Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SETA Support	MIPR	Booz Allen Hamilton : Aberdeen Proving Ground, MD	-	2.163	Feb 2022	1.780	Dec 2022	1.185	Dec 2023	-		1.185	Continuing	Continuing	Continuing
Matrix Support	MIPR	Various : Aberdeen Proving Ground, MD	5.971	2.425	Nov 2021	2.000	Dec 2022	1.610	Dec 2023	-		1.610	Continuing	Continuing	Continuing
Civilian Labor	Allot	PM MC : Aberdeen Proving Ground MD	0.108	-		-		-		-		-	0.000	0.108	-
SETA Support	MIPR	CACI : Aberdeen Proving Ground, MD	4.584	-		-		-		-		-	0.000	4.584	-
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		1.148		-		-		-	0.000	1.148	-
Subtotal			10.663	4.588		4.928		2.795		-		2.795	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Stryker MCP Design/ Development	Allot	PM SBCT : Detroit, MI	4.300	22.825	May 2022	11.315	Jan 2023	10.103	Jan 2024	-		10.103	Continuing	Continuing	Continuing
AMPV MCP Design/ Development	Allot	PM AMPV : Detroit Arsenal, MI	-	3.989	Mar 2022	5.826	Jan 2023	2.949	Jan 2024	-		2.949	Continuing	Continuing	Continuing
JLTV MCP/CPSV Design/ Development	Allot	PM JLTV : Detroit , MI	-	3.060	Apr 2022	1.573	Jan 2023	1.900	Jan 2024	-		1.900	Continuing	Continuing	Continuing
TESS Design/ Development	Allot	PdM FSS : Natick, MA	1.755	3.532		-		2.300	Nov 2023	-		2.300	0.000	7.587	-
Ancillary Items	MIPR	Various : Various	5.813	0.864	Dec 2021	-		-		-		-	0.000	6.677	-
CPI2 Core Kits	Various	Multiple : Multiple	14.359	1.786	Dec 2021	-		-		-		-	0.000	16.145	-
Engineering Changes	Option/ FFP	ELBIT : Ft. Worth, Texas	5.440	-		-		-		-		-	0.000	5.440	-
Rigid Wall Shelter Design	MIPR	CCDC-C5ISR : APG, MD	1.483	-		-		-		-		-	0.000	1.483	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Vehicle Platforms	Allot	PdM MPVS : Detroit Arsenal, MI	10.042	-		-		-		-		-	0.000	10.042	-
ISO Containers	Allot	BERG : Spokane, WA	11.100	-		-		-		-		-	0.000	11.100	-
Subtotal			54.292	36.056		18.714		17.252		-		17.252	Continuing	Continuing	N/A

Remarks
 1) CPI2 funds existing contracts managed by Stryker, AMPV and JLTV to execute design/development/vehicle prototyping.
 2) Towable Expeditionary Shelter Systems (TESS) design and development in support of Inc 1 will begin in FY24.

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Tech Manuals/Training Development Packages	Various	Various : Various	3.988	0.970	May 2022	1.320	Dec 2022	1.381	Dec 2023	-		1.381	Continuing	Continuing	Continuing
Division Main Soldier Touch Point & Experimentation	Option/ Various	Various : Ft Bliss, TX	-	2.502	Dec 2021	1.855	Dec 2022	2.419	Dec 2023	-		2.419	0.000	6.776	-
Subtotal			3.988	3.472		3.175		3.800		-		3.800	Continuing	Continuing	N/A

Remarks
 1) Tech Manuals increase is driven by Stryker, AMPV and JLTV platform required updates to user manuals, maintainer manuals, and technical data packages supporting CPI2 design.
 2) Soldier Touch Point: Ongoing experimentation to understand how CPI2 can be incorporated at the Division; to include evaluation of a MCG. Ensures continuous feedback in the try, buy and assess model for Division Main and Division MCG.

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Test and Evaluation	MIPR	Various : Various	4.670	1.964	May 2022	4.646	Feb 2023	5.023	Nov 2023	-		5.023	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post
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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
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			4.670	1.964		4.646		5.023		-		5.023	Continuing	Continuing	N/A

Remarks
 1) System Test and Evaluation increase is aligned to number of test activities for the Stryker, AMPV and JLTV designs, as well as the Safety Testing on the FMTV A2 vehicle platform. These events inform future production decisions to produce the platforms in support of CPI2 fielding's.

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	73.613	46.080		31.463		28.870		-		28.870	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Inc 0: Engineering Changes	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 0: Milestone C	[Redacted]				1 Inc 0: CPI2 MS C				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 0: Production/Installation	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 0: 5 BCT Fielding's	[Redacted]				[Redacted]				Inc 0: Fielding BCT (5)				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 0: Division/MCG Development	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 0: Division Main /MCG New Equipment Training	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 0: Division Main/MCG Operational Assessment	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 1: Division Main Soldier Touch Point	[Redacted]				[Redacted]				Inc 1: Division Main Soldier Touch Point				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 1: Safety & Transportability Test	[Redacted]				Inc 1: Safety & Transportability Test				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 1: Development Test	[Redacted]				Inc 1: Development Test				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 1: FMTV based Limited User Test	[Redacted]				2 Inc 1: Limited User Test				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 1: Milestone C	[Redacted]				3 Inc 1: Milestone C				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Inc 1: Stryker/AMPV/JLTV Platform Design/Prototype/Test	[Redacted]				Inc 1: Platform Design/Prototype/Test				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Inc 1: Safety Transportability A2 Model									■																							
Inc 1: MTV Centric Safety Testing									■																							
Inc 1: OT (FMTV/Shelters/TESS)									▲																							
Inc 1: JLTV FQT																					■											
Inc 1: Stryker FQT																									■							
Inc 1: AMPV FQT																													■			

Note
Increment 0 production/installation and fielding are OPA activities. These efforts do not consume RDTE funding.

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Command Post Directed Requirement Signed	1	2018	1	2018
CPI2 MDD	3	2018	3	2018
Inc 0: MS A	2	2019	2	2019
Inc 0: Product Development (BCT Unit) -Gov't Design	2	2019	2	2021
Inc 0: BCT Unit Safety Release Testing	4	2020	2	2021
Inc 0: BCT Operational Assessment	4	2021	4	2021
Inc 0: Product Development (BCT Unit) - Elbit Design	4	2019	3	2021
Inc 0: BCT Safety Release Testing	1	2021	2	2021
Inc 0: BCT Operational Assessment	3	2021	3	2021
Inc 0: Engineering Changes	4	2021	2	2022
Inc 0: Milestone C	3	2022	3	2022
Inc 0: Production/Installation	4	2022	4	2024
Inc 0: 5 BCT Fielding's	3	2023	4	2024
Inc 0: Division/MCG Development	4	2019	1	2022
Inc 0: Div/MCG Safety Release Test	3	2021	4	2021
Inc 0: Division Main /MCG New Equipment Training	4	2021	1	2022
Inc 0: Division Main/MCG Operational Assessment	1	2022	1	2022
Inc 1: Division Main Soldier Touch Point	1	2022	4	2024
Inc 1: Capability Development Document Approved	3	2020	3	2020
Inc 1: Milestone B Brief	3	2021	3	2021
Inc 1: Safety & Transportability Test	4	2022	3	2023
Inc 1: Development Test	3	2023	3	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) ER9 / Expeditionary Army Command Post
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Events	Start		End	
	Quarter	Year	Quarter	Year
Inc 1: FMTV based Limited User Test	4	2023	4	2023
Inc 1: Milestone C	2	2024	2	2024
Inc 1: Stryker/AMPV/JLTV Platform Design/Prototype/Test	3	2021	1	2025
Inc 1: Safety Transportability A2 Model	1	2024	2	2024
Inc 1: MTV Centric Safety Testing	4	2024	2	2025
Inc 1: OT (FMTV/Shelters/TESS)	4	2025	4	2025
Inc 1: JLTV FQT	3	2026	3	2026
Inc 1: Stryker FQT	4	2027	4	2027
Inc 1: AMPV FQT	4	2028	4	2028

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software				Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EW3: Unit Task Reorganization (UTR) Development	-	9.003	13.799	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project EW3, Unit Task Reorganization (UTR) funding decreased from \$13.814 million in FY 2023 to \$0 million in FY 2024 as a result of realignment of funds to the Tactical Network Operations and Management (TNOM) 654818 / EW3 funding line beginning in FY 2024.

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Network Modernization strategy in support of a Unified Network.

Unit Task Reorganization (UTR) funding line supports the Army Network Plan Framework objective to deliver a Standards Based Network Architecture. This will enable modernizing the Mission Command Network through the coordination of a common set of network operations (NetOps) tools and infrastructure development supporting the unit communication staff's ability to conduct Network Planning, Network Provisioning, and Network Management, aligning with the Army's plan for a unified network. UTR provides an integrated planning tool suite; tools and technologies to provision and automate delivery of configurations; and replace stove-piped management systems with integrated tools providing detailed views of the network and its components. The UTR funding line, in accordance with the National Defense Authorization Act (NDAA) policy for Middle Tier Acquisition (MTA) funding, is leveraged by the Unified Network Operations (UNO) MTA Rapid Prototyping program to achieve its required funding levels. The total cost of the UNO MTA Rapid Prototyping program is \$84.352 million RDT&E from FY 2019 - FY 2024.

The UTR funding has been re-aligned to the Tactical Network Operations Management (TNOM) 654818 / EK9 funding line beginning in FY 2024.

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

	FY 2022	FY 2023	FY 2024
Title: Network Management	8.720	12.812	-
Description: UTR introduces improvements to the way the network is managed, reducing closed management systems and replacing them with integrated tools that provide a consolidated, as well as detailed, view of the network and its components.			
The UTR software provides integrated management solutions for Transportable Tactical Command Communications (T2C2) and Scalable Class of Unified Terminals (SCOUT) systems, Satellite Transport Terminals (STTs), Tactical Communications Node - Lite (TCN-L) systems. UTR also provides initial Tactical Radio Integration Kit (TRIK) management interfaces. UTR leverages Integrated Tactical Network (ITN) and Capability Set (CS) schedules to conduct Soldier Touch Points (STPs) and demonstrate network management prototype capabilities to gain user feedback to improve network management software capabilities.			
FY 2023 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> - Complete delivery of vendor neutral Application Programming Interface (API) that supports network health status across warfighting applications and S6 tools & services as well as communication across various services. - Continue development of network components that support centralized data, security, and information exchanges, enabling Signal Soldier activities. - Implementation of Bandwidth efficient & NSA approved Over the Network and Over the Air capabilities to provision and reconfigure tactical radios that support Integrated Visual Augmentation System (IVAS), Hand Held Computing Environment (HH CE) & Mounted Computing Environment (MCE). - Continue product development of Network Management functionality enabling the ability to manage and troubleshoot the network devices that comprise the Tactical Network, monitor nodes for network health status, performance, location, and security, in addition to displaying monitored data to the local operator. Extend management interfaces for services (Network Manager & Battalion (BN) and Below Manager (INB2)). - Continue development of the Tactical radio planner to include planning for additional waveforms, Demand Assigned Multiple Access (DAMA), Satellite Communications (SATCOM), Planning. - Integration of Tactical Network Initialization & Configuration (TNIC) Initialization Process through Initialization Tool Suite. - Continue development of SATCOM planner as replacement for the Tactical Network Toolkit (TNT) Network Management System (NMS) planner for SATCOM systems targeting deployment in CS 23. - Continue development of consolidated Satellite Access Requests & receipt of Satellite Access Authorizations. - Analysis and studies of network planning/management/cybersecurity capabilities. <p>FY 2023 to FY 2024 Increase/Decrease Statement: Beginning in FY 2024, UTR RDTE funding has been realigned to UNO 654818 / EK9.</p>				
<p>Title: System of Systems Engineering and Portfolio Management</p> <p>Description: Systems engineering and program management support to include development and maintenance of the NetOps architecture, Systems Engineering Plan, Risk Management Plan, Rapid Prototyping, IPT Management, Requirements Engineering, Integrated Master Schedule, and budget formulation and execution.</p>		0.283	-	-
<p>Title: Program Management</p> <p>Description: The UNO Program Office will support the continuation of NetOps component development. The UNO Program Office will also support the transition of UNO MTA RP to a suitable acquisition pathway for software capability fielding in FY2024 to meet Unified Network requirements.</p> <p>FY 2023 Plans:</p>		-	0.483	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
The UNO Program Office will support the continuation of NetOps component development. The UNO Program Office will also support the transition of UNO MTA RP to a suitable acquisition pathway for software capability fielding in FY2024 to meet Unified Network requirements.			
FY 2023 to FY 2024 Increase/Decrease Statement: Beginning in FY 2024, UTR RDTE funding has been realigned to UNO (PE 0604818A, Proj EK9).			
Title: SBIR/STTR Transfer Description: Funding transferred in accordance with Title 15 USC §638.	-	0.504	-
FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638.			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638.			
Accomplishments/Planned Programs Subtotals	9.003	13.799	-

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• EK9: TACTICAL NETWORK OPERATIONS AND MANAGEMENT	3.243	3.400	49.577	-	49.577	25.357	26.111	26.651	27.326	0.000	161.665

Remarks
In accordance with the National Defense Authorization Act (NDAA) policy for Middle Tier Acquisition (MTA) programs, Unified Network Operations (UNO) MTA Rapid Prototyping leverages funds from Unit Task Reorganization (UTR) 654818 / EW3 and Tactical Network Operations Management (TNOM) 654818 / EK9 to achieve its required funding levels.

The UTR funding has been re-aligned to the Tactical Network Operations Management (TNOM) 654818 / EK9 funding line beginning in FY 2024.

D. Acquisition Strategy
Unit Task Reorganization (UTR) is an overarching effort that supports the establishment of a standards-based network architecture and integration of requirements across multiple efforts in the tactical network. UTR resources are applied directly to current products which are modified through Engineering Change Proposals and Modified Work Orders to comply with network standards. This enables current systems to share the information, reducing time and task for soldiers as well as new systems to access the network. Efforts are enduring to react to evolving prioritization of requirements.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development

The UTR funding has been realigned to the Tactical Network Operations Management (TNOM) 654818 / EK9 funding line beginning in FY 2024.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604818A / Army Tactical Command & Control Hardware & Software				EW3 / Unit Task Reorganization (UTR) Development								
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	TBD	Various : Various	-	-		0.483	Nov 2022	-		-		-	Continuing	Continuing	Continuing	
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.504		-		-		-	0.000	0.504	-	
Subtotal			-	-		0.987		-		-		-	Continuing	Continuing	N/A	
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Network Management	C/FFP	Various : TBD	47.001	8.720	Jan 2022	12.812	Nov 2022	-		-		-	Continuing	Continuing	Continuing	
Subtotal			47.001	8.720		12.812		-		-		-	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 of Systems Engineering and Portfolio Management	C/CPAF	Various : APG MD	3.873	0.283	Feb 2022	-		-		-		-	0.000	4.156	-	
Subtotal			3.873	0.283		-		-		-		-	0.000	4.156	N/A	
Project Cost Totals			50.874	9.003		13.799		-		-		-	Continuing	Continuing	N/A	
Remarks																
Beginning in FY 2024, UTR RDTE funding has been realigned to UNO (PE 0604818A, Proj EK9).																

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Network Management																												
Network Manager Phase 3																												
Network Manager Phase 4																												
Network Manager Phase 5																												
Radio Planner v1.3																												
Network Planner																												
Network Planner v1.0																												
Network Planner v1.1																												
Network Planner v1.2																												
Radio Provisioning																												
Data Repository																												
Data Repository Development																												
UNO RP MTA Authority																												

Note
The UTR funding has been realigned to the Tactical Network Operations Management (TNOM) 654818 / EK9 funding line beginning in FY 2024.

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / Army Tactical Command & Control Hardware & Software	Project (Number/Name) EW3 / Unit Task Reorganization (UTR) Development

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Network Management	1	2019	3	2024
Network Manager Phase 3	2	2021	3	2022
Network Manager Phase 4	3	2022	3	2023
Network Manager Phase 5	3	2023	4	2023
Radio Planner	1	2019	2	2021
Radio Planner v1.3	1	2021	2	2023
Network Planner	1	2020	4	2023
Network Planner v1.0	3	2021	3	2022
Network Planner v1.1	3	2022	3	2023
Network Planner v1.2	3	2023	4	2023
Network Provisioning	1	2019	4	2021
Radio Provisioning	1	2019	4	2022
Radio Provisioner x.1	1	2021	4	2021
Data Repository	1	2019	3	2024
Data Repository Development	1	2021	4	2023
Radio Standards version x.1	4	2020	4	2021
UNO RP MTA Authority	3	2019	3	2024

Note

The UTR funding has been re-aligned to the Tactical Network Operations Management (TNOM) 654818 / EK9 funding line beginning in FY 2024.