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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	23.652	46.039	75.098	-	75.098	81.745	41.166	39.945	34.611	Continuing	Continuing
194: <i>Engine Driven Gen Ed</i>	-	4.309	8.822	13.676	-	13.676	15.295	5.458	7.110	0.497	Continuing	Continuing
EC9: <i>Contingency Basing Infrastructure</i>	-	2.447	2.541	3.609	-	3.609	3.793	3.805	3.827	3.877	0.000	23.899
EJ9: <i>Manuever Support Vessel - Light (MSV-L)</i>	-	0.000	10.066	18.338	-	18.338	14.522	0.000	0.000	0.000	0.000	42.926
H01: <i>Combat Engineer Eq Ed</i>	-	0.998	0.823	2.280	-	2.280	3.736	3.420	2.828	4.825	Continuing	Continuing
H02: <i>Tactical Bridging - Engineering Development</i>	-	6.722	9.796	14.245	-	14.245	24.283	7.158	5.775	2.327	Continuing	Continuing
H14: <i>Materials Handling Equipment - Ed</i>	-	0.273	0.628	0.960	-	0.960	0.560	0.450	0.469	0.471	Continuing	Continuing
L39: <i>Field Sustainment Support Ed</i>	-	1.623	1.849	3.712	-	3.712	3.028	2.128	2.907	2.985	Continuing	Continuing
L41: <i>Water And Petroleum Distribution - Ed</i>	-	3.071	3.361	8.363	-	8.363	5.065	9.336	9.436	9.507	Continuing	Continuing
L43: <i>ENGINEER SUPPORT EQUIPMENT - ED</i>	-	0.553	0.870	2.445	-	2.445	3.642	1.586	0.894	3.242	Continuing	Continuing
L46: <i>Maintenance Support Equipment</i>	-	0.964	1.064	1.886	-	1.886	1.881	1.722	1.767	1.815	Continuing	Continuing
L47: <i>Improved Environmental Control Units Ed</i>	-	0.000	0.756	1.259	-	1.259	1.778	3.685	2.027	2.081	Continuing	Continuing
VR7: <i>Combat Service Support Systems</i>	-	2.692	5.463	4.325	-	4.325	4.162	2.418	2.905	2.984	Continuing	Continuing

Note
The FY 2017 funding request was increased \$33.400 million to account for the increases in the following programs: 194 Engine Driven Gen Ed, EJ9 Maneuver Support Vessel, H02 Tactical Bridging - Eng Dev., L41 Water and Petroleum Distribution and VR7 Combat Service Support Systems.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>
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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 military tactical 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, mobile electric power and water craft.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	24.566	48.339	59.983	-	59.983
Current President's Budget	23.652	46.039	75.098	-	75.098
Total Adjustments	-0.914	-2.300	15.115	-	15.115
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-2.300			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.914	-			
• Adjustments to Budget Years	-	-	15.115	-	15.115

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) 194 / Engine Driven Gen Ed			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
194: Engine Driven Gen Ed	-	4.309	8.822	13.676	-	13.676	15.295	5.458	7.110	0.497	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Management and Distribution Control (MDC), previously named Improved Power Distribution Illumination Systems Electrical (IPDISE), funds in this project line are a realignment of funds from 0603804A Project G-11, due to the program transitioning into the EMD Phase.

A. Mission Description and Budget Item Justification

This project supports the Tactical Electric Power (TEP) program which is established to develop a Modernized, Standard Family of Mobile Electric Power Generating Sources (MEPGS) for all Services throughout the Department of Defense. 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 sources that are essential to the development and eventual fielding of modernized MEPGS from 0.5 kilowatt (kW) to 840kW. These sources will ensure compliance with federally mandated environmental statutes and significantly lower noise and thermal signatures (thereby improving battlefield survivability), improve fuel and electrical efficiency, reduce weight, enhance portability, improve reliability, availability and maintainability, and reduce operational and support costs. FY16 funds will prepare the Management and Distribution Control (MDC)/Microgrids performance specification and continue the Large Advanced Mobile Power Sources (LAMPS) EMD phase. FY16 funding will also support the Small Tactical Electric Power (STEP) EMD phase. Funding in FY17 will close out the LAMPS EMD phase, continue MDC Power Distribution Unit (PDU) EMD phase and begin the STEP EMD phase.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Large Advanced Mobile Power Sources (LAMPS) and Management and Distribution Control (MDC)/Microgrids Engineering & Manufacturing Development (EMD) Phase.	4.309	8.822	4.896	-	4.896
Description: Prepare LAMPS and MDC/Microgrids performance specification and begin EMD Phase					
FY 2015 Accomplishments: Continued EMD Phase of LAMPS and MDC/Microgrids.					
FY 2016 Plans: Continue EMD Phase of LAMPS. Continue EMD Phase of MDC PDU (microgrid).					
FY 2017 Base Plans: Close out EMD Phase of LAMPS. Continue EMD Phase of MDC PDU (microgrid)					
Title: Small Tactical Electric Power (STEP) Engineering & Manufacturing Development (EMD) Phase	-	-	8.780	-	8.780

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Begin EMD Phase for the STEP program.					
FY 2017 Base Plans: Begin EMD for the STEP program. STEP EMD will be separated into 2 phases: Phase I is System Development with prototype testing with multiple vendors, Phase II will down select to a single vendor for System Demonstration and logistical development.					
Accomplishments/Planned Programs Subtotals	4.309	8.822	13.676	-	13.676

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 643804.G11: <i>Logistics and Engineer Equipment - Adv Dev G11</i>	3.874	8.857	6.166	-	6.166	3.895	8.081	8.246	7.726	Continuing	Continuing
• MA9800: <i>Generators and Associated Equipment</i>	117.850	166.356	113.266	31.761	145.027	134.532	143.249	131.191	132.384	Continuing	Continuing

Remarks

D. Acquisition Strategy

LAMPS (Large Advanced Mobile Power Sources) Engineering & Manufacturing Development (EMD) Phase: A single competitive contract was awarded for the LAMPS EMD Phase. The EMD phase will be a Fixed Price Incentive-Firm Target (FPI-FT) contract. The EMD contract will require the vendor to integrate components and fabricate prototypes, verify prototype performance through contractor testing, deliver production representative generator sets and conduct Instructor and Key Personnel Training (I&KPT) for Government testing. Major data deliverables will include the Technical Data Package (TDP), provisioning data, logistics management information, technical manuals, test reports and cost data reporting. The Government will purchase the TDP from the vendor with the intent of using it in future competitive re-procurements for LAMPS. A Failure Mode, Effects and Criticality Analysis (FMECA), Level of Repair Analysis (LORA), Functional Configuration Audit (FCA) and a Physical Configuration Audit (PCA) will be completed to verify that the TDP accurately describes the qualified production sets.

The Management and Distribution Control (MDC) program effort will use a multi-phase acquisition strategy, continue to consolidate requirements to achieve MDD by 4QFY16, and enter the acquisition process at Milestone B. The MDC product line will include a Power Distribution Unit (PDU) designed to interface with the Advanced Medium Mobile Power Sources (AMMPS) automatic power plant/microgrid, the PDU being developed in conjunction with the LAMPS program, and other products to provide the full range of power distribution equipment to support present and future Joint power system requirements.

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Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 5	PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	194 / <i>Engine Driven Gen Ed</i>

The Small Tactical Electric Power (STEP) program will use a multi-phase acquisition strategy. STEP requirements analysis and EMD will be separated into two phases; Phase I is System Development with multiple awards and Phase II is a down select to a single vendor for System Demonstration. The STEP program will enter the acquisition process at Milestone B, EMD.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				194 / Engine Driven Gen Ed								
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Small Tactical Electric Power (STEP)	Various	PM E2S2 : Stafford, VA	0.000	-		-		0.561	Feb 2017	-		0.561	Continuing	Continuing	Continuing	
Management and Distribution Control (MDC)/ Microgrids	Various	PM E2S2 : Ft. Belvoir	0.000	-		3.467		1.275	Feb 2017	-		1.275	Continuing	Continuing	Continuing	
Subtotal			0.000	-		3.467		1.836		-		1.836	-	-	-	
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Management and Distribution Control (MDC)/ Microgrids	C/CPFF	TBD : TBD	0.000	-		-		1.750	May 2017	-		1.750	Continuing	Continuing	Continuing	
Large Advanced Mobile Power Sources (LAMPS) (100-200kW)	C/FPIF	L-3 Communications, Westwood Corporation, Tulsa, OK : Various	28.118	4.309		3.895		-		-		-	Continuing	Continuing	Continuing	
Small Tactical Electric Power (STEP)	C/CPFF	TBD : TBD	0.000	-		-		8.780	Jun 2017	-		8.780	Continuing	Continuing	Continuing	
Subtotal			28.118	4.309		3.895		10.530		-		10.530	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Large Advanced Mobile Power Sources (LAMPS) (100-200kW)	MIPR	CECOM LCMC : Aberdeen Proving Ground (APG), MD	3.485	-		-		-		-		-	Continuing	Continuing	Continuing	
Subtotal			3.485	-		-		-		-		-	-	-	-	

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) 194 / <i>Engine Driven Gen Ed</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LAMPS (Large Advanced Mobile Power Sources)																												
EMD - LAMPS																												
DT/Log Demo/OT																												
(1) MS C-LAMPS																												
MDC (Management and Distribution Control)																												
(2) MDD - MDC																												
(3) MDC - Milestone B																												
MDC - Phase 1 EMD																												
(4) MDC - Phase 1 Milestone C																												
MDC - Phase 2 EMD																												
(5) MDC - Phase 2 Milestone C																												
MDC - Phase 3 EMD																												
Small Tactical Electric Power (STEP)																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) 194 / <i>Engine Driven Gen Ed</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
(1) Milestone B - STEP									▲ 1																											
(2) EMD Award - STEP									▲ 2																											
EMD - STEP																																				
(3) Milestone C- STEP																													▲ 3							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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
LAMPS (Large Advanced Mobile Power Sources)	3	2010	4	2016
EMD - LAMPS	2	2011	4	2016
DT/Log Demo/OT	1	2015	3	2016
MS C-LAMPS	4	2016	4	2016
MDC (Management and Distribution Control)	1	2017	4	2021
MDD - MDC	4	2016	4	2016
MDC - Milestone B	2	2017	2	2017
MDC - Phase 1 EMD	2	2017	3	2018
MDC - Phase 1 Milestone C	3	2018	3	2018
MDC - Phase 2 EMD	1	2019	3	2020
MDC - Phase 2 Milestone C	3	2020	3	2020
MDC - Phase 3 EMD	1	2021	3	2022
Small Tactical Electric Power (STEP)	4	2015	3	2020
Milestone B - STEP	3	2017	3	2017
EMD Award - STEP	3	2017	3	2017
EMD - STEP	3	2017	3	2020
Milestone C- STEP	3	2020	3	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) EC9 / <i>Contingency Basing Infrastructure</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
EC9: <i>Contingency Basing Infrastructure</i>	-	2.447	2.541	3.609	-	3.609	3.793	3.805	3.827	3.877	0.000	23.899
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY15 is the first year of funding for this project.

A. Mission Description and Budget Item Justification

This project develops the tools and processes that will optimize recommendations for the materiel used to establish, operate, and maintain contingency bases. The project will increase the available knowledge at the base level and provide an analytical foundation for sound investment decision making. The continuous improvement modeling and simulation analysis tools will match the evolution of threats and technologies. Using a system of systems engineering approach, the Contingency Base Infrastructure Product Directorate's focus ensures optimum integration of materiel across the base camp to facilitate the maximizing of Warfighter effectiveness. CBI's analytical results will allow leadership to make fact based informed decisions on the acquisition and employment/deployment of equipment. This enables contingency bases to be established, operated and managed as a system (system of systems) and the equipment acquired for the base to be compatible and efficient while providing the maximum overall support to the Warfighter. This approach supports Program(s) of Record (PORs) to maximize improvements in Operational Energy and ensures efficiencies across all Areas of Responsibility (AOR).

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Contingency Base Infrastructure	2.447	-	-	-	-
Description: Funding is provided for the following effort.					
FY 2015 Accomplishments: Continue integration of Model-Based Systems Engineering principles to enable analysis of contingency bases as a system (system of systems). Continuation of development of the Base Camp Master Planning Tool - Contingency Base Interface to the Warfighter (CBIWar). Support Army investment decisions across the Contingency Base Infrastructure portfolio and development of Capability Sets and their associated delivery strategy.					
Title: Toolset Development	-	0.481	0.780	-	0.780
Description: Funding is provided for the following effort.					
FY 2016 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EC9 / <i>Contingency Basing Infrastructure</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Funding is planned to support Integrated Toolset Demonstration (Demo 2) that will support portfolio maturation, integration and analytical evaluation. Additionally, providing analysis to the FY20 contingency basing infrastructure equipment set to support Army investment decisions for POM 19-23.</p> <p>FY 2017 Base Plans: Funding is planned to support Developmental Toolset Demonstration (Demo 3) and Operational Toolset Demonstration (Demo 4) that will support portfolio maturation, integration and analytical evaluation. Additionally, providing analysis to the FY21 contingency basing infrastructure equipment set to support Army investment decisions for POM 20-24.</p>					
<p>Title: Integrated Analysis and Design</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2016 Plans: Funding is planned to support Integrated Toolset Demonstration 2 that will support portfolio maturation, integration and analytical evaluation. Additionally, support Army investment decisions across the Contingency Base Infrastructure portfolio.</p> <p>FY 2017 Base Plans: Funding is planned to support Developmental Toolset Demonstration and Operational Toolset Demonstration that will support portfolio maturation, integration and analytical evaluation. Additionally, support Army investment decisions across the Contingency Base Infrastructure portfolio.</p>	-	0.972	1.391	-	1.391
<p>Title: Capabilities Implementation and Materiel Requirements</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2016 Plans: Funding is planned to support the development of the design of different sized contingency base camps, capability sets, expansion and enhancements sets, and establishment of a configuration management plan to manage the base camp capability sets.</p> <p>FY 2017 Base Plans:</p>	-	0.421	0.613	-	0.613

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EC9 / <i>Contingency Basing Infrastructure</i>				
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Funding is planned to continue supporting the development of the design of different sized contingency base camps, capability sets, expansion and enhancements sets, and establishment of a configuration management plan to manage the base camp capability sets.						
Title: Program Management						
Description: Funding is provided for the following effort.						
FY 2016 Plans: Oversight and management of integrated analysis and design, capabilities implementation and materiel requirements, and toolset development. Funding to support managing cost, schedule, performance, risk, personnel, and operational activities. Also oversight, analysis and management of operational energy related impacts and technology gaps.						
FY 2017 Base Plans: Oversight and management of integrated analysis and design, capabilities implementation and materiel requirements, and toolset development. Funding to support managing cost, schedule, performance, risk, personnel, and operational activities. Also oversight, analysis and management of operational energy related impacts and technology gaps.						
Accomplishments/Planned Programs Subtotals		2.447	2.541	3.609	-	3.609
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy Not applicable for this item.						
E. Performance Metrics N/A						

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EC9 / <i>Contingency Basing Infrastructure</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	PM E2S2 / PEO CS&CSS : Fort Belvoir, VA / Warren, MI	0.000	0.401	Feb 2015	0.667		0.825	Feb 2017	-		0.825	0	1.893	0
Subtotal			0.000	0.401		0.667		0.825		-		0.825	0.000	1.893	0.000

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Toolset Development	Various	Various : Various	0.000	0.761	Feb 2015	0.481		0.780	Feb 2017	-		0.780	0	2.022	Continuing
Integrated Analysis and Design	Various	Various : Various	0.000	0.873	Feb 2015	0.972		1.391	Feb 2017	-		1.391	0	3.236	Continuing
Capabilities Implementation and Materiel Requirements	Various	Various : Various	0.000	0.412	Feb 2015	0.421		0.613	Feb 2017	-		0.613	0	1.446	Continuing
Subtotal			0.000	2.046		1.874		2.784		-		2.784	0.000	6.704	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	2.447	2.541	3.609	-	3.609	0.000	8.597	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EC9 / <i>Contingency Basing Infrastructure</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Toolset Development	Toolset Development																											
(1) Integrated Preliminary Design Review (I-PDR)					▲ I-PDR																							
(2) Integrated Critical Design Review (I-CDR)									▲ I-CDR																			
Integrated Analysis and Design	Integrated Analysis and Design																											
(3) Individual Tool Demonstration (ITD)	▲ ITD																											
(4) Integrated Tool Demonstration 2 (ITD2)					▲ ITD2																							
(5) Developmental Toolset Demonstration (DTD)									▲ DTD																			
(6) Operational Toolset Demonstration (OTD)													▲ OTD															
(7) Initial Data Transition to JCMS, Initial Operational Capability (IOC)													▲ IOC															
Capabilities Implementation and Materiel Requirements	Capabilities Implementation and Materiel Requirements																											
Program Management	Program Management																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EC9 / <i>Contingency Basing Infrastructure</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Toolset Development	1	2015	4	2021
Integrated Preliminary Design Review (I-PDR)	1	2016	1	2016
Integrated Critical Design Review (I-CDR)	1	2017	1	2017
Integrated Analysis and Design	1	2015	4	2021
Individual Tool Demonstration (ITD)	1	2015	1	2015
Integrated Tool Demonstration 2 (ITD2)	2	2016	2	2016
Developmental Toolset Demonstration (DTD)	2	2017	2	2017
Operational Toolset Demonstration (OTD)	3	2017	3	2017
Initial Data Transition to JCMS, Initial Operational Capability (IOC)	4	2017	4	2017
Capabilities Implementation and Materiel Requirements	1	2015	4	2021
Program Management	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) EJ9 / <i>Maneuver Support Vessel -Light (MSV-L)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
EJ9: <i>Maneuver Support Vessel - Light (MSV-L)</i>	-	0.000	10.066	18.338	-	18.338	14.522	0.000	0.000	0.000	0.000	42.926
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Maneuver Support Vessel - Light (MSV(L)) is a New Start in FY16.

A. Mission Description and Budget Item Justification

FY17 dollars in the amount of \$18.586M to support MSV(L) in the Engineering and Manufacturing Development (EMD) for testing of the Maneuver Support Vessel (Light)(MSV(L)). The MSV(L) is a modified non-developmental item (NDI), multifunctional waterborne mobility platform, which will displace the current Landing Craft Mechanized-8 (LCM-8) with much greater payload and speed while being capable of operating in shallower water (improved draft), and also provide roll-through capability via stern and bow ramps. The MSV(L) will provide a waterborne corridor for movement and maneuver; expeditionary delivery of combat configured equipment, troops, and logistics, in austere anti-access/area denial environments; and operational capability from ship to shore and along coastal waters, narrow inland water ways and rivers. It will be capable of transporting multiple combat configured ready-to-fight payloads with crew (i.e. an Abrams tank; or two Strykers with bar armor; or four Joint Light Tactical Vehicles (JLTVs); or a Heavy Expandable Mobility Tactical Truck (HEMTT); or a Load Handling System (LHS) and trailer. It will be able to operate fully loaded at a speed of 15 knots in Sea State 3 (SS3) conditions, while being survivable (seaworthy) in SS7 conditions on the Beaufort Scale. It will be furnished with a subsurface surveillance device for obstacle detection and avoidance, protection from small arms fire, and two Common Remotely Operated Weapon Stations (CROWS II) for vessel defense and force protection, and mitigate detection through reduction of thermal and acoustic signature. It will move combat configured forces and supplies more efficiently than the LCM-8.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Systems Engineering / Program Management	-	2.811	3.824	-	3.824
Description: Salaries for Core and Matrix personnel,includes Source Selection Evaluation Board (SSEB).					
FY 2016 Plans: Salaries for Core and Matrix personnel, includes Source Selection Evaluation Board (SSEB).					
FY 2017 Base Plans: PM/Matrix Support includes PM and System Engineering oversight required to manage the program and provide contractor oversight. Salaries, Benefits, Travel, Personnel Training and other government costs are included for retaining a professional acquisition workforce.					
Title: Naval Architecture Support	-	-	0.631	-	0.631

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EJ9 / <i>Manuever Support Vessel -Light (MSV-L)</i>				
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: 2.5 man years for Naval architecture support and travel expenses.						
FY 2017 Base Plans: 2.5 man years to provide Naval architecture support for the MSV(L) program to include travel expenses.						
Title: Program Management Support						
Description: Program Management Support (contract) Scheduler and Project Office support on MSV(L).						
FY 2017 Base Plans: Salary and travel expenses for 2 man years for Scheduler and Project Office support on MSV(L).						
		-	-	0.507	-	0.507
Title: Government Furnished Equipment (GFE)						
Description: GFE for prototype vessel consist of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR); and Remote Weapon Stations (RWS)						
FY 2016 Plans: GFE for prototype vessel consisting of C4ISR and RWS						
Title: Engineering and Manufacturing Development (EMD)						
Description: EMD contract						
FY 2016 Plans: EMD contract						
FY 2017 Base Plans: EMD contract						
		-	5.008	13.058	-	13.058
Title: Test and Evaluation						
Description: Modeling & Simulation; and Scale modeling testing						
FY 2016 Plans: Modeling and simulation testing to include model basin testing.						
FY 2017 Base Plans:						
		-	1.125	0.318	-	0.318

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EJ9 / <i>Manuever Support Vessel -Light (MSV-L)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Government test support					
Accomplishments/Planned Programs Subtotals	-	10.066	18.338	-	18.338

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 643804526 Logistics and Engineer Eq: 643804 526 <i>Logistics and Engineer Adv Dev</i>	2.803	2.546	3.976	-	3.976	4.197	3.298	3.330	3.336	Continuing	Continuing
• SSN R03050: <i>MSV Support Vessel (Light) MSV-L SSN R03050</i>	-	-	-	-	-	-	79.991	81.512	83.063	Continuing	Continuing

Remarks
 The Maneuver Support Vessel (Light) (MSV(L)) is a new start program in FY16. APE 0603804, Project 526 provided resourcing for FY15 research and development support to this program.

Significant Achievements:
 Analysis of Alternatives final report approved 19 February 2015.
 Capabilities Development Document (CDD) approved 7 August 2015.
 Issued Requests for Information (RFIs) and follow-on questions throughout the year including an RFI in June 2015 which contained the Army Technical Product Description (ATPD), Scope of Work (SOW) and affordability caps.
 Configuration Steering Board (CSB) conducted 18 November 2015.
 Industry Day conducted 1 December 2015.

D. Acquisition Strategy
 Enter at Milestone B in FY17 with a four year Engineering and Manufacturing Development (EMD) Phase, followed by Low Rate Initial Production (LRIP) and Full Rate Production (FRP). The Acquisition Strategy is to have a Full and Open competition, evaluate paper design proposals for the selection of one contractor at MS B to build and test one prototype and then inform the Capability Production Document (CPD), LRIP, and FRP. RFP to be released in June 2016 with anticipated contract award March 2017. Purchase Model to perform basin testing as a mitigation prior to full size prototype testing. Acquisition Strategy is to award one, 10-12 year contract; broken down into EMD, LRIP and FRP.

E. Performance Metrics
 N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) EJ9 / Maneuver Support Vessel -Light (MSV-L)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering and Manufacturing Development (EMD)	C/FP	TBD : TBD	0.000	-		5.008	Jun 2016	13.058	Mar 2017	-		13.058	0	18.066	0
Government Furnished Equipment (GFE)	MIPR	TBD : TBD	0.000	-		1.122	Mar 2016	-		-		-	0	1.122	0
Subtotal			0.000	-		6.130		13.058		-		13.058	0.000	19.188	0.000

Remarks
Due to Re-Phase of EMD from 3 to 4 years, contract award will occur in FY17.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Salaries for Core and Matrix Personnel Army Watercraft, TARDEC, ILSC PSID.	MIPR	Detroit Arsenal : Warren, MI	0.000	-		2.811	Oct 2015	3.824	Oct 2016	-		3.824	Continuing	Continuing	0
Salaries/Travel for Naval Architecture Support	C/CPFF	TBD : TBD	0.000	-		-		0.631		-		0.631	0	0.631	0
Salaries / Travel for Program Management Support	C/CPFF	TBD : TBD	0.000	-		-		0.507		-		0.507	0	0.507	0
Subtotal			0.000	-		2.811		4.962		-		4.962	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation	MIPR	ATEC: APG : APG, MD	0.000	-		-		0.318	Mar 2017	-		0.318	0	0.318	0

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EJ9 / <i>Manuever Support Vessel -Light (MSV-L)</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Salaries for Core and Matrix Support																												
(1) Analysis of Alternatives Final Report Complete	▲																											
(2) Capabilities Development Document (CDD) Approved					▲																							
(3) Configuration Steering Board (CSB) Held and Approved					▲																							
(4) Industry Day Held					▲																							
(5) RFP Posting									▲																			
(6) Milestone B													▲															
(7) Contract Award													▲															
(8) Model																	▲											
Model Testing																												
Prototype Build																												
Prototype Test and Evaluation																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) EJ9 / <i>Manuever Support Vessel -Light (MSV-L)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Salaries for Core and Matrix Support	1	2016	1	2022
Analysis of Alternatives Final Report Complete	2	2015	2	2015
Capabilities Development Document (CDD) Approved	4	2015	4	2015
Configuration Steering Board (CSB) Held and Approved	1	2016	1	2016
Industry Day Held	1	2016	1	2016
RFP Posting	3	2016	4	2016
Milestone B	2	2017	2	2017
Contract Award	2	2017	2	2017
Model	1	2018	1	2018
Model Testing	1	2018	2	2018
Prototype Build	3	2018	4	2019
Prototype Test and Evaluation	4	2019	1	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) H01 / <i>Combat Engineer Eq Ed</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
H01: <i>Combat Engineer Eq Ed</i>	-	0.998	0.823	2.280	-	2.280	3.736	3.420	2.828	4.825	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the Engineering Manufacturing Development (EMD) of military Construction Equipment used in support of horizontal and vertical engineer construction tasks and to develop a variety of enabling systems that will support and improve mobility for Engineers in the Brigade Combat Teams (BCT) and Combat Support Brigades (CSB) forces. This project also supports the EMD of enabling systems to meet critical capabilities of joint interdependence through Air and Ground Line of Communication and Rapid Tactical Earthmoving repair and construction which increase the operational reach of modular forces. The BCT and CSB systems include: High Mobility Engineer Excavators, Scrapers, Scoop Loaders, Skid Steer Loaders, Dozers, Cranes and Graders. This project will also support the Research into the Deuce Replacement and the Energy Productivity Study.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Drive Assist</p> <p>Description: Integrate and demonstrate COTS technologies enhancing CE operations.</p> <p>FY 2016 Plans: Focus on the inclusion of referenced technologies for integration on a 120M Grader. Technology will primarily be COTS equipment</p> <p>FY 2017 Base Plans: Investigate the possibility of transitioning the identified technology onto additional CE platforms such as the T-5 and T-9 Dozer</p>	-	0.150	1.353	-	1.353
<p>Title: Operational Efficiency</p> <p>Description: Improve Operational Efficiency/Reduce Maintenance Time</p> <p>FY 2015 Accomplishments: Using Government supplied vehicles (GFE), evaluate new technologies to be developed by private industry to improve the efficiency or reduce maintenance burden.</p>	0.283	-	-	-	-
<p>Title: System Engineering/Program Management</p> <p>Description: Program Management</p>	0.472	0.346	0.450	-	0.450

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H01 / <i>Combat Engineer Eq Ed</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Program Management Support of R&D Program for CE</p> <p><i>FY 2016 Plans:</i> Program Management Support of R&D Program for CE</p> <p><i>FY 2017 Base Plans:</i> Program Management Support of R&D Program for CE</p>					
<p><i>Title:</i> Work Tool Enhancement</p> <p><i>Description:</i> Develop prototype systems to provide additional machine capability. This may include sweepers, buckets, lift devices, fork enhancements, etc.</p> <p><i>FY 2015 Accomplishments:</i> Investigate the availability and commercial capability of the Family of Skid Steer Loaders (CASE M400 series). These attachments include Rock drill, Angle Boom, Roto Tiller, Vibratory Roller, Snow Blower, Dozer Blade, Sand Bagger, Backhoe and Bridge Handling Equipment. Specific focus will be on attachments which improve the capability to improve the Rapid Airfield Repair (Vibratory Roller, Roto-tiller, Back-hoe). The Effort may include purchase/lease of hardware and demonstration of capacities which will enhance Rapid Airfield Repair.</p> <p><i>FY 2016 Plans:</i> Investigate the availability and commercial capability of the Family of Skid Steer Loaders (CASE M400 series). These attachments include Rock drill, Angle Boom, Roto Tiller, Vibratory Roller, Snow Blower, Dozer Blade, Sand Bagger, Backhoe and Bridge Handling Equipment. Specific focus will be on attachments which improve the capability to improve the Rapid Airfield Repair (Vibratory Roller, Roto-tiller, Back-hoe). The Effort may include purchase/lease of hardware and demonstration of capacities which will enhance Rapid Airfield Repair.</p> <p><i>FY 2017 Base Plans:</i> Investigate the availability and commercial capability of the Family of Skid Steer Loaders (CASE M400 series). These attachments include Rock drill, Angle Boom, Roto Tiller, Vibratory Roller, Snow Blower, Dozer Blade, Sand Bagger, Backhoe and Bridge Handling Equipment. Specific focus will be on attachments which improve the capability to improve the Rapid Airfield Repair (Vibratory Roller, Roto-tiller, Back-hoe). The Effort may include purchase/lease of hardware and demonstration of capacities which will enhance Rapid Airfield Repair.</p>	0.123	0.047	0.477	-	0.477
<p><i>Title:</i> Machine Product Improvement</p>	0.120	0.080	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H01 / <i>Combat Engineer Eq Ed</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Investigate technologies to enhance performance/safety of current systems. Examples of this may include track slip detection on the DEUCE, whole vehicle protection, SLEP technology insertion.</p> <p>FY 2015 Accomplishments: Investigate technologies to enhance performance/safety of current systems. Examples of this may include track slip detection on the DEUCE, whole vehicle protection, SLEP technology insertion.</p> <p>FY 2016 Plans: Investigate technologies to enhance performance/safety of current systems. Examples of this may include track slip detection on the DEUCE, whole vehicle protection, SLEP technology insertion.</p>					
<p>Title: Forced Entry (Airborne/Air Assault) Study/Development</p> <p>Description: Explore options of using Program of Record systems to meet Forced Entry requirements.</p> <p>FY 2016 Plans: Investigate the possibility of adapting the BHL for the Air Assault role. Also, research possible material solutions for the ERACC IV capability.</p>	-	0.200	-	-	-
Accomplishments/Planned Programs Subtotals	0.998	0.823	2.280	-	2.280

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• High Mobility Engineer Excavator I: <i>High Mobility Engineer Excavator I R05900</i>	-	2.656	1.743	2.900	4.643	1.978	-	-	-	0.000	9.277
• Grader, Mtzd, Hvy: <i>Grader, Mtzd, Hvy R03801</i>	5.827	5.903	1.742	3.047	4.789	0.989	-	-	-	0.000	17.508
• Hydraulic Excavator: <i>Hydraulic Excavator X01500</i>	4.938	-	1.123	-	1.123	4.944	-	-	-	0.000	11.005
• Plant, Asphalt Mixing: <i>Plant, Asphalt Mixing M08100</i>	0.667	0.984	-	-	-	-	-	-	-	0	1.651

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	Total Cost
			Base	OCO	Total					Complete	
• Tractor Full Tracked, Med T-9: <i>Tractor Full Tracked, Med T-9 M06100</i>	34.071	27.156	0.000	4.426	4.426	-	-	-	-	0	65.653
• All Terrain Cranes: <i>All Terrain Cranes R06701</i>	4.938	16.750	65.285	-	65.285	8.935	17.632	31.477	38.163	Continuing	Continuing
• Scraper, Earthmoving: <i>Scraper, Earthmoving R02800</i>	14.926	26.125	26.233	-	26.233	18.740	-	-	-	0	86.024
• ERACC 4: <i>ERACC IV R03001</i>	2.741	2.531	-	-	-	-	-	-	-	0	5.272
• ERACC 1: <i>ERACC I SSA R07002</i>	2.378	-	-	-	-	-	-	-	-	0	2.378
• ERACC 2: <i>ERACC 2 EE R07003</i>	8.365	-	2.779	-	2.779	3.663	0.992	0.991	0.991	Continuing	Continuing
• ERACC 3: <i>ERACC III METL R07004</i>	1.440	-	-	-	-	-	-	-	3.284	0	4.724
• Const Equip ESP: <i>Const Equip ESP M05500</i>	15.933	19.640	26.172	-	26.172	35.582	39.190	36.482	22.054	Continuing	Continuing

Remarks

D. Acquisition Strategy

Conduct research, development, and investigations on future Construction Equipment (CE) and identify the path forward for programs to be transitioned for PEO program management. Identify technical advancements that can improve safety, reliability, survivability, transportability, availability, maintainability and reduce the logistical footprints for future CE equipment.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H01 / <i>Combat Engineer Eq Ed</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SBIR+STIR	TBD	TACOM : Warren, Michigan	0.167	-		-		-		-		-	0	0.167	0
Subtotal			0.167	-		-		-		-		-	0.000	0.167	0.000

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Pre-Award requirements, KPP, selection criteria development, Testing of systems	Various	TACOM & TARDEC : Warren, MI	1.675	-		-		-		-		-	0	1.675	0
Development of Drive Assist for Combat Engineer	TBD	TBD : TBD	2.183	-		0.150		1.353	Feb 2017	-		1.353	0	3.686	Continuing
Design armor kits for Combat Engineer	Various	TARDEC : Warren, MI	5.995	-		-		-		-		-	0	5.995	Continuing
Development of Simulator	Various	PEO Stricom : PEO, Stricom, Orlando, FL	8.983	-		-		-		-		-	0	8.983	Continuing
Hazard Clearance at Speed	TBD	TARDEC : Warren, Michigan	0.001	-		-		-		-		-	0	0.001	0
Forced Entry: (Airborne/ Air Assault) Study/ Development	TBD	TARDEC : Warren, MI	9.256	-		0.200		-		-		-	0	9.456	Continuing
Market Research	TBD	TARDEC : Warren, Michigan	0.189	-		-		-		-		-	0	0.189	0
Work Tool Enhancement	MIPR	Various : Various	0.000	0.123	Jan 2015	0.047	Mar 2016	0.477	Mar 2017	-		0.477	0	0.647	0
Machine Product Improvement	TBD	Caterpillar : Illinois	0.000	0.120	Aug 2015	0.080	Jun 2016	-		-		-	0	0.200	0
Subtotal			28.282	0.243		0.477		1.830		-		1.830	0.000	30.832	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H01 / <i>Combat Engineer Eq Ed</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Drive Assist																												
Force Entry: HMEE Type II, Grader, ERACC & Loader Type I Study/Dev																												
System Engineer/Program Support																												
Operational Efficiency																												
Mine Clearing Armor Protection																												
Work Tool Enhancement																												
Machine Product improvement																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H01 / <i>Combat Engineer Eq Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Drive Assist	1	2012	4	2021
Force Entry: HMEE Type II, Grader, ERACC & Loader Type I Study/Development	1	2016	4	2016
System Engineer/Program Support	1	2013	4	2021
Operational Efficiency	1	2013	2	2017
Mine Clearing Armor Protection	1	2019	4	2021
Work Tool Enhancement	2	2016	4	2017
Machine Product improvement	3	2016	4	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
H02: <i>Tactical Bridging - Engineering Development</i>	-	6.722	9.796	14.245	-	14.245	24.283	7.158	5.775	2.327	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the engineering and manufacturing development and transition to procurement of Future Force Bridge Systems and support equipment. Funding supports testing associated with the Low Rate Initial Production (LRIP) phase of the Joint Assault Bridge (JAB) and development of the Line of Communication Bridge (LOCB). This project also funds efforts to upgrade and modernize the Bridging Product Management portfolio through the development of new systems and enhancement of existing systems.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Joint Assault Bridge (JAB) Development and Testing Description: JAB Development and Testing FY 2015 Accomplishments: JAB Testing FY 2016 Plans: JAB Testing FY 2017 Base Plans: Operational Testing and Live Fire Testing of the JAB	0.900	5.000	8.600	-	8.600
Title: Line of Communication Bridge (LOCB) Development and Testing Description: Prototype development and developmental and operational testing of the LOCB FY 2015 Accomplishments: Continuation of testing of the LOCB System FY 2016 Plans: Continuation of testing of the LOCB System	5.626	4.671	-	-	-
Title: Structural Health Monitoring System	0.150	0.125	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Develop and integrate a passive method to collect mobile military bridge system usage and health data and provide that information back to the user for informed decision making. System is targeted for use on the JAB, REBS, Dry Support Bridge (DSB), and LOCB and will reduce the requirement for in-field inspections.</p> <p>FY 2015 Accomplishments: Continued development of the Structural Health Monitoring system</p> <p>FY 2016 Plans: Continued development and testing of the Structural Health Monitoring system</p>					
<p>Title: Bridge Supplemental Set (BSS)</p> <p>Description: 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. The BSS is targeted for use with multiple tactical bridging systems to include the LOCB, IRB, and the DSB. It will also increase the capability of the MRBC.</p> <p>FY 2015 Accomplishments: Continuation of BSS Development</p> <p>FY 2017 Base Plans: FY17 RDTE will fund development of contract documents from User requirements, preparing Request(s) for Proposals, source selection evaluation, and award of development contracts for BSS subsystems.</p>	0.046	-	5.645	-	5.645
Accomplishments/Planned Programs Subtotals	6.722	9.796	14.245	-	14.245

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPA-3, G06520: OPA-3, G06520 Bridge Supplemental Set	-	4.959	0.983	-	0.983	5.890	5.912	4.956	5.948	Continuing	Continuing
• WTCV, GZ3001: WTCV, GZ3001 Joint Assault Bridge	39.362	33.455	13.533	-	13.533	128.967	166.930	183.719	170.743	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPA-3, MX0100 Tactical Bridging: OPA-3, G82404 <i>Line of Communication Bridge</i>	-	9.822	13.553	26.000	39.553	16.429	18.710	23.634	19.447	Continuing	Continuing

Remarks

D. Acquisition Strategy

RDT&E efforts to support testing and follow-on production.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev					H02 / Tactical Bridging - Engineering Development						
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Support	MIPR	Various : Various	2.987	1.523		1.771	Jan 2016	1.645	Dec 2016	-		1.645	Continuing	Continuing	0
Subtotal			2.987	1.523		1.771		1.645		-		1.645	-	-	0.000
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JAB Development	C/FFP	DRS/GDLS : Saint Louis, MO/Sterling Hts, MI	50.652	-		-		-		-		-	Continuing	Continuing	Continuing
LOCB Development	MIPR	Rock Island Arsenal (RIA) : Rock Island, IL	17.495	-		-		-		-		-	Continuing	Continuing	Continuing
Bridge Supplemental Set-Anchorage	C/FFP	TBD : TBD	0.050	0.046	May 2015	-		1.500	Apr 2017	-		1.500	0	1.596	0
Bridge Supplemental Set-Bridge Protection Device	C/FFP	TBD : TBS	0.000	-		-		0.750	May 2017	-		0.750	0	0.750	0
Bridge Supplemental Set-Site Stability	C/FFP	TBD : TBS	0.000	-		-		1.250	Jun 2017	-		1.250	0	1.250	0
Bridge Supplemental Set-Power Generation/Tools	MIPR	TBD : TBS	0.000	-		-		0.500	Jun 2017	-		0.500	0	0.500	0
Structural Health Monitoring	MIPR	TARDEC : Warren, MI	0.750	0.100	May 2015	0.125	Feb 2016	-		-		-	0	0.975	0
REBS Auto Launch-Retrieve	SS/FFP	TBD : TBS	1.500	-		-		-		-		-	0	1.500	0
Subtotal			70.447	0.146		0.125		4.000		-		4.000	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				H02 / Tactical Bridging - Engineering Development							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government In-House	MIPR	TACOM : Warren, MI	8.100	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			8.100	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JAB Testing	MIPR	Aberdeen Proving Grounds (APG) : APG, Maryland	12.321	0.900	Sep 2015	5.000	Apr 2016	8.600	Jan 2017	-		8.600	Continuing	Continuing	Continuing
LOCB Testing	MIPR	A TEC : Aberdeen, MD	6.800	4.153	May 2015	2.900	Mar 2016	-		-		-	0	13.853	0
Subtotal			19.121	5.053		7.900		8.600		-		8.600	-	-	-
Project Cost Totals			100.655	6.722		9.796		14.245		-		14.245	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JAB Development and Testing	JAB Development and Testing																											
LFT&E Armor Development																												
(1) JAB MSC																												
(2) LRIP																												
(3) CDR																												
LFT&E																												
PQT																												
DT/OT																												
JAB IOT&E																												
(4) JAB FRP																												
LOCB Development and Testing	LOCB Development and Testing																											
DT&E																												
Durability																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BSS-PQT																												
Structural Health Monitoring Project																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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
JAB Development and Testing	1	2015	4	2018
LFT&E Armor Development	4	2015	4	2016
JAB MSC	2	2016	2	2016
LRIP	2	2016	2	2016
CDR	3	2016	3	2016
LFT&E	4	2016	4	2017
PQT	4	2017	1	2018
DT/OT	2	2018	2	2018
JAB IOT&E	3	2018	3	2018
JAB FRP	4	2018	4	2018
LOCB Development and Testing	2	2012	4	2018
DT&E	4	2015	4	2016
Durability	1	2016	4	2016
LOCB MSC	4	2016	4	2016
Log Demo	1	2018	1	2018
LOCB IOT&E	2	2018	2	2018
LOCB FRPDR	4	2018	4	2018
Bridge Supplemental Set	2	2014	4	2019
MDD	3	2016	3	2016
BSS MSB	2	2017	2	2017
EMD Contract Award	3	2017	3	2017
PPQT-Anchorage	4	2018	4	2019

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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
PPQT-Bridge Protection Device	4	2018	4	2019
PPQT-Site Stability	4	2018	4	2019
BSS Log Demo	2	2021	4	2021
BSS MSC	2	2021	2	2021
BSS-PQT	3	2021	4	2021
Structural Health Monitoring Project	2	2014	4	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) H14 / <i>Materials Handling Equipment - Ed</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
H14: <i>Materials Handling Equipment - Ed</i>	-	0.273	0.628	0.960	-	0.960	0.560	0.450	0.469	0.471	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports engineering, manufacturing, and development of Material Handling Equipment (MHE) including Rough Terrain Forklifts, Container Handling Equipment, and other cargo handling related items to enable Combat Service Support units to rapidly and efficiently move and deliver critical supplies worldwide to the Soldier. Efforts performed under this project include conducting market research, supporting operational requirements identification and validation, conducting trade studies, generating life cycle cost estimates, performing system engineering, developing performance specifications, conducting pre-production test and evaluation, and preparing program management and acquisition documents.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Material Handling Equipment (MHE) System Improvement Description: System Improvements for Material Handling Equipment FY 2015 Accomplishments: Investigate component modernization of RTCH and testing of ATLAS II Wider Forklift	0.226	-	-	-	-
Title: Investigate high-speed towing for LCRTF Description: Investigate high-speed towing for LCRTF FY 2015 Accomplishments: LCRTF high-speed towing development	0.047	-	-	-	-
Title: Platform Safety Description: Research and Demonstrate technologies which would enhance and improve the safe operation of Material Handling Equipment to include sensors and cameras. FY 2016 Plans: Investigate the possibility of transitioning the identified technology onto additional MHE platforms such as the ALTAS and LCRTF. FY 2017 Base Plans:	-	0.330	0.466	-	0.466

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H14 / <i>Materials Handling Equipment - Ed</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Investigate the possibility of transitioning the identified technology onto additional MHE platforms such as the ALTAS and LCRTF.					
Title: Work Tool Enhancement Description: Develop prototype systems to provide additional machine capability. This may include sweepers, buckets, lift devices, fork enhancements, etc. FY 2016 Plans: Work with CASCOM to further define additional capability needs for the LCRTF and ATLAS system. FY 2017 Base Plans: Work with CASCOM to further define additional capability needs for the LCRTF and ATLAS system.	-	0.298	0.294	-	0.294
Title: System Engineering/Program Management Description: System Engineering and Program Management support for Material Handling Equipment FY 2017 Base Plans: System Engineering and Program Management support for Material Handling Equipment	-	-	0.200	-	0.200
Accomplishments/Planned Programs Subtotals	0.273	0.628	0.960	-	0.960

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• Light Capacity Rough Terrain (LCRT): <i>Light Capacity Rough Terrain (LCRT) G41002</i>	14.392	27.982	2.307	0.846	3.153	17.999	18.391	17.759	20.240	Continuing	Continuing
• All Terrain Cranes: <i>All Terrain Cranes R06701</i>	-	-	65.285	-	65.285	8.935	17.632	31.477	38.163	Continuing	Continuing

Remarks

D. Acquisition Strategy
 Develop specifications for LCRTF improvements, award contracts to produce test items for production verification testing. Testing LCRTF improvements to be performed using Army test facilities. Design lightweight armor solution for ATLAS using U.S. Army TARDEC's Center for Ground Vehicle Development and Integration. Test armored ATLAS at Aberdeen Proving Ground, MD. Procure RTCH Sling Load Attachment, obtain safety confirmation and conduct user demonstrations to valid

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H14 / <i>Materials Handling Equipment - Ed</i>

requirements. Develop additional capabilities for existing systems such as the LCRFT, RTCH and ATLAS. Award contracts with vehicle or attachment/technology OEMs to integrate existing commercial attachments/technologies onto the platforms to improve operator function and system usefulness. Testing will be conducted at Aberdeen Proving Grounds, MD.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				H14 / Materials Handling Equipment - Ed								
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
SBIR + STTR	TBD	TBD : TBD	0.032	-		-		-		-		-	0	0.032	0	
Subtotal			0.032	-		-		-		-		-	0.000	0.032	0.000	
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
MHE Training Aids	SS/FFP	Kalmar Rt : Cibolo, TX	2.555	-		-		-		-		-	Continuing	Continuing	Continuing	
RTCH Component Modernization	Various	TARDEC : Warren, MI	0.200	0.203	Jul 2015	-		-		-		-	0	0.403	0	
Lightweight Armor for ATLAS II	MIPR	TARDEC : Warren, MI	0.350	-		-		-		-		-	0	0.350	0	
Sling Load Attachment for RTCH	C/FFP	Kalmar RT Center : Cibolo, TX	0.100	-		-		-		-		-	0	0.100	0	
Platform Safety	SS/FFP	JLG : Texas	0.000	-		0.330		0.466	Feb 2017	-		0.466	0	0.796	0	
Work Tool Enhancement	Various	Various : Various	0.000	-		0.298		0.294	Mar 2017	-		0.294	0	0.592	0	
Subtotal			3.205	0.203		0.628		0.760		-		0.760	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
System Improvements for LCRTF for Tactical Operations	MIPR	TARDEC : Warren, MI	0.055	-		-		-		-		-	0	0.055	0	
Lightweight Armor for ATLAS II	MIPR	TARDEC : Warren, MI	0.110	-		-		-		-		-	0	0.110	0	
System Engineering/ Program Management	MIPR	TARDEC : Warren, MI	0.000	-		-		0.200	Dec 2016	-		0.200	0	0.200	0	
Subtotal			0.165	-		-		0.200		-		0.200	0.000	0.365	0.000	

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H14 / <i>Materials Handling Equipment - Ed</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Design and test LCRTF air drop configuration package																												
Integrate and test LCRTF cold weather start kit																												
LCRTF Lightweight armor development																												
LCRTF high speed towing development																												
Platform Safety																												
Work Tool Enhancement																												
MHE System Replacement Market Survey																												
Investigate MHE Attachments																												
System Engineering/Program Management																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) H14 / <i>Materials Handling Equipment - Ed</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Design and test LCRTF air drop configuration package	3	2013	4	2015
Integrate and test LCRTF cold weather start kit	1	2014	4	2015
LCRTF Lightweight armor development	3	2015	4	2015
LCRTF high speed towing development	2	2015	4	2015
Platform Safety	2	2016	4	2018
Work Tool Enhancement	1	2017	1	2019
MHE System Replacement Market Survey	1	2019	4	2021
Investigate MHE Attachments	1	2019	4	2021
System Engineering/Program Management	1	2017	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
L39: <i>Field Sustainment Support Ed</i>	-	1.623	1.849	3.712	-	3.712	3.028	2.128	2.907	2.985	Continuing	Continuing
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 and other aerial delivery equipment to improve safety, effectiveness, and efficiency of airborne operations. This project develops critical enablers that support the Quartermaster (QM) Force Transformation Strategy 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. These reduce sustainment requirements, related Combat Support/Combat Service Support (CS/CSS), lift demands, the combat zone footprint, and costs for logistical support.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Advanced Low Velocity Airdrop System (ALVADS) - Light and Heavy	1.623	1.849	2.444	-	2.444
Description: ALVADS - Light and Heavy are capable of airdrop operations at an altitude down to 750-ft Above Ground Level (AGL) for ALVADS-L and 975-ft AGL for ALVADS-H, while retaining the objective altitude of 500-ft AGL for both with increased aircraft survivability, and improved accuracy. Light-Gross rigged weight of 2,520-22,000 lbs and Heavy-Gross rigged weight of 22,001-42,000 lbs.					
FY 2015 Accomplishments: Completed Design Validation (DV). Down selected to technically mature ALVADS assets for Developmental Testing (DT) and initiated DT.					
FY 2016 Plans: Conduct and complete DT and initiate Operational Testing (OT).					
FY 2017 Base Plans: Complete OT, prepare Milestone C documentation, and complete logistics deliverables. Obtain Milestone C decision and transition ALVADS into production.					
Title: Extracted High and Low High Speed Container Delivery System (EHLSCDS)	-	-	1.268	-	1.268

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L39 / <i>Field Sustainment Support Ed</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Provides a high speed (230 knot) low altitude (375 A AGL) capability for up to eight Container Delivery Systems (CDS) to enhance aircraft and aircrew safety while improving accuracy and reducing dispersion for receiving ground units.					
FY 2017 Base Plans: Conduct Operational Testing (OT). Prepare Milestone C documentation and complete logistics deliverables.					
Accomplishments/Planned Programs Subtotals	1.623	1.849	3.712	-	3.712

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MA7806: <i>Precision Airdrop, OPA 3, MA7806</i>	4.919	2.890	4.298	-	4.298	2.617	2.178	2.219	2.282	Continuing	Continuing
• 643804 K39: <i>Field Sustainment Support AD, 643804 K39</i>	0.514	1.875	2.629	-	2.629	2.261	2.351	1.714	1.761	Continuing	Continuing

Remarks

D. Acquisition Strategy
Accelerate product development and testing to transition into production.

E. Performance Metrics
N/A

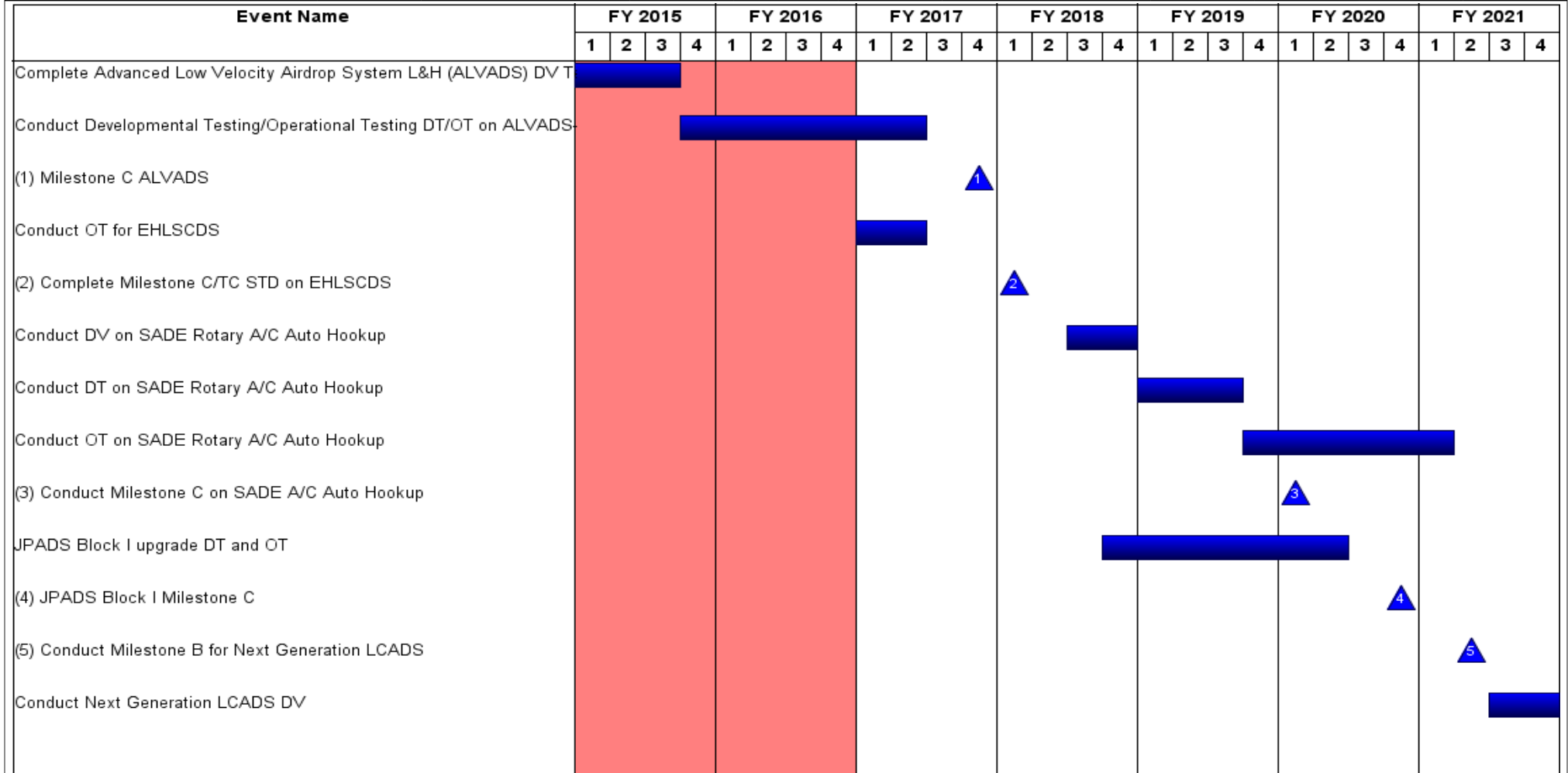
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)						Project (Number/Name)					
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev						L39 / Field Sustainment Support Ed					
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Support	Various	PM FSS, Natick : Natick, MA	3.567	0.318	Oct 2014	0.400	Oct 2015	0.712	Oct 2016	-		0.712	0	4.997	Continuing
SBIR+STTR	TBD	Various : Various	0.129	-		-		-		-		-	0	0.129	0
Subtotal			3.696	0.318		0.400		0.712		-		0.712	0.000	5.126	-
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ALVADS-L&H	Various	Various : Various	14.605	0.505	Jun 2015	0.600	Apr 2016	0.450	Nov 2016	-		0.450	0	16.160	Continuing
EHLSCDS	Various	Various : Various	0.000	-		0.100	Apr 2016	0.350	Nov 2016	-		0.350	0	0.450	0
Subtotal			14.605	0.505		0.700		0.800		-		0.800	0.000	16.610	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EHLSCDS	Various	Various : Various	0.000	-		-		0.050	Jun 2017	-		0.050	0	0.050	0
ALVADS	Various	Various : Various	0.000	-		-		0.050	Jun 2017	-		0.050	0	0.050	0
Subtotal			0.000	-		-		0.100		-		0.100	0.000	0.100	0.000
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EHLSCDS	Various	Yuma Proving Ground (YPG), AZ, AEC : AZ	10.080	-		-		0.600	Mar 2017	-		0.600	0	10.680	Continuing
ALVADS-L&H	Various	YPG, AZ/ OTC, NC : YPG, AZ/ OTC, NC	4.536	0.800	Jun 2015	0.749	Mar 2016	1.500	Mar 2017	-		1.500	0	7.585	Continuing

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L39 / Field Sustainment Support Ed
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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
Complete Advanced Low Velocity Airdrop System L&H (ALVADS) DV Testing	4	2014	3	2015
Conduct Developmental Testing/Operational Testing DT/OT on ALVADS-L&H	4	2015	2	2017
Milestone C ALVADS	4	2017	4	2017
Conduct OT for EHLSCDS	1	2017	2	2017
Complete Milestone C/TC STD on EHLSCDS	1	2018	1	2018
Conduct DV on SADE Rotary A/C Auto Hookup	3	2018	4	2018
Conduct DT on SADE Rotary A/C Auto Hookup	1	2019	3	2019
Conduct OT on SADE Rotary A/C Auto Hookup	4	2019	1	2021
Conduct Milestone C on SADE A/C Auto Hookup	1	2020	1	2020
JPADS Block I upgrade DT and OT	4	2018	2	2020
JPADS Block I Milestone C	4	2020	4	2020
Conduct Milestone B for Next Generation LCADS	2	2021	2	2021
Conduct Next Generation LCADS DV	3	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
L41: <i>Water And Petroleum Distribution - Ed</i>	-	3.071	3.361	8.363	-	8.363	5.065	9.336	9.436	9.507	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides all services with ample supply of clean fuel and water. The Army has the mission to supply fuel for all land-based forces, including the Marines and the Air Force, and must supply bulk drinking water to the Soldiers. These Engineering and Manufacturing Development programs enable the Army to improve maneuver sustainment operations to meet the demands of the Stryker Brigade Combat Teams 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. The mission covers purification, storage, distribution, and quality control of water. The Army cannot fight without clean fuel and water. These Research and Development (R&D) 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 system in hostile joint operations areas.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: 3K Tactical Water Purification System (TWPS). Description: Funding is provided for the following effort. FY 2016 Plans: Start fabrication of prototype 3K TWPS. Start development of Level II Technical Data Package (TDP). FY 2017 Base Plans: Develop in-house technical manual for Production Qualification Testing (PQT). Detailed design work for prototype. System design and development leading to Critical Design Review (CDR) in 2QFY18.	-	0.348	3.100	-	3.100
Title: Fuel System Supply Point (FSSP) Common Pump Description: Funding is provided for the following effort FY 2017 Base Plans: Finalize the Technical Data Package (TDP) for the common pump that operates at either 350 or 600 Gallons per Minute so that it is ready to use for procurement.	-	-	0.100	-	0.100
Title: Expeditionary Water Packaging System (EWPS).	0.311	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Funding is provided for the following effort</p> <p>FY 2015 Accomplishments: Finalize and staff Milestone C program documents; Release Request for Proposal (RFP) and hold a Source Selection Evaluation Board (SSEB) to award EWPS production contract.</p>					
<p>Title: Small Unit Water Purifier</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2017 Base Plans: Requirements refinement and technology development.</p>	-	-	0.169	-	0.169
<p>Title: Modular Tactical Retail Refueling System (MTRRS)</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2015 Accomplishments: Initiate test, technical manuals and technical data package (drawing package). The technical data package will allow the Army to competitively procure the MTRRS and initiate prototype testing.</p> <p>FY 2016 Plans: Continue prototype testing from FY15. Refine technical manuals and technical data package (TDP) drawing package. Begin transistioning technical data to program manager for competitive procurement. Prepare Milestone C documentation and develop Request for Proposal (RFP).</p> <p>FY 2017 Base Plans: Complete Milestone C documentation and review. Complete supportability analyses. Complete Source Selection Evaluation Board and award production contract.</p>	1.000	0.800	0.500	-	0.500
<p>Title: Water Bison</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2017 Base Plans: Develop and release Request for Proposal (RFP). Develop and prepare Milestone B documentations. Achieve Milestone B. Develop contract language in preparation for FY18 award.</p>	-	-	0.800	-	0.800
<p>Title: Early Entry Fluid Distribution System (E2FDS).</p>	1.760	2.213	2.001	-	2.001

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Funding is provided for the following effort</p> <p>FY 2015 Accomplishments: Achieve Milestone B approval. Release RFP for Engineering and Manufacturing Development (EMD) contract. Source Selection Evaluation Board (SSEB) for EMD contract. Award EMD contract.</p> <p>FY 2016 Plans: Complete initial design of E2FDS. Initiate the Critical Design Review of the E2FDS prototype. Initiate fabrication of prototypes for testing under EMD phase.</p> <p>FY 2017 Base Plans: Complete Product Verification Testing (PVT) for both systems. Collect and begin analyzing test data to inform an FY18 Fair Opportunity Decision. Conduct early supportability analyses, and evaluate draft Operator manuals delivered by both contractors.</p>					
<p>Title: Petroleum Expeditionary Analysis Kit (PEAK)</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2017 Base Plans: Establish new integrated product team for the development initial draft documentation and preparation for entry into Milestone B. Initiate new market investigations for potential commercial solutions that can address the identified requirements gap. Prepare the preliminary draft of the performance specification for EMD phase.</p>	-	-	0.500	-	0.500
<p>Title: Army Fuel Automated Management System (AFAMS) Tank Gauging</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2017 Base Plans: Continue development and integration of sensors into fuel storage systems to report fuel levels to the AFAMS system.</p>	-	-	0.426	-	0.426
<p>Title: Modular Fuel System (MFS)</p> <p>Description: Funding is provided for the following effort.</p> <p>FY 2017 Base Plans:</p>	-	-	0.100	-	0.100

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete Initial Operational Test and Evaluation (IOT&E) to include the Pump Rack Module (PRM) and 2 different models of the Tank Rack Module (TRM).					
Title: Bulk Petroleum Trailers Description: Funding is provided for the following effort. FY 2017 Base Plans: Conduct market research and provide engineering support for the Cost-Benefit Analysis (CBA) and Capabilities Development Document (CDD) generation.	-	-	0.167	-	0.167
Title: Pipeline Trace Tool Description: Funding is provided for the following effort. FY 2017 Base Plans: Mature a pipeline trace tool software developed under a Small Business Innovative Research (SBIR) contract so that it meets end user requirements and can be used on army networks. Conduct user juries and incorporate feedback. Validate and verify the software, and obtain a certificate of network worthiness.	-	-	0.500	-	0.500
Accomplishments/Planned Programs Subtotals	3.071	3.361	8.363	-	8.363

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 0603804/K41: <i>RDTE, Logistics and Engineer Equipment - Advanced Development</i>	3.409	3.764	3.662	-	3.662	4.773	-	-	-	Continuing	Continuing
• MA6000: <i>OPA 3, Distribution Systems, Petroleum & Water</i>	40.692	35.381	42.656	78.240	120.896	48.687	52.915	46.589	46.057	Continuing	Continuing

Remarks

D. Acquisition Strategy

Develop engineering prototypes for the 3K Tactical Water Purification System (3K TWPS), Modular Tactical Retail Refueling System (MTRRS), Early Entry Fluid Distribution System (E2FDS) and select Non-Development Item(NDI) based on market surveys and proposals from industry. Based on market research, will award either competitive or sole source contracts. A Make/Buy analysis will be conducted for MTRRS to determine if it can be manufactured economically at an Army Arsenal.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>

The Pipeline Trace Tool developed under a Small Business Innovative Research (SBIR) contract will be matured by Army software developers so it can be released on Army networks.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SBIR/STTR	TBD	TBD : TBD	0.062	-		-		-		-		-	0	0.062	0
Subtotal			0.062	-		-		-		-		-	0.000	0.062	0.000

Remarks
not applicable

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Petroleum Expeditionary Analysis Kit (PEAK)	Various	TARDEC : Warren, MI	0.000	-		-		0.500	Jan 2017	-		0.500	0	0.500	Continuing
Small Unit Water Purifier	Various	TARDEC : Warren, MI	0.000	-		-		0.169	Jan 2017	-		0.169	0	0.169	Continuing
Expeditionary Water Packaging System (EWPS)	Various	TARDEC : Warren, MI	0.960	0.311		-		-		-		-	0	1.271	Continuing
3K Tactical Water Purification System (3K TWPS)	MIPR	TARDEC : Warren, MI	0.638	-		0.029	Feb 2016	1.800	Jun 2017	-		1.800	0	2.467	Continuing
3K Tactical Water Purification System (3K TWPS)	Various	NFESC : Pt. Hueneme, CA	0.220	-		0.150	Mar 2016	-		-		-	0	0.370	Continuing
Early Entry Fluid Distribution System (E2FDS)	C/FFP	TBD : TBD	0.000	0.962		1.800	Jul 2016	-		-		-	0	2.762	Continuing
Modular Tactical Retail Refueling System (MTRRS)	MIPR	TARDEC : Warren, MI	1.397	0.900		0.350	Mar 2016	-		-		-	0	2.647	Continuing
Tank Gauging in Collapsible and Hard Wall Tanks (AFAMS)	C/FFP	TACOM : Warren, MI	0.000	-		-		0.654	Dec 2016	-		0.654	0	0.654	0
Subtotal			3.215	2.173		2.329		3.123		-		3.123	0.000	10.840	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
3K Tactical Water Purification System (3K TWPS)	MIPR	TARDEC : Warren, MI	0.000	-		-		0.694	Jan 2017	-		0.694	0	0.694	0
3K Tactical Water Purification System (3K TWPS)	MIPR	NFESC : Port Hueneme, CA	0.000	-		-		0.300	Jan 2017	-		0.300	0	0.300	0
Water Bison	MIPR	TARDEC : Warren, MI	0.000	-		-		0.800	Jan 2017	-		0.800	0	0.800	0
Early Entry Fluid Distribution System (E2FDS)	MIPR	TARDEC : Warren, MI	0.000	0.898		0.382	Mar 2016	1.000	Dec 2016	-		1.000	0	2.280	Continuing
Mobile Tactical Retail Refueling System (MTRRS)	MIPR	TARDEC : Warren, MI	0.000	-		-		0.500	Dec 2016	-		0.500	0	0.500	0
Tank Guaging in Collapsible and Hard Wall Tanks (AFAMS)	MIPR	TARDEC : Warren, MI	0.000	-		-		0.078	Dec 2016	-		0.078	0	0.078	0
Common Pump	MIPR	TARDEC : Warren, MI	0.000	-		-		0.100	Dec 2016	-		0.100	0	0.100	0
Bulk Petroleum Trailers	MIPR	TARDEC : Warren, MI	0.000	-		-		0.167	Dec 2016	-		0.167	0	0.167	0
Pipeline Trace Tool	MIPR	TARDEC : Warren, MI	0.000	-		-		0.500	Dec 2016	-		0.500	0	0.500	0
Subtotal			0.000	0.898		0.382		4.139		-		4.139	0.000	5.419	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
3K Tactical Water Purification System (3K TWPS)	MIPR	TARDEC : Warren, MI	0.300	-		0.200	Apr 2016	-		-		-	0	0.500	Continuing

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Expeditionary Water Packaging System (EWPS)																												
EWPS																												
3K Tactical Water Purification System (3K TWPS)					RFP/Prototype Test/Award																							
(1) 3K TWPS Materiel Development Decision (MDD)																												
(2) 3K TWPS Milestone B																												
(3) 3K TWPS PDR																												
(4) 3K TWPS CDR																												
3K TWPS Developmental Testing																												
(5) 3K TWPS Milestone C																												
3K TWPS Production Qualification Testing/ Operational Testing																												
Water Bison																												
(6) Water Bison Milestone B																												
(7) Water Bison Milestone C																												

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

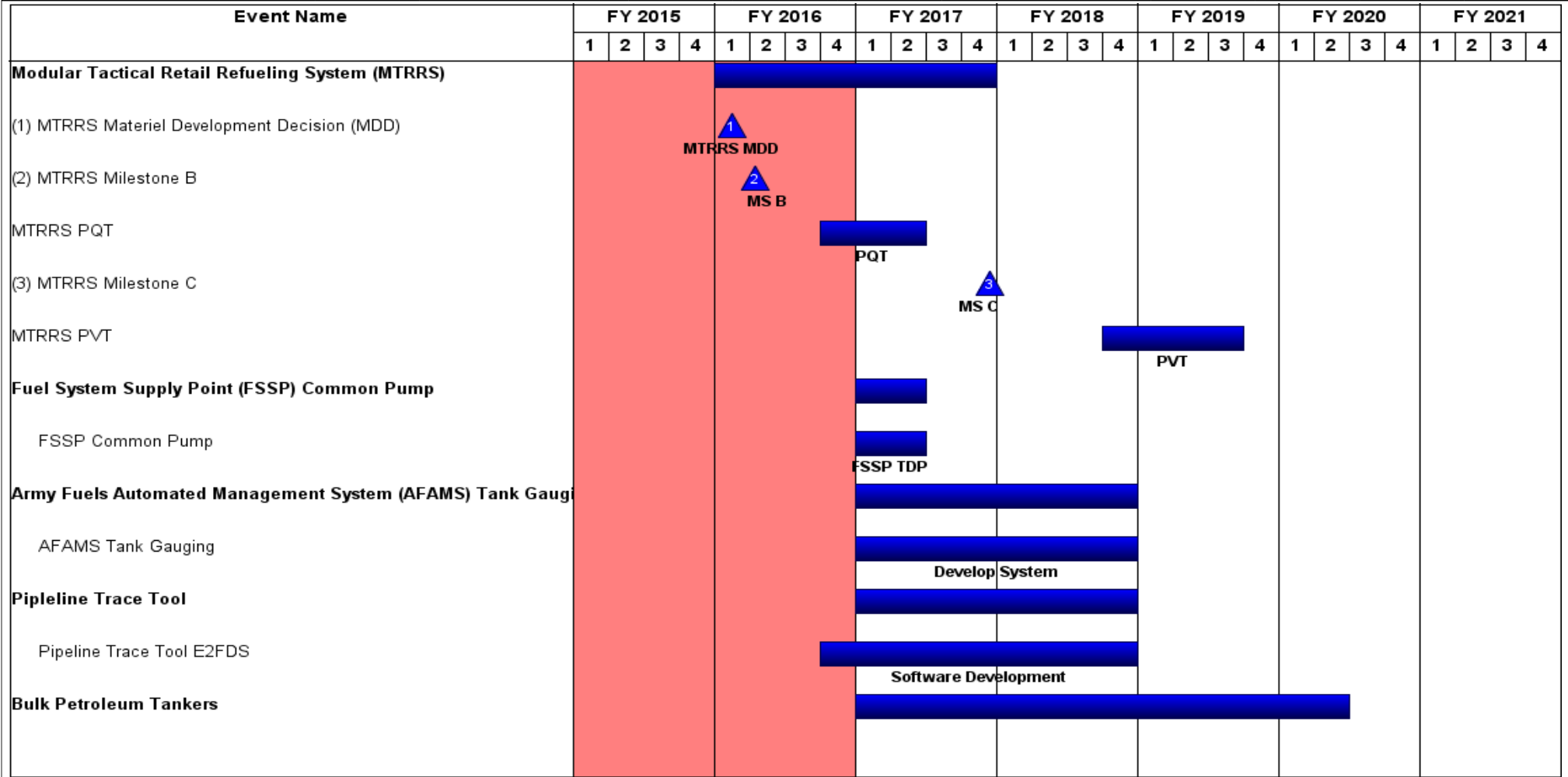
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Water Bison Full Rate Production																	FRP											
Black Water Treatment System																	Reqs. Refinement & Tech. Dev.											
(1) Black Water Treatment Materiel Development Decision (MDD)																	▲ MDD											
(2) Black Water Treatment Milestone B																	▲ MS B											
(3) Black Water Treatment Preliminary Design Review																	▲ PDR											
(4) Black Water Treatment Development Testing																					▲ DT							
Early Entry Fluid Distribution System (E2FDS)																												
(5) E2FDS Milestone B																	▲ MS B											
(6) E2FDS Preliminary Design Review																	▲ PDR											
(7) E2FDS Critical Design Review																	▲ CDR											
E2FDS Developmental Testing /Limited User Test																	DT/LUT											
(8) E2FDS Milestone C																					▲ MS C							
E2FDS First Article Test / Initial Operational Test																					FAT/IOT							

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>
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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army **Date:** February 2016


Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Bulk Petroleum Tankers Materiel Development Decision (MDD)																	▲ MDD											
Modular Fuel System (MFS)																									█			
MFS Operational Test (OT)									█ OT																			
Tactical Petroleum Tankers	█																											
(2) Tactical Petroleum Tankers Milestone B																	▲ MS B											
Tactical Petroleum Tankers PVT																	█ PVT											
(3) Tactical Petroleum Tankers Milestone C																									▲ MS C			
Petroleum Expeditionary Analysis Kit (PEAK)	█																											
(4) PEAK Materiel Development Decision (MDD)																	▲ MDD Approved											
(5) PEAK Mileston B																	▲ MS B											
(6) PEAK Milestone C																									▲ MS C			
Small Unit Water Purifier (SUWP)	█																											
(7) SUWP Materiel Development Decision (MDD)																	▲ MDD Approved											

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) SUWP Milestone B																	 MSB											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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
Expeditionary Water Packaging System (EWPS)	1	2016	3	2016
EWPS	1	2016	3	2016
3K Tactical Water Purification System (3K TWPS)	1	2016	1	2016
3K TWPS Materiel Development Decision (MDD)	2	2015	2	2015
3K TWPS Milestone B	3	2016	3	2016
3K TWPS PDR	3	2016	3	2016
3K TWPS CDR	3	2018	3	2018
3K TWPS Developmental Testing	2	2019	4	2019
3K TWPS Milestone C	3	2020	3	2020
3K TWPS Production Qualification Testing/ Operational Testing	2	2021	2	2022
Water Bison	1	2018	4	2024
Water Bison Milestone B	4	2017	4	2017
Water Bison Milestone C	3	2019	3	2019
Water Bison Full Rate Production	4	2020	4	2024
Black Water Treatment System	1	2019	4	2021
Black Water Treatment Materiel Development Decision (MDD)	4	2017	4	2017
Black Water Treatment Milestone B	2	2019	2	2019
Black Water Treatment Preliminary Design Review	4	2019	4	2019
Black Water Treatment Development Testing	2	2021	4	2021
Early Entry Fluid Distribution System (E2FDS)	1	2015	4	2023
E2FDS Milestone B	2	2016	2	2016
E2FDS Preliminary Design Review	3	2016	3	2016

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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
E2FDS Critical Design Review	2	2017	2	2017
E2FDS Developmental Testing /Limited User Test	4	2017	2	2018
E2FDS Milestone C	4	2018	4	2018
E2FDS First Article Test / Initial Operational Test	4	2019	2	2020
Modular Tactical Retail Refueling System (MTRRS)	1	2016	4	2017
MTRRS Materiel Development Decision (MDD)	1	2016	1	2016
MTRRS Milestone B	2	2016	2	2016
MTRRS PQT	4	2016	2	2017
MTRRS Milestone C	4	2017	4	2017
MTRRS PVT	4	2018	3	2019
Fuel System Supply Point (FSSP) Common Pump	1	2017	2	2017
FSSP Common Pump	1	2017	2	2017
Army Fuels Automated Management System (AFAMS) Tank Gauging	1	2017	4	2018
AFAMS Tank Gauging	1	2017	4	2018
Pipeline Trace Tool	1	2017	4	2018
Pipeline Trace Tool E2FDS	4	2016	4	2018
Bulk Petroleum Tankers	1	2017	2	2020
Bulk Petroleum Tankers Materiel Development Decision (MDD)	1	2019	1	2019
Modular Fuel System (MFS)	1	2017	2	2017
MFS Operational Test (OT)	1	2017	2	2017
Tactical Petroleum Tankers	3	2018	2	2022
Tactical Petroleum Tankers Milestone B	3	2018	3	2018
Tactical Petroleum Tankers PVT	2	2020	4	2020
Tactical Petroleum Tankers Milestone C	2	2021	2	2021
Petroleum Expeditionary Analysis Kit (PEAK)	1	2017	4	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
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Events	Start		End	
	Quarter	Year	Quarter	Year
PEAK Materiel Development Decision (MDD)	2	2017	2	2017
PEAK Mileston B	4	2018	4	2018
PEAK Milestone C	2	2021	2	2021
Small Unit Water Purifier (SUWP)	4	2017	4	2024
SUWP Materiel Development Decision (MDD)	2	2017	2	2017
SUWP Milestone B	3	2019	3	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) L43 / <i>ENGINEER SUPPORT EQUIPMENT - ED</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
L43: <i>ENGINEER SUPPORT EQUIPMENT - ED</i>	-	0.553	0.870	2.445	-	2.445	3.642	1.586	0.894	3.242	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project supports development, demonstration, testing and evaluation within the Combat Engineer and Construction Support Equipment arena. These items include critical life support equipment such as diving, fire fighting, fire suppression, urban operations, breathable air compressors, and emergency and recovery sets along with engineer safety and special unit support equipment. The Combat Engineer and Construction equipment consists of the Surveying, Firefighting Individual Requirements Equipment Support (FIRES), Urban Search and Rescue (USR), Fire Protection Equipment Type I, II and III, Tactical Fire Fighting Truck Tools (TFTT), Family of Electrical Personal Protective Equipment (FoEPPE) Family of Power Utility Kits (FoPUK), Distribution Utility Construction Kits (DUCT) and Soldier Portable Kits, Lineman's Tool Kit, Concrete and Masonry, Electricians, Plumbers, Pipefitters, Family of Light Sets (FoLS), Diving Equipment, Surface Swimmer Support Sets, Surface Supplied Diving Set, procurement of new Technical/Special Tools, Pioneer Support Set, and the Pioneer Land Clearing and Building Erection Set. Funding will support the procurement of market samples and testing for Soldier Portable SKO, and critical life support equipment such as the Deep Sea Set, Underwater Construction Set, Closed Circuit Scuba Set, Supervisor Propulsion Emergency and Recovery SCUBA (SPEaRS), Divers' Supplemental Issue Set(DSIS), Vertical Skills Engineer Construction Kit (VSECK), and Family of Boats and Motors (FOBAM). All of these programs are in the Engineering and Manufacturing Development Phase.

BUDGET ITEM JUSTIFICATION: These systems provide state-of-the-art deployable, critical life support and combat engineer and construction equipment along with engineer safety and special unit support equipment supporting the joint warfighter. These programs will minimize transportation requirements and reduce the logistical footprint by eliminating obsolete equipment and reducing the number of programs. Funding shall allow for development of dual use systems that support wartime use by soldiers to include Special Forces and peacetime operations that include national disaster relief and homeland security operations. Much of this equipment has an inherent short Economic Useful Life (EUL). Investments used to revise, update and obtain equipment within this portfolio has resulted in reductions in footprint, and increases in safety, effectiveness, and readiness.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Family of Boats and Motors (FOBAM)	0.553	0.375	-	-	-
Description: Development of various Assault Boats and Outboard Motors					
FY 2015 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L43 / <i>ENGINEER SUPPORT EQUIPMENT - ED</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Purchase and Test the Rigid Inflatable Boat FY 2016 Plans: Support for logistics support plans and Full Rate Production Decision (Milestone C, Type Classification, Full Material Release) Title: Supervisory Propulsion, Emergency and Recovery Set (SPEARS) Description: Market Research for the SPEARS FY 2017 Base Plans: Documentation preparation and market research.	-	-	0.350	-	0.350
Title: Engineering and Quality Assurance Description: Engineering and Quality Assurance of engineering SKOs FY 2016 Plans: Engineering Spt- 75K for Boats, Motors, Diving; 200K for Soldier Portable QA Support- 25K for Boats, Motors, Diving; 100K for Soldier Portable	-	0.245	-	-	-
Title: Vertical Skills Engineer Construction Kit (VSECK) Description: Research, Development, and Testing of Vertical Skills Engineer Construction Kit (VSECK) FY 2016 Plans: Procure market samples for Type 1 through Type 6 kits	-	0.250	-	-	-
Title: Engineer Safety and Special Unit Support Systems Description: Conduct Market Research, Develop, and Initiate procurement activities for conceptual Engineer Safety and Special Unit Systems to include but not limited to Family of Power Utility Kits (FoPUK). FY 2017 Base Plans: Conduct Market Research, Develop, and Initiate procurement activities for conceptual Engineer Safety and Special Unit Systems to include but not limited to Family of Power Utility Kits (FoPUK).	-	-	0.750	-	0.750
Title: Engineer Combat and Construction Sets	-	-	1.345	-	1.345

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L43 / <i>ENGINEER SUPPORT EQUIPMENT - ED</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Conduct Market Research, Develop and Procure conceptual Engineer Combat and Construction Sets to include but not limited to Urban Search and Rescue (USR).					
FY 2017 Base Plans: Conduct Market Research, Develop and Procure conceptual Engineer Combat and Construction Sets to include but not limited to Urban Search and Rescue (USR).					
Accomplishments/Planned Programs Subtotals	0.553	0.870	2.445	-	2.445

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPA 3 R70001: <i>OPA 3 R70001, Family of Engineering Combat and Construction Sets</i>	41.967	34.544	29.384	9.789	39.173	29.764	34.490	31.320	29.991	Continuing	Continuing
• OPA 3 R12001: <i>OPA 3 R12001, Family of Boats and Motors</i>	-	8.429	3.171	0.280	3.451	4.302	5.966	4.199	2.168	Continuing	Continuing

Remarks

D. Acquisition Strategy
Progression of Programs will be developed by the completion of the Initial Capabilities Document, Capability Development Document, Capability Production Document, and Description For Purchase continuing into Low Rate Initial Production. Modernization and Optimization of existing tools and testing of market samples will progress from Engineering and Manufacturing Development (EMD) and transition into production.

E. Performance Metrics
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				L43 / ENGINEER SUPPORT EQUIPMENT - ED							
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	PM SKOT : Warren, MI	0.000	-		0.050	Oct 2015	0.160	Oct 2016	-		0.160	0	0.210	0
Subtotal			0.000	-		0.050		0.160		-		0.160	0.000	0.210	0.000
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Rigid Inflatable Boats test articles	MIPR	TBS : TBS	0.000	0.373	Dec 2014	0.375	Mar 2016	-		-		-	Continuing	Continuing	Continuing
Market Samples of Vertical Skills Engineer Construction Kit (VSECK)	MIPR	TBS : TBS	0.120	-		0.150	Jan 2016	-		-		-	Continuing	Continuing	Continuing
Market Samples for Supervisory, Propulsion, Emergency and Recovery Set (SPEARS)	MIPR	TBS : TBS	0.000	-		-		0.263	Nov 2017	-		0.263	Continuing	Continuing	Continuing
Conduct Market Research for Urban Search and Rescue	MIPR	TBS : TBS	0.000	-		-		0.985	Nov 2016	-		0.985	0	0.985	0
Conduct Market Research for Family of Power Utility Kits (FoPUK)	MIPR	TBS : TBS	0.000	-		-		0.540	Jan 2017	-		0.540	0	0.540	0
Subtotal			0.120	0.373		0.525		1.788		-		1.788	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Quality Assurance of engineering	MIPR	ECBC/ARDEC : Rock Island, IL	0.278	-		0.210		-		-		-	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604804A / Logistics and Engineer Equipment - Eng Dev				L43 / ENGINEER SUPPORT EQUIPMENT - ED							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SKOs (Soldier Portable - ECACS)															
Engineering and Quality Assurance (Boats and Motors)	MIPR	ECBC : Rock Island, IL	0.200	0.080		0.035	Nov 2015	-		-		-	Continuing	Continuing	Continuing
Engineering and Quality Assurance (ES&SUS)	MIPR	ECBC/ARDEC : Rock Island, IL	0.000	-		-		0.110	Oct 2016	-		0.110	Continuing	Continuing	0
Engineering and Quality Assurance (US&R)	MIPR	ECBC/ARDEC : Rock Island, IL	0.000	-		-		0.300	Oct 2016	-		0.300	Continuing	Continuing	0
Engineer and Quality Assurance Support (SPEARS)	MIPR	ECBC/ARDEC : Rock Island, IL	0.000	-		-		0.087	Oct 2016	-		0.087	0	0.087	0
Subtotal			0.478	0.080		0.245		0.497		-		0.497	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Testing of Rigid Inflatable Boat	MIPR	NAVSEA : VA	0.625	0.100	Mar 2015	-		-		-		-	Continuing	Continuing	Continuing
Testing of VSECK	TBD	TBS : TBS	0.000	-		0.050	Jan 2016	-		-		-	0	0.050	0
Subtotal			0.625	0.100		0.050		-		-		-	-	-	-
Project Cost Totals			1.223	0.553		0.870		2.445		-		2.445	-	-	-
Remarks															

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L43 / <i>ENGINEER SUPPORT EQUIPMENT - ED</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Market research, develop, build, test Engineer Safety and Special Units																												
Procurement of test articles and testing of Rigid Inflatable Boat																												
Procure test articles & test Engineering Combat and Construction Sets																												
Procure Test Articles and Test Vertical Skills Engineering Construction																												
Procure Test Articles and Test Soldier Portable Sets																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L43 / <i>ENGINEER SUPPORT EQUIPMENT - ED</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Market research, develop, build, test Engineer Safety and Special Units Systems	1	2017	4	2020
Procurement of test articles and testing of Rigid Inflatable Boat	1	2015	4	2016
Procure test articles & test Engineering Combat and Construction Sets	1	2017	4	2018
Procure Test Articles and Test Vertical Skills Engineering Construction Kit	1	2016	1	2017
Procure Test Articles and Test Soldier Portable Sets	1	2019	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) L46 / <i>Maintenance Support Equipment</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
L46: <i>Maintenance Support Equipment</i>	-	0.964	1.064	1.886	-	1.886	1.881	1.722	1.767	1.815	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

Mobile Maintenance Equipment provides state of the art, deployable, vehicle-mounted and containerized shelter tool systems supporting the Joint warfighter. These systems are equipped with industrial quality tools required for Two Level Maintenance that reduce common tool redundancy, provide tool standardization, minimize transportation requirements, reduces 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. All of these programs are in the Engineering and Manufacturing Development Phase.

BUDGET ITEM JUSTIFICATION: The need to develop and maintain a System of System maintenance approach is critical 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 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 SATS maintenance modules, Special Tools initiatives; packaging development; and technical support for emerging JCIDS materiel requirements documents. Upgrades to existing shelter mounted systems to include a 3-D printing/additive manufacturing capability as well as use of lower cost set components. Modernization upgrades to increase effectiveness while improving efficiency, reliability and maintainability while supporting emerging Army systems to include the Joint Light Tactical Vehicle (JLTV).

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Next Generation Shop Equipment, Welding (SEW)	-	0.730	0.965	-	0.965

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L46 / <i>Maintenance Support Equipment</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Develop and Test new components of Shop Equipment, Welding					
FY 2016 Plans: Buying Production Representative Sample					
FY 2017 Base Plans: Testing, Logistics Demonstration and Validation					
Title: Load Banks					
Description: Engineering Support and QA Support for Load Banks					
FY 2016 Plans: Engineering Support and QA Support for Load Banks					
Title: Mobile Maintenance Equipment Shop Set					
Description: Modernization / Redesign efforts of maintenance support equipment in support of technological advances, environmental/safety constraints and to support emerging systems					
FY 2015 Accomplishments: Next generation Ordnance SKO					
FY 2016 Plans: Limited modeling on ARSS shelter, additive manufacturing for MWMSS					
FY 2017 Base Plans: Obtain shelter and tools for next generation ARSS, develop additive manufacturing capability for MWMSS, market research on Next Generation Generator, Crane and other components for FRS					
Title: Support for Requirements Generation					
Description: Support for requirements generation of future SKOs					
FY 2015 Accomplishments: Document development supporting future requirements SKOs					
Title: Special Tools Initiative					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L46 / <i>Maintenance Support Equipment</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Develop Rapid Deployment Sets, Kits, and Outfits (SKOs) - Special Tool Initiative and support to Tactical Wheeled Vehicles and other vehicle platforms</p> <p>FY 2015 Accomplishments: Develop and test various Soldier Portable Tool Kits based on the maintenance requirements of current and future platforms.</p> <p>FY 2017 Base Plans: Market Research for Special Tools</p>					
<p>Title: Refrigeration Tool Kit (RTK)</p> <p>Description: Develop and Test RTK</p> <p>FY 2016 Plans: Develop RTK</p> <p>FY 2017 Base Plans: Conduct market research for RTK and buy test articles</p>	-	0.144	0.263	-	0.263
<p>Title: Packaging Support</p> <p>Description: Full Packaging Program Support and Packaging Data Management</p> <p>FY 2015 Accomplishments: Develop and Maintain Logistics Packaging, Packing and Palletization data</p> <p>FY 2017 Base Plans: Develop and Maintain Logistics Packaging, Packing and Palletization data</p>	0.111	-	0.037	-	0.037
<p>Title: Engineering Support</p> <p>Description: Engineering Support from ECBC</p> <p>FY 2017 Base Plans: Support to RDTE funded MMES efforts</p>	-	-	0.123	-	0.123
Accomplishments/Planned Programs Subtotals	0.964	1.064	1.886	-	1.886

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L46 / <i>Maintenance Support Equipment</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>			<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• OPA 3 ML5345: <i>OPA 3 ML5345, Items Less Than \$5.0M (MAINTENANCE EQUIPMENT)</i>	2.789	2.760	2.716	0.145	2.861	2.759	2.767	4.771	4.616	Continuing	Continuing
• OPA 3 G05301: <i>OPA 3 G05301, Mobile Maintenance Equipment Systems</i>	27.776	25.270	35.694	1.609	37.303	28.776	41.007	53.763	50.501	Continuing	Continuing

Remarks

D. Acquisition Strategy

Programs will progress from requirements generation through market research, development, market samples and testing. Efforts will support the two level maintenance concept utilizing commercial technologies and incorporating them into SKO to support next generation weapon and support systems.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L46 / <i>Maintenance Support Equipment</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SBIR/STTR	TBD	Various : Various	0.096	-		-		-		-		-	0	0.096	0
Program Management	MIPR	PM SKOT : Warren, MI	0.000	-		-		0.160	Oct 2016	-		0.160	0	0.160	0
Subtotal			0.096	-		-		0.160		-		0.160	0.000	0.256	0.000

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Maintenance Support Equipment Life Cycle Configuration Analyses and ICD Development Support	MIPR	PM SKOT/ Army Test & Evaluation Command (ATEC)/ Combined Arms Support Command (CASCOM) : (IL, MI, MD, VA)	1.556	-		-		-		-		-	Continuing	Continuing	Continuing
Next Generation Shop Equipment Welding (SEW) concept design and development	MIPR	ECBC : Rock Island, IL	0.900	-		0.730	Feb 2016	0.965	Jan 2017	-		0.965	Continuing	Continuing	Continuing
Modernization/Redesign efforts of Truck/Trailer transported shelters for next generation systems	MIPR	ECBC : Rock Island, IL	1.211	0.449	Dec 2014	0.070	Feb 2016	0.295	Mar 2017	-		0.295	Continuing	Continuing	Continuing
Develop Rapid Deployment Sets, Kits, & Outfits - Special Tool Initiative.	MIPR	ECBC : Rock Island, IL	0.300	-		-		-		-		-	Continuing	Continuing	Continuing
Procure Ground Based Special Tools in support of Tactical Wheeled Vehicles	MIPR	PM SKOT : Harrison, MI	0.000	0.300	Jan 2016	-		0.043	Dec 2016	-		0.043	Continuing	Continuing	Continuing
Refrigeration Tool Kit (RTK)	MIPR	ECBC : Rock Island, IL	0.000	-		0.144	Jan 2016	0.263	Dec 2016	-		0.263	Continuing	Continuing	Continuing

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L46 / <i>Maintenance Support Equipment</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Redesign of Mobile Maintenance Equipment Shop Set of next generation																												
Develop, Procure and Test Special Tools for Additional Vehicles																												
Develop Refrigeration Tool Kit and other Soldier Portable																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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
Redesign of Mobile Maintenance Equipment Shop Set of next generation vehicle	1	2007	4	2021
Develop, Procure and Test Special Tools for Additional Vehicles	1	2015	4	2021
Develop Refrigeration Tool Kit and other Soldier Portable	1	2015	1	2019

Note

Modernization / Redesign efforts of Shop Equipment, Truck/Trailer Mounted Shelters for next generation of systems.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) L47 / Improved Environmental Control Units Ed			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
L47: Improved Environmental Control Units Ed	-	0.000	0.756	1.259	-	1.259	1.778	3.685	2.027	2.081	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

The Improved Environmental Control Units (IECU) program will provide updates that support the new generation of Environmental Control Units (ECUs) that use environmentally approved refrigerants, with zero Ozone-Depleting Chemicals (ODCs) to replace the current Military Standard (MIL-STD) Family of ECUs. The IECUs will provide improved cooling, heating and dehumidification to soldiers and materiel systems in combat, combat support and combat service support units. The IECUs are required to replace currently fielded environmental control units in order to comply with statutory and regulatory restrictions on the use of Class II ODCs (such as HCFC-22) and to improve the performance of military ECUs. They are form, fit and function replacements to the current MIL-STD ECUs. Technical improvements over existing military-standard ECUs will yield significant fuel and weight savings, reduction in scheduled maintenance and increased reliability. 9, 18, and 36K BTU/H IECUs: The 9, 18 and 36K BTU/H IECUs will be a replacement for the current MIL-STD-ECU variants. The new family of IECUs will utilize a new refrigerant which complies with mandated Environmental Protection Agency (EPA) requirements (non-global warming). FY16 and FY17 funding supports Advanced Concept Development Phase activities for the 9, 18, 36, and 60K IECU variants which include multiple trailer-mounted systems and shelter system integrations, as well as support of new ECU requirements coming from the Army Family of Soft Wall Shelters CDD. In addition, the field has identified an emerging requirement for an integrated fuel-fired heating/cooling system. These variants will further standardize cooling units in the field, enable cooling of larger shelters and structures, offer increased mobility, and may be used to cool multiple tents with one unit. FY16 and 17 funding also supports continued evaluation of IECUs and variants at Network Integration Evaluation (NIE) to support new operational concepts, and supports development of new ECU and refrigeration products. There are no FY15 base dollars.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Technology Development	-	0.100	0.400	-	0.400
Description: Concept Development for 9/18/36/60K BTUH Improved Environmental Control Unit (IECU), multiple trailer-mounted variants and integrated heating/cooling systems.					
FY 2016 Plans: Support continuing technology insertions and demonstration of prototypes for follow-on IECU variants.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L47 / <i>Improved Environmental Control Units Ed</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Support continuing technology insertions and demonstration of prototypes for follow-on IECU variants.					
<p>Title: Government System Test and Evaluation</p> <p>Description: Testing for prototype performance for the trailer mounted variants of the Improved Environmental Control Units (IECUs) and soft wall ECUs.</p> <p>FY 2016 Plans: Conduct performance tests on follow-on IECU systems.</p> <p>FY 2017 Base Plans: Conduct performance tests on follow-on IECU systems.</p>	-	0.050	0.200	-	0.200
<p>Title: Other Contract and Government Agency</p> <p>Description: Support engineering, logistics, and testing efforts for multiple trailer-mounted variants, soft wall ECUs, and integrated heating/cooling units. Support Engineering and Manufacturing Development (EMD) effort on 9/18/36K Improved Environmental Control Unit (IECU) family.</p> <p>FY 2016 Plans: Support engineering, logistics, and testing efforts for follow-on IECU variants.</p> <p>FY 2017 Base Plans: Support engineering, logistics, and testing efforts for follow-on IECU variants.</p>	-	0.556	0.400	-	0.400
<p>Title: Government Program Management</p> <p>Description: Oversight and management of engineering, logistics, contracts, and testing efforts for 9/18/36/60K Improved Environmental Control Unit (IECU) family and multiple trailer-mounted variants. Transition to production. Provide oversight and management of follow-on ECU variants.</p> <p>FY 2016 Plans: Oversight and management of engineering, logistics, contracts, and testing efforts for follow-on IECU variants.</p> <p>FY 2017 Base Plans: Oversight and management of engineering, logistics, contracts, and testing efforts for follow-on IECU variants.</p>	-	0.050	0.259	-	0.259
Accomplishments/Planned Programs Subtotals	-	0.756	1.259	-	1.259

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L47 / <i>Improved Environmental Control Units Ed</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• MF9303: OPA 3, <i>Improved Environmental Control Units , MF9303</i>	7.388	18.876	22.124	-	22.124	16.277	8.198	8.463	27.857	Continuing	Continuing

Remarks

D. Acquisition Strategy

Begin concept development for efforts in support of multiple trailer-mounted IECU variants. The initial prototypes of the trailer-mounted variants will be assembled in house, with eventual production via depot-level integration of Government Furnished Equipment (GFE) from existing production contracts. Initial prototypes of the integrated fuel-fired heating and cooling systems will be procured via GFE and off-the-shelf components through third party vendors for assessment. This assessment will support development of a revised PD for eventual competitive procurement. Support technology insertions required to adapt IECUs to support future integrated Command Post heating and cooling requirements in support of Force 2025 and the Command Post ICD. Initial prototypes of ECUs in support of The Soft Wall Shelters CDD will be procured through third party vendors for assessment. This assessment will support development of a revised PD for eventual competitive procurement.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
9,18 and 36K Improved Environmental Control Unit (IECU)	Various	PM E2S2 : various	1.174	-		-		-		-		-	0	1.174	Continuing
Trailer Variants	Various	PM E2S2 : various	0.506	-		0.015		0.059	Dec 2016	-		0.059	0	0.580	Continuing
Soft Wall ECUs	Various	PM E2S2 : various	0.050	-		0.020		0.130	Dec 2016	-		0.130	0	0.200	0
Integrated heating/cooling units	Various	PM E2S2 : various	0.025	-		0.015		0.070	Dec 2016	-		0.070	0	0.110	0
SBIR/STTR	Various	various : various	0.137	-		-		-		-		-	0	0.137	0
Subtotal			1.892	-		0.050		0.259		-		0.259	0.000	2.201	-

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
9 ,18 and 36K Improved Environmental Control Unit (IECU)	C/CPFF	Mainstream Engineering : Vero Beach, FL	2.064	-		-		-		-		-	0	2.064	Continuing
Trailer Mounted variants	MIPR	CERDEC Night Vision Lab : Ft Belvoir, VA	0.400	-		0.025		0.100	Mar 2017	-		0.100	0	0.525	0
Soft Wall ECU	C/CPFF	TBD : TBD	2.085	-		0.050		0.200		-		0.200	0	2.335	0
Integrated heating/cooling units	MIPR	CERDEC Night Vision Lab : Ft. Belvoir, VA	0.200	-		0.025		0.100	Mar 2017	-		0.100	0	0.325	0
Subtotal			4.749	-		0.100		0.400		-		0.400	0.000	5.249	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L47 / Improved Environmental Control Units Ed
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
9, 18 and 36K Improved Environmental Control Unit (IECU)	MIPR	CERDEC : Fort Belvoir, VA	2.117	-		-		-		-		-	0	2.117	0
Soft Wall ECUs	Various	CERDEC : Fort Belvoir, VA	3.682	-		0.300		0.200	Dec 2016	-		0.200	0	4.182	0
Trailer variants	MIPR	CERDEC : Fort Belvoir, VA	0.620	-		0.100		0.100	Dec 2016	-		0.100	0	0.820	0
Integrated heating/cooling units	MIPR	CERDEC : Fort Belvoir, VA	0.065	-		0.156		0.100	Dec 2016	-		0.100	0	0.321	0
Subtotal			6.484	-		0.556		0.400		-		0.400	0.000	7.440	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
9,18 and 36K Improved Environmental Control Unit (IECU)	MIPR	ATEC : APG, MD	0.478	-		-		-		-		-	0	0.478	0
Trailer Variants	MIPR	ATEC : APG, MD	0.349	-		0.025		0.050	Mar 2017	-		0.050	0	0.424	Continuing
Soft Wall ECUs	MIPR	ATEC : APG, MD	0.200	-		0.025		0.100	Mar 2017	-		0.100	0	0.325	0
Integrated heating/cooling units	MIPR	ATEC : APG, MD	0.150	-		-		0.050	Mar 2017	-		0.050	0	0.200	0
Subtotal			1.177	-		0.050		0.200		-		0.200	0.000	1.427	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		14.302	-	0.756	1.259	1.259	0.000	16.317	-

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L47 / <i>Improved Environmental Control Units Ed</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
9, 18 and 36K BTU/H IECU																												
Trailer Variants IECU																												
Integrated Heating/Cooling Units																												
Follow-on IECU Variants																												
Integrated Command Post ECU Solutions for Force 2025																												
New ECUs for Army Family of Soft Wall Shelters																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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
9, 18 and 36K BTU/H IECU	1	2009	4	2015
Trailer Variants IECU	1	2016	4	2017
Integrated Heating/Cooling Units	1	2016	4	2017
Follow-on IECU Variants	1	2019	4	2022
Integrated Command Post ECU Solutions for Force 2025	1	2018	4	2019
New ECUs for Army Family of Soft Wall Shelters	2	2016	2	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>				Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
VR7: <i>Combat Service Support Systems</i>	-	2.692	5.463	4.325	-	4.325	4.162	2.418	2.905	2.984	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the Engineering and Manufacturing Development (EMD) of critical distribution and sustainment capabilities to include base camp subsystems, field shelters, showers, latrines, heaters, mortuary affairs systems, camouflage systems, organizational equipment, and other combat service support equipment to fill identified theater distribution and services capability gaps, improve unit sustainability, improve resource and energy efficiency and increase combat effectiveness. Project supports development of expeditionary tactical field systems and support equipment to improve safety, effectiveness, and efficiency of deployed soldiers. This project develops critical enablers that support the Quartermaster (QM) Force Transformation Strategy 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 and reduces sustainment requirements, related Combat Support/Combat Service Support (CS/CSS), lift demands, the combat zone footprint, and costs for logistical support.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Expeditionary Shelter Protection System (ESPS)	0.550	0.861	0.400	-	0.400
Description: ESPS is a lightweight, rapidly deployable and reusable ballistic protection system that can be integrated with commonly used military shelters in expeditionary and remote base camps and outposts where more robust forms of ballistic protection (i.e. sandbags, concrete barriers) are not readily available or logistically feasible.					
FY 2015 Accomplishments: Conducted contract planning and prepared draft solicitation for new development contract for ESPS.					
FY 2016 Plans: Release solicitation and award development contract for ESPS, procure test items and initiate logistics requirements to support transition to ESPS production.					
FY 2017 Base Plans: Conduct DT/OT, continue logistics requirements and initiate preparation of documentation for ESPS to support production decision and full production in FY18.					
Title: Family of Space Heaters	0.150	0.150	0.150	-	0.150

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: The family of Army Space Heaters support soldiers operating in basic, cold and extreme cold environments with a safe, portable, lightweight, multi-fueled, self-powered, space heaters for use in tents and/ or expeditionary shelters that do not require an external power source. These heaters provide the much needed capability of providing heated air effectively and efficiently while eliminating the shortcomings of the antiquated, dangerous and inefficient heaters they are replacing in the inventory.</p> <p>FY 2015 Accomplishments: Completed contract source selection, awarded contract, and procured test items for Production Qualification Testing (PQT) for Improved Army Space Heater (IASH) Type II.</p> <p>FY 2016 Plans: Conduct PQT, complete independent evaluation, initiate logistics requirements and prepare documentation to support transition of IASH Type II to production in FY17.</p> <p>FY 2017 Base Plans: Complete logistics requirements, obtain Type Classification decision approval for IASH Type II and begin full production.</p>					
<p>Title: Net-Zero Energy Efficiency Solutions</p> <p>Description: Net-Zero Energy Efficiency Solutions reduce the operational energy and logistics footprint of the expeditionary base camp system, with the goal being a significant reduction in fuel, water, material and power requirements to sustain operations in the field. Effort includes reducing site preparation, sustainment, maintenance and spare parts requirements. Operating a base camp such as Force Provider requires a significant amount of logistics support and also produces an enormous amount of by products, both of which cost money, human effort (that means a risk in the form of soldiers on the road), and represents a potential vulnerability.</p> <p>FY 2015 Accomplishments: Conducted evaluation on Net-Zero energy efficiency solutions for Force Provider. Initiated Developmental Testing/Operational Testing (DT/OT) on Force Provider resource and energy efficient Rigid-Wall Shelter Based 150-Soldier Module with integrated state-of-the-art energy saving appliances and mature expeditionary shelter energy efficiency upgrades.</p> <p>FY 2016 Plans:</p>	1.727	1.042	1.320	-	1.320

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Conduct evaluation on Net-Zero energy efficiency solutions for Force Provider. Complete DT/OT on Force Provider Resource and Energy Efficient Rigid-Wall Shelter based 150-Soldier module with integrated state-of-the-art energy saving appliances and mature expeditionary shelter energy efficiency upgrades. Transition Rigid-Wall Shelter camp into production. Complete DT on Force Provider 150-Soldier module with integrated Advanced Medium-sized Mobile Power Source (AMMPS) microgrid. Transition proven and validated capabilities into full-rate production.</p> <p>FY 2017 Base Plans: Conduct evaluation on Net-Zero energy efficiency solutions for Force Provider. Complete DT/OT on Force Provider solar water heating subsystem, smart base monitoring and mature expeditionary shelter energy efficiency upgrades. Transition solar water heating subsystem and smart base monitoring into production. Transition proven and validated capabilities into full-rate production.</p>					
<p>Title: Laundry and Shower Improvements</p> <p>Description: Provides an enhanced capability for field hygiene with improved hot and cold weather performance, better compatibility with current and future combat clothing, and increased reliability, maintainability and ease of operation.</p> <p>FY 2015 Accomplishments: Developed test prototypes of key laundry subsystems incorporating component replacements and upgrades to address identified field problems and equipment issues.</p> <p>FY 2016 Plans: Continue development of hardware improvements. Conduct Developmental Testing (DT) on prototype subsystems and components.</p> <p>FY 2017 Base Plans: Complete testing of prototype system improvements. Update Technical Data Packages and product support documentation and transition to production.</p>	0.265	0.225	0.600	-	0.600
<p>Title: Expeditionary Solid Waste Disposal (ESWDS) for Small Base Camps</p> <p>Description: Provides an integrated waste management (reduction, treatment or disposal process) add-on capability that can safely process 1,000 pounds (lbs) or more of mixed solid waste in a single day on site. Mixed solid waste produced on a single 150 person site must be properly managed through reduction, reuse, recycling,</p>	-	0.685	0.845	-	0.845

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>treatment, or disposal. Most of the waste is nonhazardous solid waste. Provides a substantial improvement over the current practice of burn pits that poses a health risk to Soldiers and/or the backhaul logistics burden.</p> <p>FY 2016 Plans: Complete the Expeditionary Solid Waste Disposal System prototypes and obtain required environmental permits for test and operation. Prepare for and initiate Developmental Testing (DT).</p> <p>FY 2017 Base Plans: Complete DT and conduct Operational Test (OT) on ESWDS.</p>					
<p>Title: Containerized Ice Making System (CIMS)</p> <p>Description: Develops an add-on ice making capability that automatically dispenses and seals 10 lbs bags at a rate of a minimum of 3,600 pounds of ice per day. This capability is based upon Army current operational requirements for ice which is four pounds per Soldier per day. This capability enables support for up to 900 personnel. Current operations require external support to provide personnel with ice for cooling drinking water in extremely arid environments. This capability will reduce the sustainment risk and cost associated with transporting this commodity from external sources. The objective requirement enables stockage of ice to assist with surge operations.</p> <p>FY 2017 Base Plans: Develop programmatic documentation, specification and contract solicitation and transition the CIMS to production.</p>	-	-	0.350	-	0.350
<p>Title: Black Waste Elimination for Small Base Camps (150 personnel)</p> <p>Description: Provides the capability to reduce/eliminate the black water generated by small base camps. The objective capability will reduce our sustainment requirements for backhauling black waste water as well as our risk of contaminating the environment with biological contaminants. This capability will significantly reduce reliance on external support and is a key capability required to move toward zero footprint base camps.</p> <p>FY 2017 Base Plans: Procure test prototypes and initiate Development Testing (DT) of the black waste elimination system.</p>	-	-	0.660	-	0.660
<p>Title: Ultralightweight Camouflage Net System (ULCANS)</p> <p>Description: ULCANS is durable, robust, snag resistant state of the art camouflage system that provides increased survivability against multi-spectral visual, infrared and radar threats, thermal signature suppression</p>	-	2.500	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>

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

and significant thermal/solar reduction capability. ULCANS utilizes a snag-free design and is capable of use in all types of weather and climatic conditions except in heavy snow and winds. ULCANS variants are integrated systems that are very lightweight, easily deployable, versatile, user friendly and tailored to the equipment meeting the requirements of operations for combat systems, command and control equipment, logistic support sites, tactical facilities, and fixed facilities. RDT&E funding supports formal development of new ULCANS variants (snow, urban, aviation, 2 sided system) and necessary technology/signature enhancements for current ULCANS variants.

FY 2016 Plans:

Conduct natural environment background characterization, conduct early market research, evaluate and test potential solutions, conduct Engineering Change Proposal (ECP) for woodland camouflage variant. Initiate ECP logistics requirements, finalize market research, begin contract planning.

FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Accomplishments/Planned Programs Subtotals				
2.692	5.463	4.325	-	4.325

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 643804 VR8: <i>Combat Service Support Systems AD,</i>	2.588	4.048	4.401	-	4.401	4.366	2.386	2.848	2.925	Continuing	Continuing

Remarks

D. Acquisition Strategy

Accelerate product development and testing to transition into production.

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 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 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Project Management Support	Various	PM Force Sustainment Systems : Natick, MA	0.459	0.262	Oct 2014	0.366	Oct 2015	0.465	Oct 2016	-		0.465	Continuing	Continuing	0
CBI Support	Various	PD CBI : Warren, MI	3.747	-		-		-		-		-	0	3.747	0
SBIR+STTR	TBD	Various : Various	0.077	-		-		-		-		-	0	0.077	0
Subtotal			4.283	0.262		0.366		0.465		-		0.465	-	-	0.000

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Soldier Support Equipment	TBD	Various : Various	2.596	1.138	Mar 2015	3.117	Nov 2015	1.570	Jan 2017	-		1.570	Continuing	Continuing	0
Contingency Basing Infrastructure	Various	Various : Various	1.531	-		-		-		-		-	0	1.531	0
Subtotal			4.127	1.138		3.117		1.570		-		1.570	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Soldier Support Equipment	Various	Various : Various	2.283	1.292	Mar 2015	1.980	Nov 2015	2.290	Jan 2017	-		2.290	Continuing	Continuing	0
Contingency Basing Infrastructure	Various	Various : Various	1.206	-		-		-		-		-	0	1.206	0
Subtotal			3.489	1.292		1.980		2.290		-		2.290	-	-	0.000

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	11.899	2.692	5.463	4.325	-	4.325	-	-	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Conduct DT/OT and transition Zero-Footprint Base capabilities to Force																												
Award development contract and procure test items for ESPS DT/OT																												
Conduct DT/OT on ESPS																												
(1) Obtain production decision for ESPS																												
Conduct DT/OT on Laundry and Shower System Improvements																												
Conduct DT/OT on the small base camp Solid Waste Disposal System																												
(2) Award development contract for the Waste-to-Energy System																												
Produce Waste-to-Energy System prototypes																												
Conduct DT/OT on the Waste-to-Energy System																												
Complete documentation to support the Containerized Ice Making System																												
Produce small base camp black waste elimination system prototypes																												
Conduct DT/OT on the small base camp black waste elimination system																												
Produce large base camp black waste elimination system prototypes																												

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
(1) Obtain Milestone B for the Family of Vehicle Mounted Rigid Wall She																	▲																			
Conduct DT/OT on the Family of Vehicle Mounted RWS																																				
(2) Obtain Milestone B for the Family of Expandable/Non-Expandable IS																											▲									
Conduct DT/OT for the Family of Expandable/Non-Expandable ISO																																				
Develop ULCANS arctic/snow variant and conduct DT/OT																																				
Develop ULCANS urban variant and conduct DT/OT																																				
Develop ESPS Overhead Protection System and conduct DT and OT																																				
Support contract award and conduct PQT for IASH Type II																																				
Support development of TC-STD documentation for IASH Type II																																				
Develop ULCANS Aviation variant and conduct OT																																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 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
Conduct DT/OT and transition Zero-Footprint Base capabilities to Force Provider.	1	2015	4	2022
Award development contract and procure test items for ESPS DT/OT	4	2015	2	2016
Conduct DT/OT on ESPS	2	2017	1	2018
Obtain production decision for ESPS	3	2018	3	2018
Conduct DT/OT on Laundry and Shower System Improvements	4	2016	4	2017
Conduct DT/OT on the small base camp Solid Waste Disposal System	4	2016	4	2017
Award development contract for the Waste-to-Energy System	1	2018	1	2018
Produce Waste-to-Energy System prototypes	1	2018	4	2018
Conduct DT/OT on the Waste-to-Energy System	1	2019	2	2020
Complete documentation to support the Containerized Ice Making System production	3	2017	4	2017
Produce small base camp black waste elimination system prototypes	1	2017	3	2017
Conduct DT/OT on the small base camp black waste elimination system	4	2017	3	2018
Produce large base camp black waste elimination system prototypes	1	2021	4	2021
Obtain Milestone B for the Family of Vehicle Mounted Rigid Wall Shelters (RWS)	2	2018	2	2018
Conduct DT/OT on the Family of Vehicle Mounted RWS	3	2019	2	2020
Obtain Milestone B for the Family of Expandable/Non-Expandable ISO	3	2019	3	2019
Conduct DT/OT for the Family of Expandable/Non-Expandable ISO	2	2020	2	2021
Develop ULCANS arctic/snow variant and conduct DT/OT	1	2018	3	2019
Develop ULCANS urban variant and conduct DT/OT	1	2020	4	2021
Develop ESPS Overhead Protection System and conduct DT and OT	2	2021	4	2022
Support contract award and conduct PQT for IASH Type II	4	2015	3	2016
Support development of TC-STD documentation for IASH Type II	4	2016	3	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army			Date: February 2016	
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) VR7 / <i>Combat Service Support Systems</i>		

Events	Start		End	
	Quarter	Year	Quarter	Year
Develop ULCANS Aviation variant and conduct OT	1	2021	4	2022