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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	76.374	90.965	79.706	-	79.706	107.608	70.530	71.922	58.062	0.000	555.167
194: Engine Driven Gen Ed	-	6.599	12.890	1.803	-	1.803	5.095	15.485	14.475	14.163	0.000	70.510
EC9: Contingency Basing Infrastructure	-	3.470	3.946	3.061	-	3.061	3.054	3.088	3.013	3.251	0.000	22.883
EJ9: Manuever Support Vessel - Light (MSV-L)	-	14.748	28.906	34.245	-	34.245	20.318	7.030	0.000	0.000	0.000	105.247
FG4: Ultra-Lightweight Camouflage Net System (ULCANS)	-	13.600	2.972	3.392	-	3.392	2.992	1.604	1.501	1.778	0.000	27.839
H01: Combat Engineer Eq Ed	-	2.192	3.889	2.745	-	2.745	2.796	4.769	5.929	3.691	0.000	26.011
H02: Tactical Bridging - Engineering Development	-	15.197	14.923	12.504	-	12.504	49.454	13.783	23.057	8.343	0.000	137.261
H14: Materials Handling Equipment - Ed	-	0.924	0.745	0.333	-	0.333	0.629	0.634	0.509	0.666	0.000	4.440
L39: Field Sustainment Support Ed	-	3.569	3.147	2.223	-	2.223	2.974	3.052	3.146	3.247	0.000	21.358
L41: Water And Petroleum Distribution - Ed	-	6.541	8.005	10.774	-	10.774	8.885	8.944	9.046	9.404	0.000	61.599
L43: ENGINEER SUPPORT EQUIPMENT - ED	-	2.352	3.795	0.341	-	0.341	1.230	3.169	0.198	1.422	0.000	12.507
L46: Maintenance Support Equipment	-	1.813	2.053	1.412	-	1.412	1.897	1.947	1.829	2.044	0.000	12.995
L47: Improved Environmental Control Units Ed	-	1.210	1.951	2.340	-	2.340	2.152	2.206	3.948	6.989	0.000	20.796
VR7: Combat Service Support Systems	-	4.159	3.743	4.533	-	4.533	6.132	4.819	5.271	3.064	0.000	31.721

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army		Date: February 2018			
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>				
<p>A. Mission Description and Budget Item Justification</p> <p>This Program Element (PE) provides system development and demonstration for various projects. This PE includes the development of water craft, 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, and mobile electric power.</p> <p>The FY 2019 funding request was reduced by \$11.657 million to account for the availability of prior year execution balances.</p>					
B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	75.098	90.965	109.672	-	109.672
Current President's Budget	76.374	90.965	79.706	-	79.706
Total Adjustments	1.276	0.000	-29.966	-	-29.966
• Congressional General Reductions	-0.031	-			
• Congressional Directed Reductions	-9.838	-			
• Congressional Rescissions	-	-			
• Congressional Adds	13.600	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.455	-			
• Adjustments to Budget Years	-	-	-29.966	-	-29.966
<p><u>Change Summary Explanation</u></p> <p>The FY 2019 decrease is due to schedule adjustment in the Large Advanced Mobile Power Sources EMD phase and a re-phasing of Project L43.</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
194: Engine Driven Gen Ed	-	6.599	12.890	1.803	-	1.803	5.095	15.485	14.475	14.163	0.000	70.510
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note The FY 2019 decrease is due to the Large Advanced Mobile Power Sources EMD phase contract termination .												
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 (MEP) systems to include MEP Generating Sources (MEPGS) and MEP Distribution Systems (MEPDS) 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 systems that are essential to the development and eventual fielding of modernized MEPGS and MEPDS. This project also ensures Army Expeditionary Forces are capable of rapid deployment through aerial delivery initiatives and reduces sustainment requirements, related Combat Support/Combat Service Support (CS/ CSS) demands in lift, combat zone footprint, and costs for logistical support. FY19 funds will continue to develop the Management and Distribution Control (MDC) Phase 1: Prime Power Connection Kit (PPCK) and the large Power Distribution Unit (PDU) performance specification to include developmental testing.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Management and Distribution Control (MDC) Engineering & Manufacturing Development (EMD) Phase.								6.599	12.890	1.803	-	1.803
Description: Prepare MDC/Microgrids performance specification and begin EMD Phase.												
FY 2018 Plans: Begin EMD phase for PPCK and continue EMD Phase of MDC PDU (microgrid).												
FY 2019 Base Plans: FY19 funds will continue to develop the Management and Distribution Control (MDC) Large Power Distribution Unit (PDU) and the Prime Power Connection Kit (PPCK) performance specification to include developmental testing.												
FY 2018 to FY 2019 Increase/Decrease Statement: The FY 2019 decrease is due to the Large Advanced Mobile Power Sources EMD phase contract termination .												
Accomplishments/Planned Programs Subtotals								6.599	12.890	1.803	-	1.803

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018	
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>			
C. Other Program Funding Summary (\$ in Millions)											
			FY 2019	FY 2019	FY 2019					Cost To	
Line Item	FY 2017	FY 2018	Base	OCO	Total	FY 2020	FY 2021	FY 2022	FY 2023	Complete	Total Cost
• G11: <i>Adv Elec Energy Con Ad</i>	5.051	6.524	3.335	-	3.335	3.372	7.201	7.405	17.413	0.000	50.301
• MA9800: <i>Generators and Associated Equipment</i>	132.391	116.204	133.772	0.569	134.341	113.476	88.765	115.703	101.957	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The Management and Distribution Control (MDC) program effort will use a multi-phase acquisition strategy, continue to consolidate requirements and provide solutions to known capability gaps. The MDC product line will include the current power distribution equipment (Army PDISE), the PDU being developed for use with large tactical electric power generators and the Prime Power Connection Kit (PPCK) and other products to provide the full range of power distribution equipment to support present and future Joint power system requirements.											
E. Performance Metrics											
N/A											

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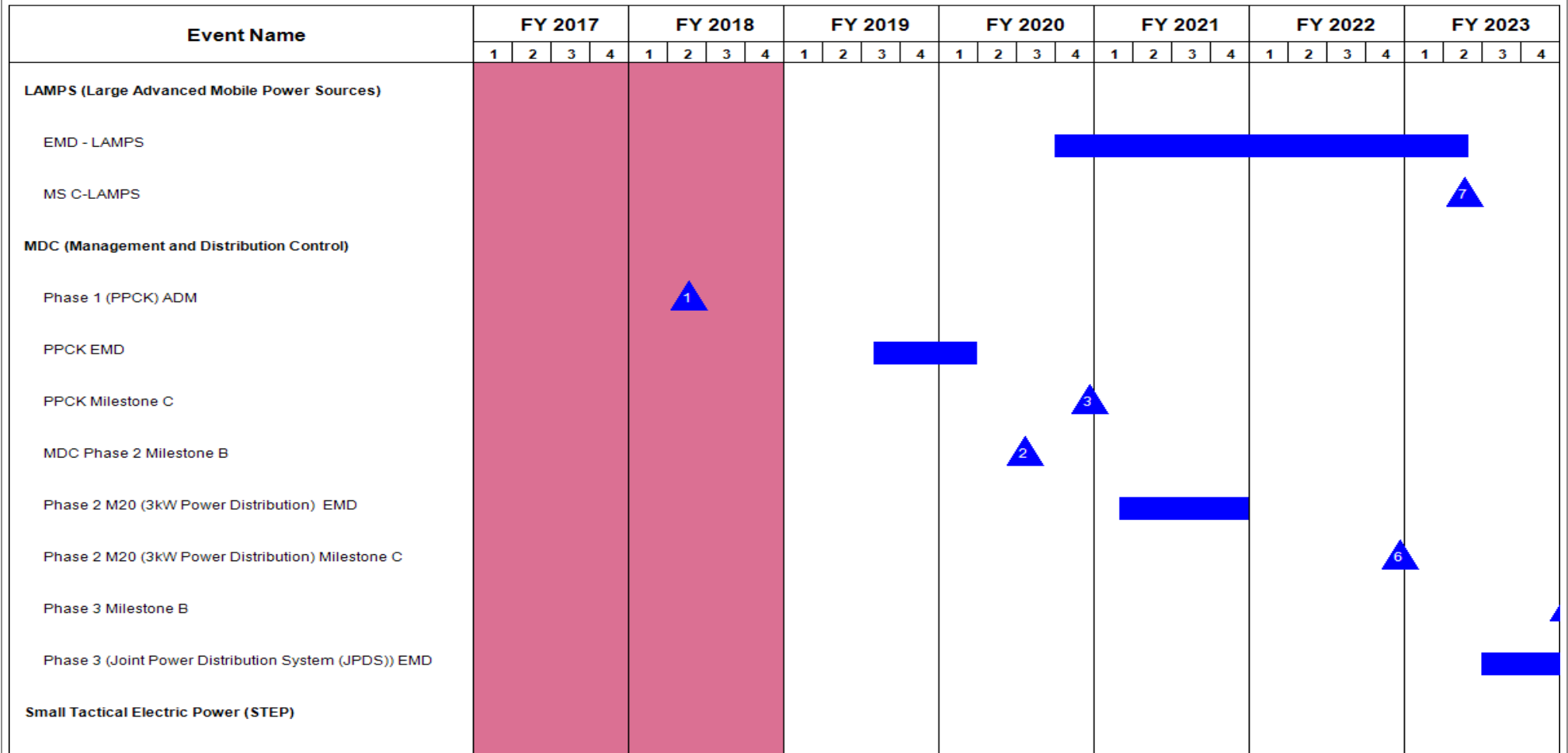
Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) 194 / Engine Driven Gen Ed					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	Various	PM E2S2 : Ft. Belvoir	-	1.275		1.332		1.803		-		1.803	Continuing	Continuing	Continuing
Large Advanced Mobile Power Sources (LAMPS) (100-200kW)	Various	PM E2S2 Ft. Belvior : Ft. Belvior	-	1.132		-		-		-		-	0.000	1.132	-
Subtotal			-	2.407		1.332		1.803		-		1.803	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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)	C/CPFF	TBD : TBD	-	1.750		6.260		-		-		-	Continuing	Continuing	Continuing
Large Advanced Mobile Power Sources (LAMPS) (100-200kW)	C/FPIF	L-3 Communications, Westwood Corporation, Tulsa, OK : Various	36.224	-		-		-		-		-	Continuing	Continuing	Continuing
Subtotal			36.224	1.750		6.260		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	1.132	Feb 2017	-		-		-		-	Continuing	Continuing	Continuing
Management and Distribution Control (MDC)	Various	Various : Various	-	-		2.168		-		-		-	0.000	2.168	-
Subtotal			3.485	1.132		2.168		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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					
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	Army Test & Evaluation Ctr (ATEC) : APG, MD	6.318	-		-		-		-		-	Continuing	Continuing	Continuing
Management and Distribution Control (MDC)	MIPR	Army Test & Evaluation Ctr (ATEC) : APG, MD	-	1.310	Feb 2017	3.130		-		-		-	0.000	4.440	-
Subtotal			6.318	1.310		3.130		-		-		-	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			46.027	6.599		12.890		1.803		-		1.803	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
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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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army																Date: February 2018																					
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev										Project (Number/Name) 194 / Engine Driven Gen Ed																	
Event Name										FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestone B - STEP																										4											
EMD Award - STEP																										5											
EMD - STEP																																					

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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)	4	2020	4	2024
EMD - LAMPS	4	2020	2	2023
MS C-LAMPS	2	2023	2	2023
MDC (Management and Distribution Control)	3	2017	4	2024
Phase 1 (PPCK) ADM	2	2018	2	2018
PPCK EMD	3	2019	1	2020
PPCK Milestone C	4	2020	4	2020
MDC Phase 2 Milestone B	3	2020	3	2020
Phase 2 M20 (3kW Power Distribution) EMD	1	2021	4	2021
Phase 2 M20 (3kW Power Distribution) Milestone C	4	2022	4	2022
Phase 3 (Joint Power Distribution System (JPDS)) EMD	3	2023	2	2024
Small Tactical Electric Power (STEP)	3	2021	4	2025
Milestone B - STEP	3	2021	3	2021
EMD Award - STEP	3	2021	3	2021
EMD - STEP	3	2021	4	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) EC9 / Contingency Basing Infrastructure			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EC9: Contingency Basing Infrastructure	-	3.470	3.946	3.061	-	3.061	3.054	3.088	3.013	3.251	0.000	22.883
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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 data driven, 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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Toolset Development	0.735	0.738	0.551	-	0.551
Description: CBI employs Systems Engineers and System Architects to continue the maturation of tools by applying analytical rigor and a systems of systems methodology in toolset development. The toolset provides the backbone for the analysis support to the field allowing operational users to make informed decisions for the design of base camps. The Systems Database is a repository for Contingency Base (CB) information and is available as a single source of information to the CB community. Funding is provided for the following efforts in FY18 and 19.					
FY 2018 Plans: Continue model based systems engineering tool maturation of multiple analytical tools, Base Camp Master Planning Tool ? Contingency Base Interface to the Warfighter (CBIWar), an initial transfer of systems data to the Joint Construction Management System (JCMS), and perform an Initial Operational Capability (IOC) review.					
FY 2019 Base Plans: Funding is planned to continue model based systems engineering tool maturation of multiple analytical tools, Base Camp Master Planning Tool, Contingency Basing Interface to the Warfighter (CBIWar), update systems data to the Joint Construction Management System (JCMS), and perform Design Charrettes in support of					

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Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) EC9 / Contingency Basing Infrastructure				
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
finalizing the Core Set Development of the Armor Brigade Combat Team (ABCT) Base Camp and beginning the Stryker Brigade Combat Team (SBCT) Base Camp layout.							
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 are due to transfer of RDTE to OMA for PEO Core Salaries.							
Title: Integrated Analysis and Design			1.208	1.652	1.595	-	1.595
Description: CBI employs Systems Engineers, Operational Research System Analysts and collaborates with Sandia National Laboratories to provide the methodologies, modeling and analysis engines, and the analysis required to recommend and mature the optimized equipment sets that comprise a base camp. Optimized sets range from Platoon to Brigade sized camps in Armor, Infantry, Stryker, Medical, and Logistic camps that optimize the usage of fuel, water, waste and manpower. Funding is provided for the following efforts in FY 18 and 19.							
FY 2018 Plans: Funding is planned to support Initial Operational Capability of our toolset that will support portfolio maturation, integration and analytical evaluation. Additionally, providing analysis to the FY22 contingency basing infrastructure enhanced equipment set to support PD CBI's Annual Report which will inform Army Project Managers and other decision makers the resource implications of their respective product lines and provide investment recommendations for POM 21-25.							
FY 2019 Base Plans: Funding is planned to support an Integrated Design Review in support of the Core Set Development of the Armor Brigade Combat Team (ABCT) Base Camp layout. Funding is also planned to begin the Core Set Development of the Stryker Brigade Combat Team Base Camp Layout. Additionally, providing analysis to the FY23 contingency basing infrastructure enhanced equipment set to support PD CBI's Annual Report which will inform Army Project Managers and other decision makers the resource implications of their respective product lines and provide investment recommendations for the next POM (FY22-26).							
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 are due to transfer of RDTE to OMA for PEO Core Salaries.							
Title: Capabilities Implementation and Materiel Requirements			0.659	0.673	0.686	-	0.686

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Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) EC9 / Contingency Basing Infrastructure			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: CBI employs System Integrators and Engineering Technicians to develop, update and refine system data set strategies of equipment using the developed optimized base camp designs. Funding is provided for the following efforts in FY18 and 19.</p> <p>FY 2018 Plans: Funding is planned to continue supporting the development of the design of different sized contingency base camps, capability sets specifically focusing on enhancement sets, and establishment of a configuration management plan to manage the base camp capability sets.</p> <p>FY 2019 Base Plans: Funding is planned to continue supporting the development of the design of different sized contingency base camps, capability sets specifically focusing on expansion sets, and the planning to manage the base camp capability sets.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 are due to transfer of RDTE to OMA for PEO Core Salaries.</p>						
<p>Title: Program Management</p> <p>Description: Programmatic support and oversight of cost schedule, performance, risk and operational activities in managing the product office. Funding is provided for the following efforts in FY18 and 19.</p> <p>FY 2018 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. Funding will continue to support the review and staffing of the Joint Publication for Contingency Basing.</p> <p>FY 2019 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</p>		0.868	0.883	0.229	-	0.229

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<u>B. Accomplishments/Planned Programs (\$ in Millions)</u>					
	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
impacts and technology gaps. Funding will continue to support the review the Facilities Capability Development Document (CDD) which will include master planning capability of base camps.					
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Decrease from FY18 to FY19 are due to transfer of RDTE to OMA for PEO Core Salaries.					
Accomplishments/Planned Programs Subtotals	3.470	3.946	3.061	-	3.061
<u>C. Other Program Funding Summary (\$ in Millions)</u> N/A					
<u>Remarks</u>					
<u>D. Acquisition Strategy</u> Not applicable for this item.					
<u>E. Performance Metrics</u> N/A					

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev						Project (Number/Name) EC9 / Contingency Basing Infrastructure			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	Various	PM E2S2 / PEO CS&CSS : Fort Belvoir, VA / Warren, MI	1.180	0.868		0.883		0.229		-		0.229	0.000	3.160	-
Subtotal			1.180	0.868		0.883		0.229		-		0.229	0.000	3.160	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Toolset Development	Various	Various : Various	1.558	0.735		0.738		0.551		-		0.551	0.000	3.582	Continuing
Integrated Analysis and Design	Various	Various : Various	2.603	1.208		1.652		1.595		-		1.595	0.000	7.058	Continuing
Capabilities Implementation and Materiel Requirements	Various	Various : Various	0.901	0.659		0.673		0.686		-		0.686	0.000	2.919	Continuing
Subtotal			5.062	2.602		3.063		2.832		-		2.832	0.000	13.559	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			6.242	3.470		3.946		3.061		-		3.061	0.000	16.719	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity

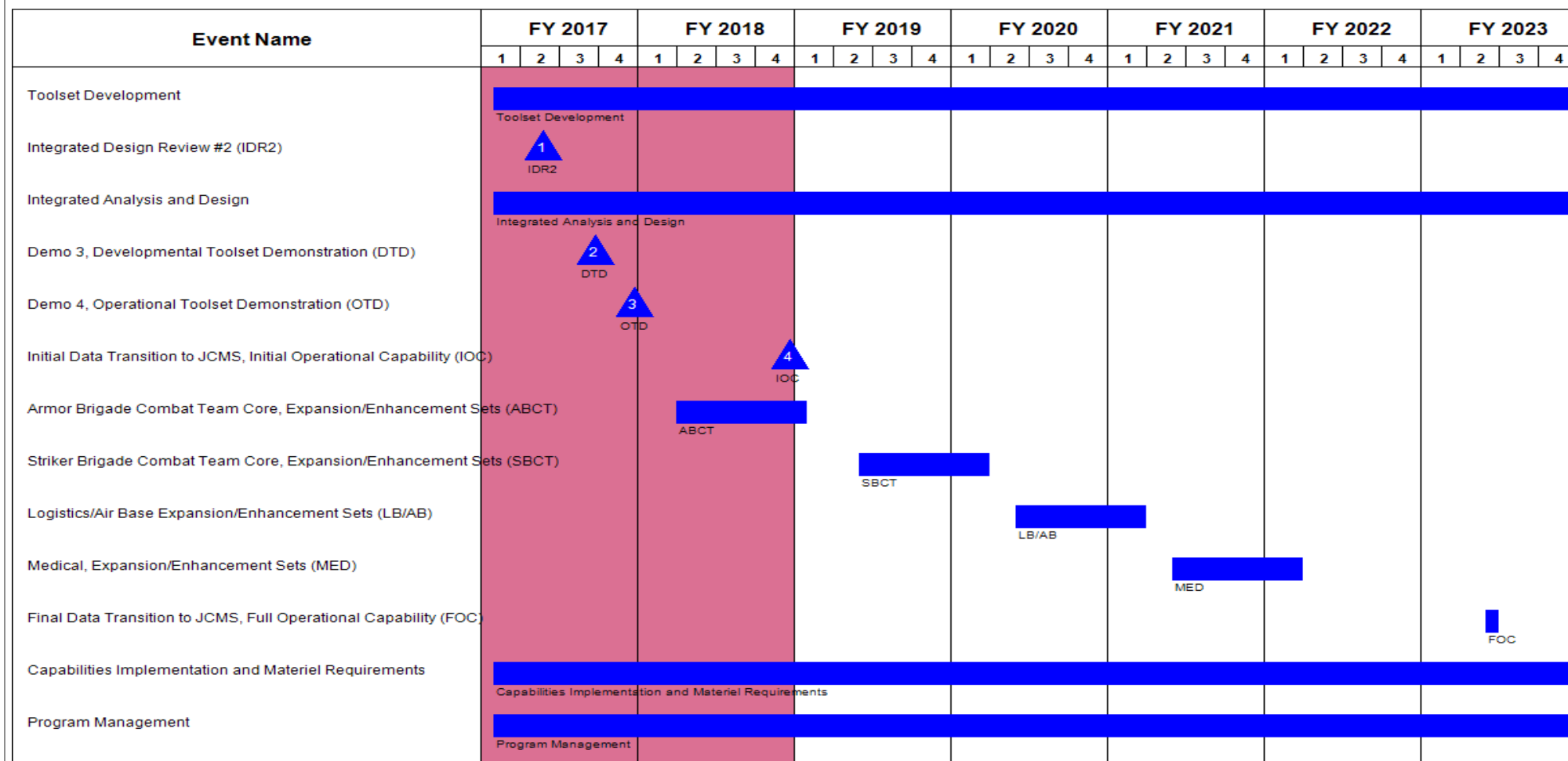
2040 / 5

R-1 Program Element (Number/Name)

PE 0604804A / Logistics and Engineer
Equipment - Eng Dev

Project (Number/Name)

EC9 / Contingency Basing Infrastructure



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Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev										Project (Number/Name) EC9 / Contingency Basing Infrastructure																	
Event Name										FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Infantry Brigade Combat Team, Core, Expansion/Enhancements Sets (IBCT)																																					

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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	2016	4	2023
Integrated Design Review #2 (IDR2)	2	2017	2	2017
Integrated Analysis and Design	1	2016	4	2023
Demo 3, Developmental Toolset Demonstration (DTD)	3	2017	3	2017
Demo 4, Operational Toolset Demonstration (OTD)	4	2017	4	2017
Initial Data Transition to JCMS, Initial Operational Capability (IOC)	4	2018	4	2018
Armor Brigade Combat Team Core, Expansion/Enhancement Sets (ABCT)	2	2018	1	2019
Striker Brigade Combat Team Core, Expansion/Enhancement Sets (SBCT)	2	2019	1	2020
Logistics/Air Base Expansion/Enhancement Sets (LB/AB)	2	2020	1	2021
Medical, Expansion/Enhancement Sets (MED)	2	2021	1	2022
Final Data Transition to JCMS, Full Operational Capability (FOC)	2	2023	2	2023
Capabilities Implementation and Materiel Requirements	1	2016	4	2023
Program Management	1	2016	4	2023
Infantry Brigade Combat Team, Core, Expansion/Enhancements Sets (IBCT)	2	2017	1	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) EJ9 / Manuever Support Vessel -Light (MSV-L)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EJ9: Manuever Support Vessel - Light (MSV-L)	-	14.748	28.906	34.245	-	34.245	20.318	7.030	0.000	0.000	0.000	105.247
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Maneuver Support Vessel (Light) (MSV(L)) program element supports the Engineering and Manufacturing Development (EMD) phase of the program. The MSV(L) is a multifunctional waterborne mobility platform, which displaces the current Landing Craft Mechanized-8 (LCM-8). The LCM-8 does not have the speed, functional draft (shallow water capability), and maneuver capability to move today's Army; cannot transport an Abrams tank. The MSV(L) provides 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. This vessel's capability supports 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 two 20 ft. or one 40 ft. ISO container (Intermodal container); or a Heavy Expandable Mobility Tactical Truck (HEMTT); or a Load Handling System (LHS), and trailer). The MSV(L) will incorporate new roll-through capability via stern access and bow ramps. The MSV(L) provides the capability to operate fully loaded at a speed of 15 knots in Beaufort Sea Scale 3 conditions, while being survivable (seaworthy) in Beaufort Sea Scale 7 conditions. The vessel's force protection attributes includes 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 the capacity to mitigate detection through reduction of thermal and acoustic signature. The MSV(L) provides increased capability that moves combat configured forces and supplies more efficiently than the LCM-8.

Army Watercraft funding supports initiatives to enhance the seaworthiness, safety, and survivability while increasing the lethality, tactical mobility, and operational capability of the Army Mariner. Vessel lethality/Escalation of Force measures have increasingly become an area of vital concern to the Combatant Commanders (CCDR) given the requirement to preserve "freedom of the seas" access in all areas of the world, particularly the littorals, to support maneuver operations in all Areas of Responsibility.

FY19 funding will support completion of the contractor's design, full scale prototype build, testing and evaluation activities, and initial logistics assessments.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Engineering and Manufacturing Development (EMD) Contract	9.126	22.039	30.525	-	30.525
Description: The EMD phase of the contract includes system engineering and analysis to support execution of the Preliminary Design Review (PDR), Critical Design Review (CDR), Contract Systems Integration Laboratory (CSIL) fabrication, model basin testing, production of full-scale prototype vessel and required testing. In					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018				
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) EJ9 / Manuever Support Vessel -Light (MSV-L)				
B. Accomplishments/Planned Programs (\$ in Millions)				FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
addition, deliverables include development of Integrated Product Support (IPS) analysis and products, as well as, development of Technical Data Package (TDP). FY 2018 Plans: FY18 will include system engineering analysis to support execution of the Critical Design Review (CDR), completion and testing of CSIL, model basin testing, and authorization for the production of full-scale prototype vessel. The funding increase in FY18 is a result of cost associated with the build of the MSV(L) full-scale prototype. The current schedule is an estimate. Schedule revisions will occur after contract award which may include acceleration in the program if FY17 and FY18 funding remains intact. FY 2019 Base Plans: FY19 will include building of the full scale prototype vessel, testing and evaluation activities, and initial logistics assessments. FY 2018 to FY 2019 Increase/Decrease Statement: Increase is due to the cost of the activities that will occur in FY19.								
Title: Government Test and Evaluation Support Description: Government test support. FY 2018 Plans: Government oversight of model basin and CSIL testing. FY 2019 Base Plans: Contract Systems Integration Laboratory (CSIL) testing and evaluation activities. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease is due to costs of the activities that will occur in FY19.				-	0.490	0.300	-	0.300
Title: Government Furnished Equipment (GFE) Description: GFE for prototype vessel consists of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR). FY 2018 Plans:				1.243	1.000	0.125	-	0.125

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) EJ9 / Manuever Support Vessel -Light (MSV-L)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
GFE is required to support the full size prototype vessel. FY 2019 Base Plans: GFE is required to support the full size prototype vessel. FY 2018 to FY 2019 Increase/Decrease Statement: no change						
Title: Program Management / Systems Engineering Description: PM/Matrix Support includes PM and systems engineering oversight required to manage the program and provide contractor oversight. Salaries for support through the EMD phase. FY 2018 Plans: Funds will cover salaries for Core and Matrix support, contract execution, program management and contractor oversight. FY 2019 Base Plans: Funds will cover matrix salaries for program management and engineering support to include contract execution and contractor oversight. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease is due to staffing changes to coordinate with EMD phase activities and support only includes matrix employees and Naval Architects.		3.872	3.977	3.008	-	3.008
Title: Program Management Support Contract Description: Program Management and Contract Support for MSV(L). FY 2018 Plans: Program Management Support to support MSV(L) contract execution. FY 2019 Base Plans: Program Management Support to support MSV(L) for Cyber Security, Contract Data Requirement List (CDRL) management, IMS support, and program documentation. FY 2018 to FY 2019 Increase/Decrease Statement: No change		0.507	0.750	0.287	-	0.287
Title: Naval Architecture Support		-	0.650	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army						Date: February 2018					
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Description: Naval architecture support and travel expenses - now included in PM Systems engineering support.											
FY 2018 Plans: Naval Architecture to support MSV(L) contract execution.											
FY 2018 to FY 2019 Increase/Decrease Statement: Accounted for in Program Management Systems Engineering.											
Accomplishments/Planned Programs Subtotals						14.748	28.906	34.245	-	34.245	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• R03050: <i>Maneuver Support Vessel (Light) (MSV-L)</i>	-	-	0.000	-	0.000	6.939	77.081	82.000	92.184	0.000	258.204
Remarks											
<p>The MSV(L) was a new start program beginning in FY16. APE 0603804, Project 526 provided resourcing for research and development support to this program prior to the receipt of funding in Feb 16.</p> <p>Significant Achievements:</p> <ul style="list-style-type: none"> - The Contract was awarded on 28 Sep 17 to Vigor Works, LLC. - On 22 Sep 17, obtained MDA approval for Milestone B and entry into the EMD phase. - The RFP was released on 27 Oct 16 and closed on 30 Jan 17. The SSEB commenced 30 Jan 17. 											
D. Acquisition Strategy											
<p>The MSV(L) will enter at MS B with an 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 with a down select from paper designs to one contractor at MS B. The contract will award one 10 year contract to a single vendor comprised of EMD followed by the production and development phase. Model basin testing will occur after successful execution of PDR. This sequence of events mitigate risks prior to the authorization of building the full size prototype. The full size prototype will undergo testing which will inform the Capability Production Document (CPD). Following successful prototype testing, at Knowledge Point (KP) 6, the program will transition to the Other Procurement Army (OPA) funding, and initiate LRIP. Upon MS C approval, the Government will authorize the Production and Deployment phase.</p>											

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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>

E. Performance Metrics

At MS B, The Acquisition Program Baseline (APB) established cost, schedule, and performance metrics. Per the contract, the contractor will provide monthly cost and performance deliverables.

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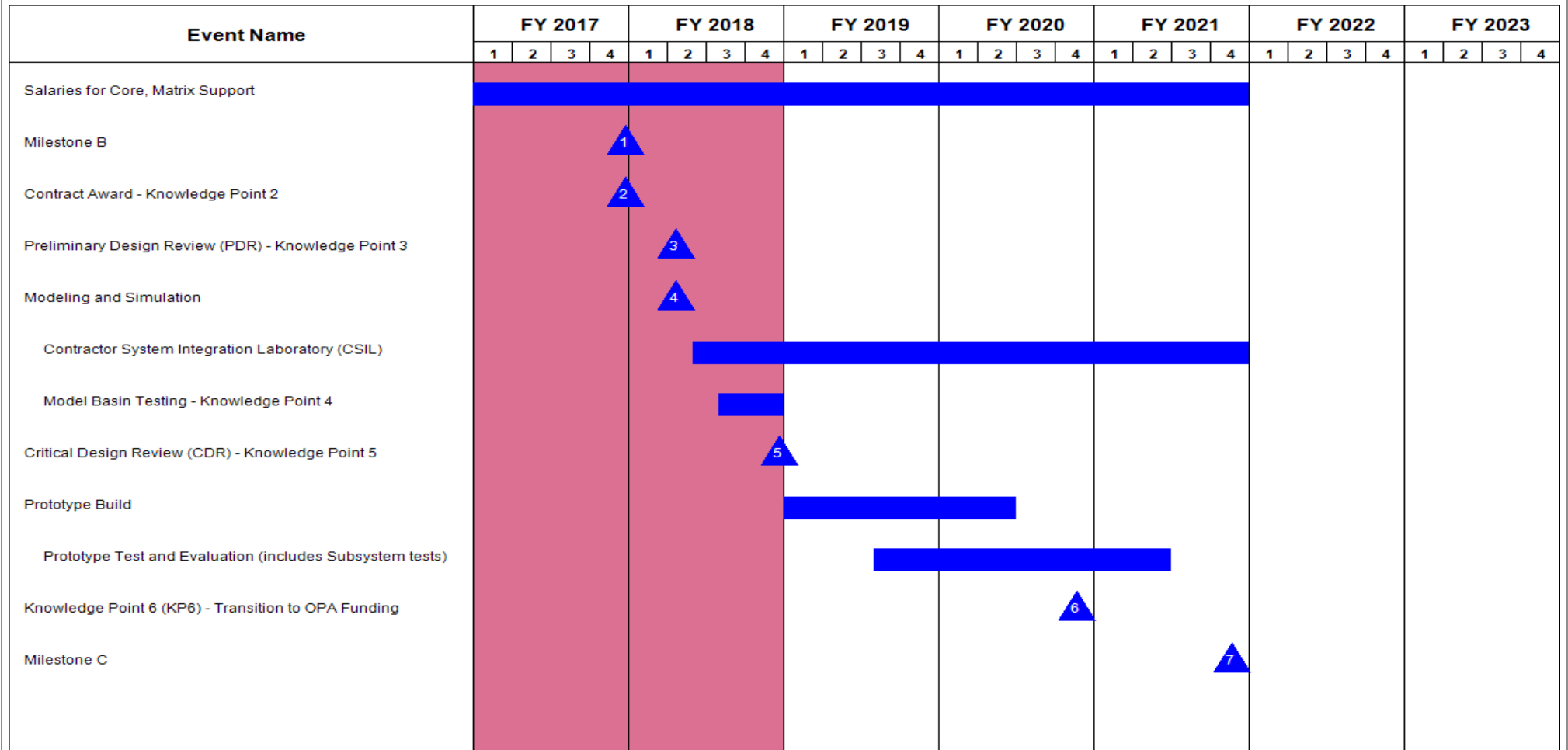
Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) EJ9 / Manuever Support Vessel -Light (MSV-L)					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Manufacturing Development (EMD)	C/FP	Vigor Works, LLC : Clackamas, OR	-	9.126	Sep 2017	22.039	Feb 2018	30.525	Feb 2019	-		30.525	53.073	114.763	88.820
Government Furnished Equipment (GFE)	Reqn	Various : Various	1.029	1.243	Aug 2017	1.000	Jul 2018	0.125	Jan 2019	-		0.125	0.000	3.397	-
Information Support Plan (ISP)	SS/CPFF	ACC Warren, MI : Warren, MI	1.637	-		-		-		-		-	0.000	1.637	2.278
Subtotal			2.666	10.369		23.039		30.650		-		30.650	53.073	119.797	N/A
Remarks															
Contract was awarded on 28 Sep 2017 to Vigor Works, LLC. GFE is required to support a full size prototype build.															
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Salaries for Matrix Personnel Army Watercraft, TARDEC, ILSC PSID.	MIPR	Detroit Arsenal : Warren, MI 48397-5000	5.470	3.872	Oct 2016	3.977	Oct 2017	3.008	Oct 2018	-		3.008	Continuing	Continuing	-
Salaries/Travel for Naval Architecture Support	C/CPFF	Picatinny Arsenal, New Jersey 07806-5000 : Warren, MI 48397-5000	0.110	-		0.650		-		-		-	0.000	0.760	-
Salaries / Travel for Program Management Support	C/CPFF	Picatinny Arsenal, New Jersey 07806-5000 : Warren, MI 48397-5000	1.421	0.507	Jul 2017	0.750	Oct 2017	0.287	Oct 2018	-		0.287	Continuing	Continuing	-
Subtotal			7.001	4.379		5.377		3.295		-		3.295	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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>					
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation - Government	MIPR	ATEC: APG : APG, MD	-	-		0.490	Oct 2017	0.300	Oct 2018	-		0.300	Continuing	Continuing	-
Subtotal			-	-		0.490		0.300		-		0.300	Continuing	Continuing	N/A
Remarks No Government test and evaluation took place in FY17.															
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			9.667	14.748		28.906		34.245		-		34.245	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
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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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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, Matrix Support	4	2016	4	2021
Milestone B	4	2017	4	2017
Contract Award - Knowledge Point 2	4	2017	4	2017
Preliminary Design Review (PDR) - Knowledge Point 3	2	2018	2	2018
Modeling and Simulation	2	2018	2	2018
Contractor System Integration Laboratory (CSIL)	2	2018	4	2021
Model Basin Testing - Knowledge Point 4	3	2018	4	2018
Critical Design Review (CDR) - Knowledge Point 5	4	2018	4	2018
Prototype Build	1	2019	2	2020
Prototype Test and Evaluation (includes Subsystem tests)	3	2019	2	2021
Knowledge Point 6 (KP6) - Transition to OPA Funding	4	2020	4	2020
Milestone C	4	2021	4	2021

Note

As long as program funding remains in place, PD AWS will assess designated Knowledge Points to determine opportunities for program acceleration. KP6: Successful completion of Prototype Testing with Contractor - Transition to OPA funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) FG4 / Ultra-Lightweight Camouflage Net System (ULCANS)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FG4: Ultra-Lightweight Camouflage Net System (ULCANS)	-	13.600	2.972	3.392	-	3.392	2.992	1.604	1.501	1.778	0.000	27.839
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
ULCANS provides increased survivability against multi-spectral visual, infrared and radar threats, thermal signature suppression and significant thermal/solar reduction capability. ULCANS is capable of use in all types of weather and climatic conditions except in heavy snow and winds. ULCANS variants are integrated systems that are very lightweight, easily deployable, versatile, user friendly and tailored to the equipment meeting the requirements of operations for combat systems, command and control equipment, logistic support sites, tactical facilities, and fixed facilities. RDT&E funding for ULCANS Increment I program supports formal development for necessary technology/signature enhancements of three ULCANS Increment I variants (Woodland, Arctic, Desert/Urban) to replace current legacy ULCANS variants (Woodland and Desert).												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Ultra-lightweight Camouflage Net System (ULCANS)								13.600	2.972	3.392	-	3.392
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 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 for ULCANS Increment I program supports formal development for necessary technology/signature enhancements of three ULCANS Increment I variants (Woodland, Arctic, Desert/Urban) to replace current legacy ULCANS variants (Woodland and Desert).												
FY 2018 Plans: Obtain Milestone B decision authorizing ULCANS Increment I to enter Engineering and Manufacturing Development (EMD). Award development contract, procure/build test items for Woodland, Arctic, and Desert/ Urban Variants and conduct competitive down-select testing to one vendor. Initiate build of Woodland variant test items for Developmental Testing/ Operational Testing (DT/OT).												
FY 2019 Base Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018	
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) FG4 / Ultra-Lightweight Camouflage Net System (ULCANS)			
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Complete DT/OT and logistics requirements, prepare documentation and obtain Milestone C decision and initiate full production for Woodland variant.											
FY 2018 to FY 2019 Increase/Decrease Statement: FY18 to FY19 fund increase required to support extensive EMD testing and logistics effort for transition to production.											
Accomplishments/Planned Programs Subtotals							13.600	2.972	3.392	-	3.392
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• VR7: Combat Service Support Systems	4.159	3.743	4.533	-	4.533	6.132	4.819	5.271	3.064	0.000	31.721
• VR8: Combat Service Support Systems - Ad	4.004	5.062	3.222	-	3.222	3.447	3.116	2.587	2.637	0.000	24.075
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 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev						Project (Number/Name) FG4 / Ultra-Lightweight Camouflage Net System (ULCANS)			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ULCANS	Various	PMFSS : Natick, MA	-	1.000		0.872		0.990		-		0.990	0.000	2.862	-
Subtotal			-	1.000		0.872		0.990		-		0.990	0.000	2.862	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ULCANS Increment I Woodland Variant	C/FFP	PMFSS : Natick, MA	-	4.000		0.750		0.857		-		0.857	0.000	5.607	-
ULCANS Increment I Arctic Variant	C/FFP	PMFSS : Natick, MA	-	4.000		0.750		0.857		-		0.857	0.000	5.607	-
Subtotal			-	8.000		1.500		1.714		-		1.714	0.000	11.214	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ULCANS Increment I Woodland Variant	Various	Various : Various	-	2.300		0.300		0.325		-		0.325	0.000	2.925	-
ULCANS Increment I Arctic Variant	Various	Various : Various	-	2.300		0.300		0.363		-		0.363	0.000	2.963	-
Subtotal			-	4.600		0.600		0.688		-		0.688	0.000	5.888	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	13.600		2.972		3.392		-		3.392	0.000	19.964	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity

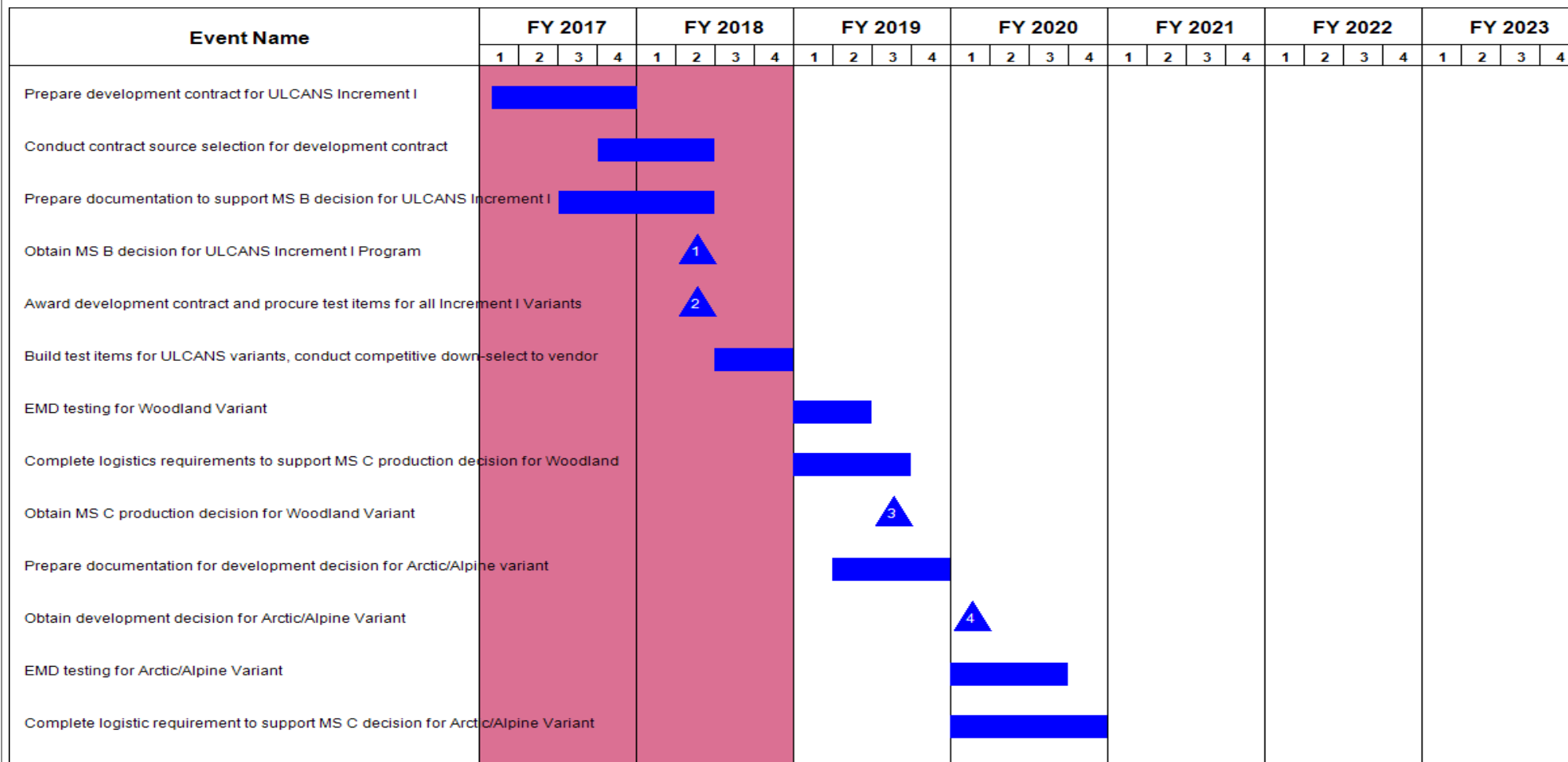
2040 / 5

R-1 Program Element (Number/Name)

PE 0604804A / Logistics and Engineer Equipment - Eng Dev

Project (Number/Name)

FG4 / Ultra-Lightweight Camouflage Net System (ULCANS)



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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army																Date: February 2018												
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev								Project (Number/Name) FG4 / Ultra-Lightweight Camouflage Net System (ULCANS)										
Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Obtain production decision for Arctic/Alpine Variant																6												
Prepare documentation for tailored development decision for Desert/Urban Variant																												
Obtain development decision for Desert/Urban Variant																5												
EMD testing for Desert/Urban Variant																												
Complete logistics requirement to support MS C decision for Desert/Urban Variant																												
Obtain production decision for Desert/Urban Variant																												
EMD for Emerging Sensor Threat Requirements																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) FG4 / <i>Ultra-Lightweight Camouflage Net System (ULCANS)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Prepare development contract for ULCANS Increment I	1	2017	4	2017
Conduct contract source selection for development contract	4	2017	2	2018
Prepare documentation to support MS B decision for ULCANS Increment I	3	2017	2	2018
Obtain MS B decision for ULCANS Increment I Program	2	2018	2	2018
Award development contract and procure test items for all Increment I Variants	2	2018	2	2018
Build test items for ULCANS variants, conduct competitive down-select to vendor	3	2018	4	2018
EMD testing for Woodland Variant	1	2019	2	2019
Complete logistics requirements to support MS C production decision for Woodland	1	2019	3	2019
Obtain MS C production decision for Woodland Variant	3	2019	3	2019
Prepare documentation for development decision for Arctic/Alpine variant	2	2019	4	2019
Obtain development decision for Arctic/Alpine Variant	1	2020	1	2020
EMD testing for Arctic/Alpine Variant	1	2020	3	2020
Complete logistic requirement to support MS C decision for Arctic/Alpine Variant	1	2020	4	2020
Obtain production decision for Arctic/Alpine Variant	4	2020	4	2020
Prepare documentation for tailored development decision for Desert/Urban Variant	1	2020	3	2020
Obtain development decision for Desert/Urban Variant	3	2020	3	2020
EMD testing for Desert/Urban Variant	3	2020	1	2022
Complete logistics requirement to support MS C decision for Desert/Urban Variant	3	2020	3	2021
Obtain production decision for Desert/Urban Variant	3	2021	3	2021
EMD for Emerging Sensor Threat Requirements	1	2021	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) H01 / Combat Engineer Eq Ed			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
H01: Combat Engineer Eq Ed	-	2.192	3.889	2.745	-	2.745	2.796	4.769	5.929	3.691	0.000	26.011
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project supports the engineering, manufacturing, and development of combat engineer 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), Combat Support Brigade (CSB), and Multi-Roll Bridge Company (MRBC) forces. This project also supports the development 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. Systems that support BCT and CSB forces include: High Mobility Engineer Excavators, Scrapers, Scoop Loaders, Skid Steer Loaders, Dozers, Cranes, Graders, and emerging armor solutions. Systems that support the MRBC forces include Hydraulic Excavators (HYEX) and Enhanced Rapid Airfield Construction Capability (ERACC).												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Driver Assist								1.265	0.453	0.324	-	0.324
Description: Research and demonstrate technologies that will enhance operations such as the inclusion of cameras, collision sensors, and lifting aids.												
FY 2018 Plans: Integrate Commercial-off-the-Shelf (COTS) cameras, similar to backup cameras, and collision warning sensors to increase situational awareness of CE operator. Will result in the production representative prototype on vehicle by end of Fiscal Year 2021. Test and validate additional fork carriages for fielded loaders.												
FY 2019 Base Plans: Drive Assist - Continue integration of Commercial-off-the-Shelf (COTS) cameras, similar to backup cameras, and collision warning sensors to increase situational awareness of CE operator. Will result in the production representative prototype on vehicle by end of Fiscal Year 2021.												
Drive Assist Machine Control - Development of additional technology to allow the machine to autonomously control and prevent unsafe operating conditions such as braking to avoid objects or to prevent roll overs.												
.												
FY 2018 to FY 2019 Increase/Decrease Statement:												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) H01 / Combat Engineer Eq Ed				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funding increase from FY2018 to FY2019 to addition of Drive Assist Machine Control efforts.						
<p>Title: Operational Efficiency</p> <p>Description: Evaluate emerging technologies that can improve machine productivity and efficiency such as baseline fuel efficiency, engine management, efficient lubricants, and hydraulic technologies.</p> <p>FY 2018 Plans: Work with TARDEC Force Projection Technology group to test and qualify additional lubricants/hydraulic fluids which increase efficiency and decrease chance intervals. Research additional hydraulic control systems which have the potential to increase efficiency of systems. Continue to develop duty cycles for improved efficiencies. Conduct basic research into the possibility of having a hybrid solution developed to integrate into systems already fielded.</p> <p>FY 2019 Base Plans: Work with TARDEC Force Projection Technology group to test and qualify additional lubricants/hydraulic fluids which increase efficiency and decrease chance intervals. Research additional hydraulic control systems which have the potential to increase efficiency of systems. Continue to develop duty cycles for improved efficiencies. Conduct basic research into the possibility of having a hybrid solution developed to integrate into systems already fielded.</p>		-	0.100	0.100	-	0.100
<p>Title: System Engineering/Program Management</p> <p>Description: Provide funding for System Engineering and Program Management support costs.</p> <p>FY 2018 Plans: Provide funding for System Engineering and Program Management support costs.</p> <p>FY 2019 Base Plans: Provide funding for System Engineering and Program Management support costs.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increase from FY2018 to FY2019 is due to additional Man-Years required to support research, development, and testing efforts of the Hydraulic Excavators (HYEX) vehicles.</p>		0.450	0.450	1.037	-	1.037
<p>Title: Technology Insertion/System Improvement</p> <p>Description: Work with Maneuver Support Center of Excellence (MSCoE) to test and integrate hardware to increase platform capability and performance. Develop prototype systems to provide additional machine</p>		0.477	0.575	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) H01 / Combat Engineer Eq Ed		
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
capability. This may include sweepers, buckets, lift devices, sand-bag filler auger, expandable tines for +48" center load pallets, and fork enhancements.						
FY 2018 Plans: Survey Combat Engineer Equipment fleet to determine what systems have obsolete technology which will not be procurable as spares for the remaining Life Cycles of the systems. Research additional technologies to improve the maintenance and operating efficiencies. Procure and evaluate the commercially available technology to replace aging components which include new engine/hydraulic controllers, joystick controls, lighting, etc. Maintenance improvements can include self-lubrication systems. Integrate and evaluate the improvement in the military environment and assess the benefits to the Soldier. Work with Maneuver Support Center of Excellence (MSCoE) and maintenance personnel to identify systems and what areas of machine maintenance are critical for increasing operational availability.						
FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease from FY2018 to FY2019 is due to completion of efforts in FY2018.						
Title: Mine Clearing Armor Protection (MCAP)		-	1.512	0.499	-	0.499
Description: Evaluate and integrate technologies to increase operator protection and safety during mine clearing missions. Mine Clearing Armor Protection (MCAP) Dozers were built on legacy D7G. These systems are being replaced by the D7R and will require additional equipment to allow for use in completing the MCAP mission. This includes providing greater operator protection as well as additional tools for conducting the mine clearing operation.						
FY 2018 Plans: Review the requirements for crew protection and conduct a cost/performance trade off to determine if the best way to protect the operator is to increase the armor protection or remove the operator from the cab. Research blade design to ensure the mine clearing capability is sufficient for meeting the requirement of the MCAP mission.						
FY 2019 Base Plans: Complete analysis of alternatives (AOA) of solutions to increase the armor protection or remove the operator from the cab, and research of blade design to ensure the mine clearing capability is sufficient for meeting the requirement of the MCAP mission. Integrate mine clearing capabilities into Dozer vehicles.						
FY 2018 to FY 2019 Increase/Decrease Statement:						

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018				
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) H01 / Combat Engineer Eq Ed				
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funding decrease from FY2018 to FY2019 is due to reduced Man-Year requirements to support the MCAP efforts, which will be completed in FY2019.							
Title: Forced Entry (Airborne/Air Assault) Study/Development Description: Explore options of using Program of Record systems to meet Forced Entry requirements. FY 2018 Plans: Conduct feasibility study for an Air Assault version of the 120M Grader which will be capable of being transported by helicopter. This will include provisions for splitting the 120M into multiple parts and reassembly in the field. FY 2018 to FY 2019 Increase/Decrease Statement: Reduced funding from FY2018 to FY2019 is due to completion of the efforts in FY2018.			-	0.200	-	-	-
Title: Weight Reduction in Transparent Armor (TA) Description: Investigate technologies that will reduce the weight in TA while maintaining current protection levels or technologies that will increase protection levels with no or minimal increase in weight. FY 2018 Plans: Work under the TARDEC TA Small Business Innovative Research (SBIR) program which has already shown positive result to quality TA at the protection level and continue to develop one level higher. FY 2018 to FY 2019 Increase/Decrease Statement: Reduced funding from FY2018 to FY2019 is due to completion of effort in FY2018.			-	0.200	-	-	-
Title: D9 Dozer Armor Cab Reverse Engineering Description: The Armored D9 dozer is a low density/specialized equipment used for shaping the battlefield while providing protection for the operator. When originally procured, the Army did not purchase technical data related to the Crew Protection Kit (CPK) and relied on the CPK Original Equipment Manufacturer (OEM) to supply parts and support. The CPK OEM is no longer able to provide support and the technical data is unavailable. Reverse engineering of the CPK is required to provide the technical knowledge allowing continued support for the system. FY 2018 Plans:			-	0.399	0.785	-	0.785

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army								Date: February 2018				
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Ship an existing D9 Armored cab to TARDEC for use and planning purposes. Cab will be assessed to determine the best method for Reverse Engineering. FY 2019 Base Plans: Execute the reverse engineering effort to include the develop of Level 3 Technical Data Packages (TDP) and fabrication/test of an armored cab. FY 2018 to FY 2019 Increase/Decrease Statement: Funding increase from FY2018 to FY2019 is due to increased Man-Year support costs needed for the development of Level 3 TDP, in addition to fabrication and testing of the armored cab.												
Accomplishments/Planned Programs Subtotals								2.192	3.889	2.745	-	2.745
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost	
• R05901: <i>High Mobility Engineer Excavator</i>	20.563	66.271	46.048	25.700	71.748	27.188	8.351	3.199	16.422	Continuing	Continuing	
• R03801: <i>Grader, Mtzd, Hvy</i>	4.789	0.989	0.000	-	0.000	-	-	-	-	0.000	5.778	
• X01500: <i>Hydraulic Excavator</i>	1.123	3.850	1.355	-	1.355	-	-	2.400	20.185	Continuing	Continuing	
• M06100: <i>Tractor Full Tracked, Med T-9</i>	5.311	-	0.000	-	0.000	2.685	-	-	-	0.000	7.996	
• R06701: <i>All Terrain Cranes</i>	67.790	8.935	13.031	-	13.031	17.057	31.445	38.061	35.566	Continuing	Continuing	
• R02800: <i>Scraper, Earthmoving</i>	26.233	11.180	7.961	-	7.961	-	-	11.960	11.960	0.000	69.294	
• R07001: <i>Enhanced Rapid Airfield Construction Capap</i>	2.779	2.563	0.980	-	0.980	0.979	3.557	9.819	18.037	0.000	38.714	
• R07003: <i>ERACC II Enhanced Earthmoving</i>	2.779	2.563	0.980	-	0.980	0.979	1.483	6.775	6.966	Continuing	Continuing	
• M05500: <i>Const Equip ESP</i>	15.338	19.032	37.017	-	37.017	35.790	22.249	24.950	23.382	Continuing	Continuing	
• ML5350: <i>Items Less Than \$5.0M (Const Equip)</i>	8.075	6.899	6.103	-	6.103	4.381	-	1.410	1.410	0.000	28.278	
Remarks												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) H01 / Combat Engineer Eq Ed
D. Acquisition Strategy Conduct research, development, and investigations on future Construction Equipment (CE) and identify the path forward for programs of record (POR) to be transitioned for Program Executive Officer Program Management. Identify technical advancements that can improve safety, reliability, survivability, transportability, availability, maintainability and reduce the logistical footprints for current and future CE equipment.		
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) H01 / Combat Engineer Eq Ed					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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+STIR	TBD	TACOM : Warren, Michigan	0.167	-		-		-		-		-	0.000	0.167	-
Subtotal			0.167	-		-		-		-		-	0.000	0.167	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Pre-Award requirements, KPP, selection criteria development, Testing of systems	Various	TACOM & TARDEC : Warren, MI	1.675	-		-		-		-		-	0.000	1.675	-
Driver Assist	TBD	TBD : TBD	2.183	1.265	Dec 2017	0.453	Apr 2018	0.324	Apr 2019	-		0.324	Continuing	Continuing	-
Design Armor Kits for Combat Engineer	Various	TARDEC : Warren, MI	5.995	-		0.399	Dec 2017	0.785	Dec 2018	-		0.785	0.000	7.179	-
Development of Simulator	Various	PEO Stricom : PEO, Stricom, Olrando, FL	8.983	-		-		-		-		-	0.000	8.983	-
Hazard Clearance at Speed	TBD	TARDEC : Warren, Michigan	0.001	-		-		-		-		-	0.000	0.001	-
Forced Entry: (Airborne/ Air Assault) Study/ Development	C/FFP	TBD : TBD	9.288	-		0.200		-		-		-	Continuing	Continuing	-
Market Research	TBD	TARDEC : Warren, Michigan	0.189	-		0.100	Apr 2018	0.100	Apr 2019	-		0.100	Continuing	Continuing	-
Machine Diagnostics	MIPR	Various : Various	0.123	0.477	Mar 2017	-		-		-		-	Continuing	Continuing	-
Technology Insertion/ System Improvement	TBD	TBD : TBD	0.462	-		0.575		-		-		-	Continuing	Continuing	-
Weight Reduction in Transparent Armor (TA)	C/TBD	TBD : TBD	-	-		0.200	Apr 2018	-		-		-	Continuing	Continuing	-
Subtotal			28.899	1.742		1.927		1.209		-		1.209	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) H01 / Combat Engineer Eq Ed					
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering/ Program Management	MIPR	TARDEC/TACOM : Warren, Michigan	1.791	0.450	Jan 2017	0.450	Oct 2017	1.037	Oct 2018	-		1.037	Continuing	Continuing	-
Subtotal			1.791	0.450		0.450		1.037		-		1.037	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Efficiency	MIPR	TARDEC, Warren, Michigan : TARDEC, Warren, Michigan	0.319	-		-		-		-		-	0.000	0.319	-
Operational Energy/Duty Cycle Monitoring	TBD	TBD : TBD	0.987	-		-		-		-		-	0.000	0.987	-
Non Nuclear Soil Density Set Testing	TBD	TARDEC : Warren, MI	0.050	-		-		-		-		-	0.000	0.050	-
Mine Clearing Armor Protection (MCAP)	TBD	TBD : TBD	-	-		1.512	Dec 2017	0.499	Dec 2018	-		0.499	Continuing	Continuing	-
Subtotal			1.356	-		1.512		0.499		-		0.499	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			32.213	2.192		3.889		2.745		-		2.745	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
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>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Driver Assist																												
System Engineer/Program Support																												
Operational Efficiency																												
Mine Clearing Armor Protection (MCAP)																												
Technology Insertion/System Improvement																												
Market Research																												
Weight Reduction in Transparent Armor (TA)																												
Forced Entry (Airborne/Air Assault) Study/Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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
Driver Assist	1	2018	4	2021
System Engineer/Program Support	1	2018	4	2023
Operational Efficiency	1	2018	4	2023
Mine Clearing Armor Protection (MCAP)	1	2018	4	2022
Technology Insertion/System Improvement	1	2017	4	2019
Market Research	1	2018	4	2023
Weight Reduction in Transparent Armor (TA)	2	2018	4	2019
Forced Entry (Airborne/Air Assault) Study/Development	1	2018	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) H02 / Tactical Bridging - Engineering Development			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
H02: Tactical Bridging - Engineering Development	-	15.197	14.923	12.504	-	12.504	49.454	13.783	23.057	8.343	0.000	137.261
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note The Joint Assault Bridge (JAB) will be funded in PE 643804/EW8 for FY18												
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 development and testing of the Bridge Supplemental Set (BSS), tests associated with the Low Rate Initial Production (LRIP) phase of the Line of Communication Bridge (LOCB) and Joint Assault Bridge (JAB). This project also funds efforts to upgrade and modernize the Bridging Product Management portfolio through the development of new systems such as the Structural Health Monitoring System, and the Family of Higher Military Load Classification Bridges (FoHMLC-B).												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Joint Assault Bridge (JAB) Development and Testing Description: Funding provided for Joint Assault Bridge (JAB) development and testing.								8.760	-	-	-	-
Title: Line of Communication Bridge (LOCB) Development and Testing Description: Funding for prototype development, commercial bridge analysis, commercial bridge performance assessment, developmental testing and operational testing of the Line of Communication Bridge (LOCB) system. FY 2018 Plans: Funding supports structural strength testing and AATC durability testing. FY 2019 Base Plans: Funding supports operational testing for the Line of Communication Bridge (LOCB) FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease in FY19 is due to completion of RIA bridge development effort in FY18.								2.387	3.698	2.903	-	2.903
Title: Bridge Supplemental Set (BSS) Description: Funding provided to develop a multi-functional, consolidated engineering set consisting of an anchorage system, access/egress traction improvement matting, power generation, tools, and a float bridge								4.050	4.775	4.553	-	4.553

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) H02 / Tactical Bridging - Engineering Development			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
protection device. The BSS is targeted for use with multiple tactical bridging systems to include the Line of Communication Bridge (LOCB), Improved Ribbon Bridge (IRB), and the Dry Support Bridge (DSB). It will also increase the capability of the Multi-Role Bridge Company (MRBC). FY 2018 Plans: FY18 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. FY 2019 Base Plans: FY19 RDTE will fund development efforts at Engineering Research and Development Center (ERDC) for the Analytical Hydrodynamics/Structural testing, Anchorage and Bridge Protection Device FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease in FY19 is due to completion of site stability-product qualification testing, anchorage and anchorage developmental testing in FY18.						
Title: Family of Higher Military Load Capacity Bridges Description: Funding provided to develop the Family of Higher Military Load Classification Bridges (FoHMLC-B). FoHMLC-B will replace Joint Assault Bridge and Dry Support Bridge sections, components and systems to support the heavier weights of next generation combat vehicles. FY 2018 Plans: FY18 funds will support developing an analysis of alternatives (AoA) for the Family of Higher MLC Bridges (FoHMLC-B), modeling/simulation, Bridge Lab upgrades, market research and to support MDD approval. FY 2019 Base Plans: FY19 funds will support the Family of Higher MLC Bridges (FoHMLC-B) Industry Day, Assault Vehicle Launched Bridge/Dry Support Bridge requirement analysis, and the development for the Requests for Proposals (RFP). FY 2018 to FY 2019 Increase/Decrease Statement: FY18 is the first year of funding for the Family of Higher MLC Bridges (FoHMLC-B)		-	6.450	5.048	-	5.048
Accomplishments/Planned Programs Subtotals		15.197	14.923	12.504	-	12.504

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army									Date: February 2018		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) H02 / Tactical Bridging - Engineering Development			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• G06520: BRIDGE SUPPLEMENTAL SET	-	-	0.000	-	0.000	17.966	33.027	36.029	34.247	0.000	121.269
• GZ3001: Joint Assault Bridge	64.752	128.350	142.255	-	142.255	205.772	226.964	290.954	248.729	Continuing	Continuing
• G82404: LINE OF COMMUNICATION BRIDGE LOCB	11.500	16.610	98.229	-	98.229	60.574	10.559	10.547	10.533	0.000	218.552
Remarks											
D. Acquisition Strategy											
Research Development Test & Evaluation 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 2019 Army												Date: February 2018			
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>			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering and Program Management	MIPR	Various : Various	5.233	1.822	Oct 2016	1.326	Oct 2017	1.100	Oct 2018	-		1.100	Continuing	Continuing	-
Subtotal			5.233	1.822		1.326		1.100		-		1.100	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Assault Bridge Development	C/FFP	DRS/GDLS : Saint Louis, MO/Sterling Hts, MI	51.429	-		-		-		-		-	0.000	51.429	-
Line of Communication Bridge Development	MIPR	Rock Island Arsenal (RIA) : Rock Island, IL	17.495	0.230	Feb 2017	0.800		-		-		-	Continuing	Continuing	Continuing
Bridge Supplemental Set- Anchorage	MIPR	Engineer Research and Development Center : Vicksburg, MS	0.096	1.000	Nov 2016	0.750	Nov 2017	0.250		-		0.250	0.000	2.096	-
Bridge Supplemental Set - Bridge Protection Device	MIPR	Engineer Research and Development Center : Vicksburg, MS	-	0.700	Nov 2016	0.450	Nov 2017	0.150		-		0.150	0.000	1.300	-
Bridge Supplemental Set - Site Stability	MIPR	Engineer Research and Development Center : Vicksburg, MS	-	1.200	Nov 2016	1.350	Nov 2017	0.350		-		0.350	0.000	2.900	-
Bridge Supplemental Set - Power Generation/Tools	MIPR	PM SKOT : Warren, MI	-	0.500	Nov 2016	0.350	Nov 2017	0.150		-		0.150	0.000	1.000	-
Family of High Military Load Capacity Bridges	MIPR	TBS : TBD	-	-		5.574		4.654		-		4.654	Continuing	Continuing	Continuing
Line of Communication Bridge Development Connector Redesign	MIPR	TARDEC : WARREN MI	-	0.500	Mar 2017	-		-		-		-	0.000	0.500	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev						Project (Number/Name) H02 / Tactical Bridging - Engineering Development			
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			69.020	4.130		9.274		5.554		-		5.554	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Bridge Lab Spt	MIPR	TARDEC - Bridge Lab : Warren, MI	-	0.675	Oct 2016	1.300	Oct 2017	0.800	Oct 2018	-		0.800	0.000	2.775	-
Subtotal			-	0.675		1.300		0.800		-		0.800	0.000	2.775	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Assault Bridge Testing	MIPR	Aberdeen Proving Grounds (APG) : APG, Maryland	17.463	8.000	Mar 2017	-		-		-		-	0.000	25.463	-
Line of Communication Bridge Testing	MIPR	ERDC : Vicksburg, MS	13.853	0.570		2.023		2.150		-		2.150	Continuing	Continuing	Continuing
Bridge Supplemental Set - Anchorage	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	-	-		0.250	Nov 2017	1.100	Nov 2018	-		1.100	Continuing	Continuing	Continuing
Bridge Supplemental Set - Bridge Protection Device	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	-	-		0.350	Nov 2017	0.750	Nov 2018	-		0.750	Continuing	Continuing	Continuing
Bridge Supplemental Set - Power Generation/Tools	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	-	-		0.150	Nov 2017	0.250	Nov 2018	-		0.250	Continuing	Continuing	Continuing
Bridge Supplemental Set - Site Stability	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	-	-		0.250	Nov 2017	0.800	Nov 2018	-		0.800	Continuing	Continuing	Continuing
Subtotal			31.316	8.570		3.023		5.050		-		5.050	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army										Date: February 2018			
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>			
		Prior Years	FY 2017	FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		105.569	15.197		14.923		12.504		-	12.504	Continuing	Continuing	N/A
Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>		Project (Number/Name) H02 / <i>Tactical Bridging - Engineering Development</i>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Joint Assault Bridge Development and Testing																												
Joint Assault Bridge Life Fire Test & Eval																												
Joint Assault Bridge Production Qualification Test																												
Joint Assault Bridge Developmental Test / Operational Test																												
Joint Assault Bridge Initial Operational Test & Eval																												
Joint Assault Bridge Full Rate Production Decision																												
Line Of Communication Bridge Development and Testing																												
Line Of Communication Bridge Durability																												
Line Of Communication Bridge Milestone "C"																												
Line Of Communication Bridge Log Demo																												
Line Of Communication Bridge IOT&E																												
Line Of Communication Bridge FRPDR																												
Bridge Supplemental Set - Milestone "B"																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) H02 / Tactical Bridging - Engineering Development	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Bridge Supplemental Set - Anchorage - Make or Buy Decision									6																			
									MBD - Anchor																			
Bridge Supplemental Set - Anchorage - Award									10																			
									Award - Anchor																			
Bridge Supplemental Set - Anchorage - Development Testing																												
Bridge Supplemental Set - Anchorage - Milestone "C"																												
Bridge Supplemental Set - Site Stability - Contract Award									8																			
									Award - SS																			
Bridge Supplemental Set - Site Stability - Development Testing																												
Bridge Supplemental Set - Site Stability - Milestone "C"																												
Bridge Supplemental Set - Bridge Protection Device - Make or Buy Decision									9																			
									MBD - BPD																			
Bridge Supplemental Set - Bridge Protection Device - Award																												
Bridge Supplemental Set - Bridge Protection Device - Developmental Testing																												
Bridge Supplemental Set - Bridge Protection Device - Milestone "C"																												
Family of High Military Load Capacity Bridging																												
Family of High Military Load Capacity Bridgi Abbreviated Capability Dev Document									1																			
									FoHMLC CDD																			

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) H02 / Tactical Bridging - Engineering Development
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Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Family of High Military Load Capacity Bridging Material Dev Decision								 FoHMLC MDD																				
Family of High Military Load Capacity Bridging Analysis of Alternatives																												
Family of High Military Load Capacity Bridging Milestone "B"												 FoHMLC MSB																
Family of High Military Load Capacity Bridging Low Rate Initial Production																										 FoHMLC		
Family of High Military Load Capacity Bridging AVLB/DSB Requirement Analysis																												
Family of High Military Load Capacity Bridging Prototype Development																												
Family of High Military Load Capacity Bridging Prototype Testing																												
Family of High Military Load Capacity Bridging OTA Award																							 FoHMLC OTA Award					
Family of High Military Load Capacity Bridging Milestone "C"																										 FoHMLC		
Family of High Military Load Capacity Bridging Log Development																												
Family of High Military Load Capacity Bridging Capabilities Production Doc																						 FoHMLC CPD						

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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
Joint Assault Bridge Development and Testing	1	2016	1	2019
Joint Assault Bridge Live Fire Test & Eval Armor Development	1	2016	4	2016
Joint Assault Bridge Life Fire Test & Eval	4	2016	4	2018
Joint Assault Bridge Production Qualification Test	4	2017	2	2018
Joint Assault Bridge Developmental Test / Operational Test	2	2018	2	2018
Joint Assault Bridge Initial Operational Test & Eval	3	2018	3	2018
Joint Assault Bridge Full Rate Production Decision	1	2019	1	2019
Line Of Communication Bridge Development and Testing	2	2012	4	2018
Line Of Communication Bridge DT&E	1	2016	4	2016
Line Of Communication Bridge Durability	1	2016	2	2018
Line Of Communication Bridge Milestone "C"	3	2018	3	2018
Line Of Communication Bridge Log Demo	1	2019	2	2019
Line Of Communication Bridge IOT&E	4	2019	1	2020
Line Of Communication Bridge FRPDR	2	2020	2	2020
Bridge Supplemental Set - Milestone "B"	4	2018	4	2018
Bridge Supplemental Set - Anchorage - Make or Buy Decision	1	2019	1	2019
Bridge Supplemental Set - Anchorage - Award	3	2019	3	2019
Bridge Supplemental Set - Anchorage - Development Testing	1	2020	2	2020
Bridge Supplemental Set - Anchorage - Milestone "C"	3	2020	3	2020
Bridge Supplemental Set - Site Stability - Contract Award	3	2019	3	2019
Bridge Supplemental Set - Site Stability - Development Testing	2	2020	3	2020
Bridge Supplemental Set - Site Stability - Milestone "C"	4	2020	4	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018	
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) H02 / Tactical Bridging - Engineering Development	
	Start		End	
Events	Quarter	Year	Quarter	Year
Bridge Supplemental Set - Bridge Protection Device - Make or Buy Decision	3	2019	3	2019
Bridge Supplemental Set - Bridge Protection Device - Award	1	2020	1	2020
Bridge Supplemental Set - Bridge Protection Device - Developmental Testing	3	2020	4	2020
Bridge Supplemental Set - Bridge Protection Device - Milestone "C"	1	2021	1	2021
Family of High Military Load Capacity Bridging	1	2018	2	2022
Family of High Military Load Capacity Bridgi Abbreviated Capability Dev Document	4	2017	4	2017
Family of High Military Load Capacity Bridging Material Dev Decision	3	2018	3	2018
Family of High Military Load Capacity Bridging Analysis of Alternatives	1	2019	1	2020
Family of High Military Load Capacity Bridging Milestone "B"	2	2019	2	2019
Family of High Military Load Capacity Bridging Low Rate Initial Production	4	2023	4	2023
Family of High Military Load Capacity Bridging AVLB/DSB Requirement Analysis	4	2018	3	2019
Family of High Military Load Capacity Bridging Prototype Development	2	2020	2	2021
Family of High Military Load Capacity Bridging Prototype Testing	1	2021	3	2022
Family of High Military Load Capacity Bridging OTA Award	4	2022	4	2022
Family of High Military Load Capacity Bridging Milestone "C"	4	2023	4	2023
Family of High Military Load Capacity Bridging Log Development	1	2024	2	2025
Family of High Military Load Capacity Bridging Capabilities Production Doc	2	2022	2	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) H14 / Materials Handling Equipment - Ed			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
H14: Materials Handling Equipment - Ed	-	0.924	0.745	0.333	-	0.333	0.629	0.634	0.509	0.666	0.000	4.440
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 the 5K Light Capability Rough Terrain Forklifts (LCRTF), Rough Terrain Container Handler (RTCH) 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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Platform Safety and Driver Assist								0.382	0.050	0.033	-	0.033
Description: Research and demonstrate technologies which would enhance and improve the safe operation of Material Handling Equipment to include sensors and cameras.												
FY 2018 Plans: Transition identified technologies onto additional MHE platforms such as the RTCH, ALTAS, and LCRTF. Continue integration of Commercial-off-the-Shelf (COTS) cameras, similar to backup cameras, and collision warning sensors to increase situational awareness of CE operator. Will result in the production representative prototype on vehicle by end of Fiscal Year 2021.												
FY 2019 Base Plans: Continue integration of Commercial-off-the-Shelf (COTS) cameras, similar to backup cameras, and collision warning sensors to increase situational awareness of CE operator. Will result in the production representative prototype on vehicle by end of Fiscal Year 2021. Development of additional technology to allow the machine to autonomously control and prevent unsafe operating conditions such as braking to avoid objects or to prevent roll overs.												
FY 2018 to FY 2019 Increase/Decrease Statement:												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) H14 / Materials Handling Equipment - Ed		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funding increase from FY2018 to FY2019 is due to the addition of project to develop technology for autonomous control.						
Title: Material Handling Equipment System Improvement Description: Develop Work Tool Enhancement prototype systems to provide additional machine capability. This may include sweepers, buckets, lift devices, fork enhancements, etc. Investigate commercial solutions for MHE replacement and possible attachments to increase capabilities and versatility. FY 2018 Plans: Integrate commercial solutions for MHE replacements and possible attachments to increase capabilities and versatility. FY 2019 Base Plans: Conduct market research for emerging commercial solutions for MHE replacements and possible attachments to increase capabilities and versatility.		0.242	0.050	0.050	-	0.050
Title: System Engineering/Program Management Description: System Engineering and Program Management support for Material Handling Equipment. FY 2018 Plans: Provide funds for System Engineering and Program Management support for Material Handling Equipment operations. FY 2019 Base Plans: Provide funds for System Engineering and Program Management support for Material Handling Equipment operations.		0.200	0.250	0.250	-	0.250
Title: Weight Reduction in Transparent Armor (TA) Description: Investigate technologies that will reduce the weight of TA while maintaining current protection levels or that will increase protection levels with no or minimal increase in weight. FY 2018 Plans:		-	0.195	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army									Date: February 2018		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) H14 / Materials Handling Equipment - Ed			
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Continue the work under the TARDEC Transparent Armor (TA) Small Business Innovative Research (SBIR) program which has already shown positive results to quality TA at the current protection level and continue to develop higher level of protection. FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease from FY2018 to FY2019 is due to completion of effort in FY2018.											
Title: Rough Terrain Container Handler Component Modernization Description: Research, investigate, and develop solutions to mitigate obsolescence on Rough Terrain Container Handler (RTCH) vehicles. This effort includes reverse engineering the Electronic Control Unit (ECU) component to develop a replacement to obsolete ECUs. Develop Engineering Change Proposals (ECPs) to modernize fleet of RTCH vehicles which includes replacing wiring harness, cab, and ECUs. FY 2018 Plans: Develop and integrate Engineering Change Proposals (ECPs) to modernize fleet of RTCH vehicles which includes replacing wiring harness, cab, and ECUs. FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease from FY2018 to FY2019 is due to completion of efforts in FY2018.							0.100	0.200	-	-	-
Accomplishments/Planned Programs Subtotals							0.924	0.745	0.333	-	0.333
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• G41002: 5K Light Capacity Rough Terrain (LCRT) Forklift	3.153	9.000	12.901	-	12.901	16.869	15.887	21.772	22.973	Continuing	Continuing
• MA4500: Modification Of In-Svc Equipment (OPA-3)	80.438	60.192	49.797	19.200	68.997	81.874	76.875	66.379	55.485	0.000	490.240
Remarks											
D. Acquisition Strategy											
Develop specifications for 5K Light Capability Rough Terrain Forklifts (LCRTF) improvements, and 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 All Terrain Lift Army System (ATLAS) using U.S. Army TARDEC's Center for Ground Vehicle Development and Integration. Test armored ATLAS at Aberdeen Proving Ground, MD. Develop additional capabilities for											

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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>
existing systems such as the LCRFT, RTCH and ATLAS. Award contracts with vehicle or attachment technology Original Equipment Manufacturers to integrate existing commercial attachment technologies onto the platforms to improve operator functions and system usefulness. Testing will be conducted at Aberdeen Proving Grounds, MD.		
<u>E. Performance Metrics</u> N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev						Project (Number/Name) H14 / Materials Handling Equipment - Ed			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-		-		-		-		-	0.000	0.032	-
Subtotal			0.032	-		-		-		-		-	0.000	0.032	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-		-		-		-		-	0.000	2.555	-
RTCH Component Modernization	SS/Various	Various : Various	1.006	-		0.200		-		-		-	0.000	1.206	-
Lightweight Armor for ATLAS II	MIPR	TARDEC : Warren, MI	0.350	-		-		-		-		-	0.000	0.350	-
Sling Load Attachment for RTCH	C/FFP	Kalmar RT Center : Cibolo, TX	0.100	-		-		-		-		-	0.000	0.100	-
Platform Safety/Driver Assist	TBD	TBD : TBD	-	0.430	Sep 2017	0.050	Dec 2017	0.033	Jan 2019	-		0.033	Continuing	Continuing	Continuing
MHE System Improvement	SS/FFP	Automation Alley : Troy, MI	-	0.294	Aug 2017	0.050	Mar 2018	0.050	Mar 2019	-		0.050	Continuing	Continuing	Continuing
Weight Reduction in Transparent Armor	TBD	TBD : TBD	-	-		0.195		-		-		-	Continuing	Continuing	Continuing
Subtotal			4.011	0.724		0.495		0.083		-		0.083	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-		-		-		-		-	0.000	0.055	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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>			
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Lightweight Armor for ATLAS II	MIPR	TARDEC : Warren, MI	0.110	-		-		-		-		-	0.000	0.110	-
System Engineering/ Program Management	MIPR	TARDEC : Warren, MI	-	0.200	Dec 2016	0.250	Dec 2017	0.250	Dec 2018	-		0.250	Continuing	Continuing	-
Subtotal			0.165	0.200		0.250		0.250		-		0.250	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Lightweight Armor for ATLAS II	TBD	TBD : TBD	0.133	-		-		-		-		-	0.000	0.133	-
System Improvements for LCRTF for Tactical Operations	TBD	TBD : TBD	0.405	-		-		-		-		-	0.000	0.405	-
Investigate high speed towing for LCRTF	TBD	TBD : TBD	0.047	-		-		-		-		-	0.000	0.047	-
Testing of ATLAS II Wider Forklift	MIPR	Various : Various	0.023	-		-		-		-		-	0.000	0.023	-
Subtotal			0.608	-		-		-		-		-	0.000	0.608	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			4.816	0.924		0.745		0.333		-		0.333	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
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>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Platform Safety/Driver Assist																												
MHE System Improvement																												
System Engineering/Program Management																												
RTCH Component Modernization																												
Weight Reduction Transparent Armor																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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
Platform Safety/Driver Assist	4	2017	4	2023
MHE System Improvement	1	2018	4	2023
System Engineering/Program Management	1	2017	4	2023
RTCH Component Modernization	2	2017	4	2019
Weight Reduction Transparent Armor	2	2017	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
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			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
L39: Field Sustainment Support Ed	-	3.569	3.147	2.223	-	2.223	2.974	3.052	3.146	3.247	0.000	21.358
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 Army in executing future movement and maneuver operations and distributed sustainment support and the Army's Modular Force Capabilities by maintaining readiness through fielding and integrating new equipment. This project also ensures Army Expeditionary Forces are capable of rapid deployment by providing aerial delivery initiatives. This project also ensures Army Expeditionary Forces are capable of rapid deployment through aerial delivery initiatives and reduces sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands in lift, combat zone footprint, and costs for logistical support.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Advanced Low Velocity Airdrop System (ALVADS) - Light and Heavy	2.301	0.119	-	-	-
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 2018 Plans: Complete logistics deliverables. Obtain Milestone C decision and transition ALVADS into production.					
FY 2018 to FY 2019 Increase/Decrease Statement: ALVADS will reach Milestone C decision in FY 2018 and program will transition to TACOM ILSC for production and fielding.					
Title: Extracted High and Low High Speed Container Delivery System (EHLSCDS)	1.268	1.228	0.248	-	0.248
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.					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L39 / Field Sustainment Support Ed				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: Conduct and complete Operational Testing (OT). Begin preparation for Milestone C documentation and work logistics deliverables.						
FY 2019 Base Plans: Complete logistics deliverables. Obtain Milestone C decision and transition ALVADS into production.						
FY 2018 to FY 2019 Increase/Decrease Statement: EHLSCDS will complete testing in FY 2018 and will reach Milestone C decision in FY 2019 and program will transition to TACOM ILSC for production and fielding.						
Title: Joint Precision Airdrop System-2K Block 1 upgrade (JPADS-BLK1) Description: Supports increasing the technological and design maturity, testing, and integration of several key initiatives focused on: maintaining system accuracy and reliability in Global Positioning System (GPS) denied environments; collision avoidance; more precise position determination software; and improved Guidance Navigation and Control (GN&C) hardware.		-	1.800	0.989	-	0.989
FY 2018 Plans: Begin system level qualification flight testing of JPADS 2K Block 1 integrated improvements in support of an updated Army Test and Evaluation Command (ATEC) safety confirmation for the JPADS 2K enhancements.						
FY 2019 Base Plans: Complete system level testing and documentation updates to incorporate Engineering Change Proposal (ECP) changes into production.						
FY 2018 to FY 2019 Increase/Decrease Statement: JPADS-BLK1 upgrade enhancement is being completed in FY 2019						
Title: Rapid Rigging and DeRigging Airdrop System (RRDAS) Description: Reduces rigging times while also providing the capability to rapidly de-rig loads on the drop zone. This will reduce the lead time to prepare Low Velocity Airdrop Load (LVADS) loads while also increasing the survivability of receiving ground forces by ensuring the airdrop loads (to include weapon systems, prime movers, trailers, etc.) are quickly de-rigged and made operational.		-	-	0.986	-	0.986
FY 2019 Base Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army						Date: February 2018					
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Obtain Milestone B decision and award RRDAS prototype development contract. Fabricate RRDAS prototypes.											
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funds are increasing from FY 18 to FY 19 as program is moving from Logistics and Engineering Equipment Advanced Development phase into Logistics and Engineering Equipment Engineering Development phase.											
Accomplishments/Planned Programs Subtotals						3.569	3.147	2.223	-	2.223	
C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• K39: <i>Field Sustainment Support Ad</i>	2.528	2.429	2.311	-	2.311	1.675	1.720	1.773	1.807	0.000	14.243
• MA7806: <i>Precision Airdrop</i>	4.298	4.147	3.751	1.980	5.731	3.788	2.079	2.140	2.184	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 2019 Army												Date: February 2018			
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			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Support	Various	PM FSS : Natick, MA	4.285	0.569	Nov 2016	0.600		0.403		-		0.403	0.000	5.857	Continuing
SBIR+STTR	TBD	Various : Various	0.129	-		-		-		-		-	0.000	0.129	-
Subtotal			4.414	0.569		0.600		0.403		-		0.403	0.000	5.986	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	15.710	0.450	Oct 2016	0.128		-		-		-	0.000	16.288	Continuing
EHLSCDS	Various	Various : Various	0.100	0.350	Jan 2017	-		0.150		-		0.150	0.000	0.600	-
JPADS	Various	Various : Various	-	-		0.600		0.250		-		0.250	0.000	0.850	-
RRDAS	Various	Various : Various	-	-		-		0.847		-		0.847	0.000	0.847	-
Subtotal			15.810	0.800		0.728		1.247		-		1.247	0.000	18.585	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-	0.050	Oct 2016	0.400		-		-		-	0.000	0.450	-
ALVADS	Various	Various : Various	-	0.050	Jan 2017	-		-		-		-	0.000	0.050	-
JPADS	Various	Various : Various	-	-		0.200		-		-		-	0.000	0.200	-
Subtotal			-	0.100		0.600		-		-		-	0.000	0.700	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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					
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	May 2017	0.360		-		-		-	0.000	11.040	Continuing
ALVADS-L&H	Various	Yuma Proving Ground (YPG), AZ/ OTC, NC : AZ	6.788	1.500	Nov 2016	-		-		-		-	0.000	8.288	Continuing
JPADS	Various	Various : Various	-	-		0.859		0.573		-		0.573	0.000	1.432	-
Subtotal			16.868	2.100		1.219		0.573		-		0.573	0.000	20.760	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			37.092	3.569		3.147		2.223		-		2.223	0.000	46.031	N/A
Remarks															

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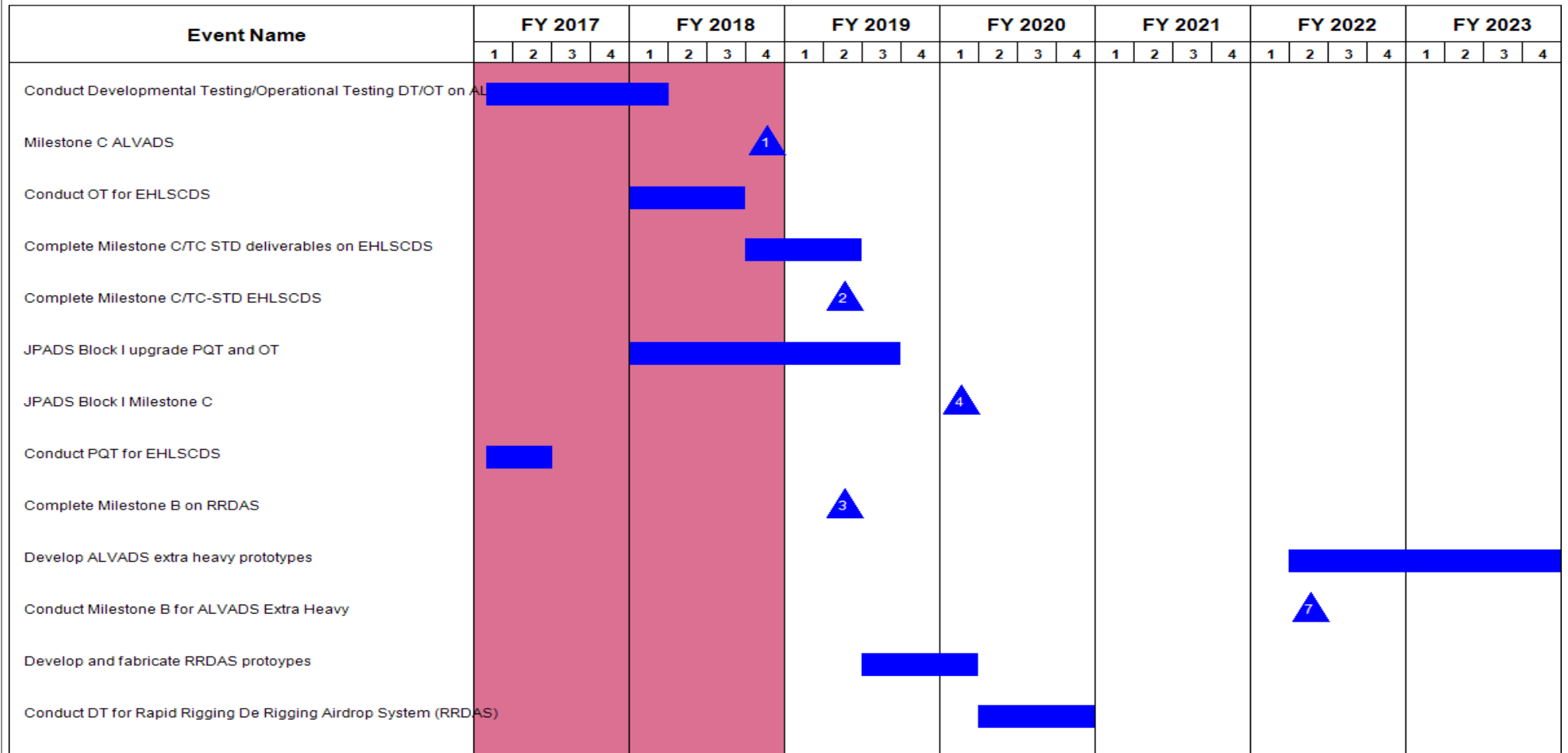
Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army

Date: February 2018

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-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>		Project (Number/Name) L39 / <i>Field Sustainment Support Ed</i>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Conduct OT for RRDAS																												
Complete Milestone C for RRDAS																												
Conduct DT and OT for Low Cost HSL components																												
Complete Milestone C for Low Cost HSL components																												
Conduct DT and OT for JPADS 10K Block I upgrade																												
Complete DT and OT for JPADS 10K Block I Upgrade																												
Conduct DT and OT for ALVADS DRAS capability																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>	Project (Number/Name) L39 / <i>Field Sustainment Support Ed</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Conduct Developmental Testing/Operational Testing DT/OT on ALVADS-L&H	1	2016	1	2018
Milestone C ALVADS	4	2018	4	2018
Conduct OT for EHLSCDS	1	2018	3	2018
Complete Milestone C/TC STD deliverables on EHLSCDS	4	2018	2	2019
Complete Milestone C/TC-STD EHLSCDS	2	2019	2	2019
JPADS Block I upgrade PQT and OT	1	2018	3	2019
JPADS Block I Milestone C	1	2020	1	2020
Conduct PQT for EHLSCDS	1	2017	2	2017
Complete Milestone B on RRDAS	2	2019	2	2019
Develop ALVADS extra heavy prototypes	2	2022	4	2023
Conduct Milestone B for ALVADS Extra Heavy	2	2022	2	2022
Develop and fabricate RRDAS prototypes	3	2019	1	2020
Conduct DT for Rapid Rigging De Rigging Airdrop System (RRDAS)	2	2020	4	2020
Conduct OT for RRDAS	3	2020	1	2021
Complete Milestone C for RRDAS	4	2021	4	2021
Conduct DT and OT for Low Cost HSL components	4	2020	2	2021
Complete Milestone C for Low Cost HSL components	4	2021	4	2021
Conduct DT and OT for JPADS 10K Block I upgrade	3	2021	2	2022
Complete DT and OT for JPADS 10K Block I Upgrade	4	2022	4	2022
Conduct DT and OT for ALVADS DRAS capability	1	2020	2	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) L41 / Water And Petroleum Distribution - Ed			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
L41: Water And Petroleum Distribution - Ed	-	6.541	8.005	10.774	-	10.774	8.885	8.944	9.046	9.404	0.000	61.599
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 water purification and waste water treatment, reutilization, storage, distribution, alternative water source acquisition, disposal, 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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: 3K Tactical Water Purification System (TWPS).								0.672	2.621	2.179	-	2.179
Description: The 3,000 (3k) Gallons per Hour (GPH) Tactical Water Purification System (TWPS) replaces the legacy 3,000 (3k) GPH Reverse Osmosis Water Purification Unit (ROWPU), which is currently the largest water purification capability in the Army's inventory and is nearing the end of its useful life. The 3k TWPS shall be the sole bulk water capability supporting Echelons Above Brigade (EAB) and will be the primary water purification capability for laundry and shower facilities. Purifies up to 3,000 GPH from any water source, including 60,000 m g/L Total Dissolved Solids (TDS) salt water and CBRN contaminated sources. Consists of feed water pumps, hoses, media and cartridge filters, high pressure pump, reverse osmosis elements, 3,000 gallon water storage and distribution system, and control panel. Supports all tactical water missions LH S/PLS compatible via C HU/ E-CHU												
FY 2018 Plans: Conduct Milestone B in 4QFY18. Conduct Critical Design Review (CDR) and complete detail design and begin prototype build.												
FY 2019 Base Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Complete prototype build. Begin Technical Data Package (TDP) development and conduct internal testing. FY 2018 to FY 2019 Increase/Decrease Statement: 3K TWPS increase in funding from FY18 to FY19 is due to increase in work year costs to complete prototype build and begin Technical Data Package (TDP) development.						
Title: Modular Tactical Retail Refueling System (MTRRS) Description: The Mobile Tactical Retail Refueling System (MTRRS) has 1,050 gallon capacity fuel tank, 17 gallons per minute electric fuel motor/pump, a filter separator, and a flow meter. MTRRS allows for different configurations and transport platforms including cargo trucks, trailers, and LHS flat-racks. The system can be removed from transport platform and operated on the ground. The MTRRS will replace the Tank Pump Unit (TPU) and Tank Unit Liquid Dispensing (TLUD) systems. MTRRS is a Family of Medium Tactical Vehicles (FMTV) transportable system that provides 1,050 gallons of filtered fuel to Echelons Above Brigade (EAB). FY 2018 Plans: Release Request for Proposal (RFP), conduct Source Selection Evaluation Board (SSEB), contract award. Achieve Milestone B/C FY 2019 Base Plans: Test Readiness Review. Project Request For Proposal (RFP) release and prepare. Development Testing (DT). FY 2018 to FY 2019 Increase/Decrease Statement: MTRRS decrease in funding from FY18 to FY19 is due to a competitive award in 3QFY18. FY19 only preparation for Developmental Testing (DT) and Preliminary Design Review (PDR).		0.243	3.460	1.000	-	1.000
Title: Water Bison Description: The Unit Water Trailer (Water Bison) is a replacement for the 400 gallon Water Buffalo. A second variant, the Water Bison Lite, is also required. The Water Bison consists of a 500 gallon baffled capacity tank and the Water Bison Lite consists of a 250 gallon baffled capacity tank. They provide the modular force an efficient method of transporting a full day supply (DOS) of bulk potable water. Both systems include freeze protection that are mounted on a trailer and include all hoses and fittings necessary to dispense water by means of gravity flow. The Water Bison and Water Bison Lite will be used by units at all echelons. The Family of Medium Tactical Vehicles (FMTV) shall be capable of towing this system. FY 2018 Plans:		-	0.045	0.045	-	0.045

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) L41 / Water And Petroleum Distribution - Ed		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Release Request for Proposal (RFP). Continue working Milestone B/C documentation. Develop Scope of Work.						
FY 2019 Base Plans: Milestone B documentation.						
Title: Early Entry Fluid Distribution System (E2FDS). Description: The Early Entry Fluid Distribution System (E2FDS) is a high throughput flexible conduit system for the transport of bulk petroleum or water on the modular battlefield. It is a rapidly-emplaced conduit system capable of the throughput of 850,000 gallons of fuel or 650,000 gallons of raw non-potable water, per a 20 hour operational day through a trace up to 50 miles long. It is a new materiel system that enhances the Inland Petroleum Distribution System (IPDS) pipeline and rapidly establishes new or extends existing pipeline traces. E2FDS requires little to no engineer support to emplace the conduit or pump stations. Pump stations are fully automated and centrally controlled.		5.626	0.747	4.885	-	4.885
FY 2018 Plans: Perform Developmental Testing (DT) on the E2FDS non-developmental components including the pump stations, employment and retrieval system, and hose segments.						
FY 2019 Base Plans: Complete system design and development, Test Readiness Review (TRR), test assets delivered. Release Production Request For Proposal (RFP).						
FY 2018 to FY 2019 Increase/Decrease Statement: E2FDS increase in funding from FY18 to FY19 is due to additional work years required to complete system design and development and preparation/release of the Request for Proposal (RFP) for production contract.						
Title: Petroleum Expeditionary Analysis Kit (PEAK) Description: The Petroleum Expeditionary Analysis Kit (PEAK) is a stand alone system that at point of consumption will rapidly verify petroleum products' suitability for use. The PEAK will at point of consumption evaluate kerosene-based and diesel fuels used in ground systems and aircraft. The PEAK replaces Aviation Fuels ContaminationTest Kit (AFCTK). It will provide the field with the capability to determine fuel grade and additives at the point of consumption. The PEAK will enable fuel quality surveillance within Brigade Combat Teams and Support Brigades.		-	0.712	0.847	-	0.847
FY 2018 Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) L41 / Water And Petroleum Distribution - Ed		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Prepare and release developmental Request For Proposal (RFP). Prepare documents and achieve Milestone B. Award Developmental Contract. FY 2019 Base Plans: Developmental Testing. Achieve Milestone C. FY 2018 to FY 2019 Increase/Decrease Statement: PEAK increase in funding from FY18 to FY19 is due to increase in Work Year efforts for developmental test.						
Title: Bulk Fuel Distribution System (BFDS) Description: The Bulk Fuel Distribution System (BFDS) is a 7,500 gallon mobile petroleum distribution system; pulled primarily by the M915A3 or later versions. The BFDS provides bulk distribution between large fuel storage areas and will include a radar level gauge sensor for mission command reporting; providing asset and in-transit visibility. The BFDS is not capable of off-road or retail operations. The BFDS provides theater bulk petroleum distribution to maximize throughput to support early entry buildup and onward movement of forces. FY 2018 Plans: Materiel Development Decision (MDD). Market Research. FY 2019 Base Plans: Develop purchase description and MS C documentation.		-	0.045	0.045	-	0.045
Title: Petroleum Water Trace Tool (PAWTL) Description: Petroleum and Water Trace Locator (PAWTL) supports all Army petroleum and water pipeline systems. It is a geospatial based software application that allows planners to develop pipeline traces based on any mission scenario. The software identifies roadways and uses terrain elevation data to recommend pipeline routes and pump station placement. FY 2018 Plans: Fund Army Research laboratory. Assume contract management and complete Small Business Innovative Research (SBIR) effort. Refinement of source code for pipeline trace tool. FY 2018 to FY 2019 Increase/Decrease Statement: PAWTL decrease in funding from FY18 to FY19 due to completion of (SBIR) efforts in FY18.		-	0.375	-	-	-
Title: Black Water Treatment (BWT)		-	-	0.045	-	0.045

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L41 / Water And Petroleum Distribution - Ed				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: Black Water Treatment (BWT) treats waste water to discharge standards. FY 2019 Base Plans: Support Material Development Decision (MDD). Conduct Market Research. FY 2018 to FY 2019 Increase/Decrease Statement: Black Water Treatment (BWT) FY19 program begins to support Materiel Development Decision (MDD) and market research.						
Title: Tactical Fuel Distribution System (TFDS) Description: The Tactical Fuel Distribution System (TFDS) provides theater bulk petroleum distribution to maximize throughput in order to support early entry, buildup, and onward movement of forces. The TFDS, with retail petroleum capability, will improve operational and sustainment support from the Theater Army to Echelons Above Brigade (EAB). The TFDS has a 5,000 gallon fuel capacity and will replace the current M967 and M969 tanker trailers. The M1088 tractor and its variants are the primary mover for the TFDS. FY 2019 Base Plans: Supports Materiel Development Decision (MDD) and market research. FY 2018 to FY 2019 Increase/Decrease Statement: Program begins in FY2019.		-	-	0.045	-	0.045
Title: PM Support Description: Program Management (PM) Support is matrix support that includes PM travel expenses and systems engineering oversight required to manage Research, Development, Technology and Engineering (RDT&E) projects. Includes salaries and travel for the support of programs within this Project. FY 2019 Base Plans: Funds support, travel, and general oversight efforts. FY 2018 to FY 2019 Increase/Decrease Statement: Program support consolidated into a separate item in FY 2019. In FY 2018, Program Support costs were distributed amongst the separate programs.		-	-	1.683	-	1.683
Accomplishments/Planned Programs Subtotals		6.541	8.005	10.774	-	10.774

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018	
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			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• K41: RDTE, Logistics and Engineer Equipment - Advanced Development	2.237	4.773	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• MA6000: Distribution Systems, Petroleum & Water	113.896	47.597	39.730	-	39.730	44.631	42.570	34.655	29.374	0.000	352.453
• R67500: PETROLEUM QUALITY ANALYSIS SYSTEM	8.207	6.903	1.770	-	1.770	-	-	-	-	0.000	16.880
Remarks											
D. Acquisition Strategy											
Develop engineering prototypes for the 3K Tactical Water Purification System (3K TWPS), Petroleum Tankers, 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. Initiate IPT's and develop acquisition strategies for Water Bison, Petroleum Expeditionary Analysis Kit (PEAK) and Small Unit Water Purifier (SUWP); Black Water, Gray Water, Mobile Tactical Retail Refueling System (MTRRS). Conduct developmental and operational testing where applicable for 3K TWPS, Bison, E2FDS, Petroleum Tankers, MTRRS, PEAK, SUWP, Black water. Conduct Source Selection Evaluation Boards (SSEBs) within the Petroleum and Water Systems portfolio. Develop documentation in support of Milestone Decisions.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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>			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Support	MIPR	TACOM : Warren, MI	-	-		-		1.683	Nov 2018	-		1.683	0.000	1.683	-
Subtotal			-	-		-		1.683		-		1.683	0.000	1.683	N/A
Remarks not applicable															
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Petroleum Expeditionary Analysis Kit (PEAK)	C/FFP	TACOM ACC : Warren, MI	-	-		0.500	Jan 2018	0.300	Feb 2019	-		0.300	0.000	0.800	Continuing
3K Tactical Water Purification System (3K TWPS)	MIPR	TARDEC : Warren, MI	0.667	0.202	Jun 2017	2.489	Jan 2018	1.023	Jan 2019	-		1.023	0.000	4.381	Continuing
Early Entry Fluid Distribution System (E2FDS)	C/FFP	DRS Systems : TBD	2.762	0.424		0.131	Mar 2018	0.014	Feb 2019	-		0.014	0.000	3.331	Continuing
Modular Tactical Retail Refueling System (MTRRS)	C/FFP	TACOM : Warren, MI	2.647	-		3.250		-		-		-	0.000	5.897	Continuing
Petroleum Water Trace Tool (PAWTL)	MIPR	TARDEC : Warren, MI	-	-		0.015		-		-		-	0.000	0.015	-
Subtotal			6.076	0.626		6.385		1.337		-		1.337	0.000	14.424	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
3K Tactical Water Purification System (3K TWPS)	MIPR	NFESC : Port Hueneme, CA	-	0.470		0.132	Nov 2017	1.156	Oct 2018	-		1.156	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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			
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Water Bison	MIPR	TARDEC : Warren, MI	-	-		0.045	Oct 2017	0.045	Oct 2018	-		0.045	0.000	0.090	-
Early Entry Fluid Distribution System (E2FDS)	MIPR	TARDEC : Warren, MI	1.280	5.202	Jun 2017	0.215	Dec 2017	1.024	Oct 2018	-		1.024	0.000	7.721	Continuing
Mobile Tactical Retail Refueling System (MTRRS)	MIPR	TARDEC : Warren, MI	-	0.243	Jun 2017	0.210	Dec 2017	0.500	Oct 2018	-		0.500	0.000	0.953	-
Bulk Fuel Distribution System (BFDS)	MIPR	TARDEC : Warren, MI	-	-		0.045	Oct 2017	0.045	Nov 2018	-		0.045	0.000	0.090	-
PEAK	MIPR	TARDEC Warren, MI : Warren, MI	-	-		0.180	Jan 2017	0.300	Oct 2018	-		0.300	0.000	0.480	-
Petroleum Water Trace Tool (PAWTL)	MIPR	TARDEC : Warren, MI	-	-		0.360	Feb 2017	-		-		-	0.000	0.360	-
Black Water	MIPR	TARDEC : Warren, MI	-	-		-		0.045	Nov 2018	-		0.045	0.000	0.045	-
Retail	MIPR	TARDEC : Warren, MI	-	-		-		0.045	Nov 2018	-		0.045	0.000	0.045	-
Subtotal			1.280	5.915		1.187		3.160		-		3.160	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Early Entry Fluid Distribution System (E2FDS)	MIPR	Aberdeen Proving Ground : APG, MD	-	-		0.401	Aug 2018	3.847	Jan 2019	-		3.847	0.000	4.248	-
3K Tactical Water	MIPR	TARDEC : Warren, MI	0.200	-		-		-		-		-	0.000	0.200	-
Modular Tactical Retail Refueling System (MTRRS)	MIPR	Yuma : Yuma Proving Ground, AZ	0.317	-		-		0.500	Apr 2019	-		0.500	0.000	0.817	-

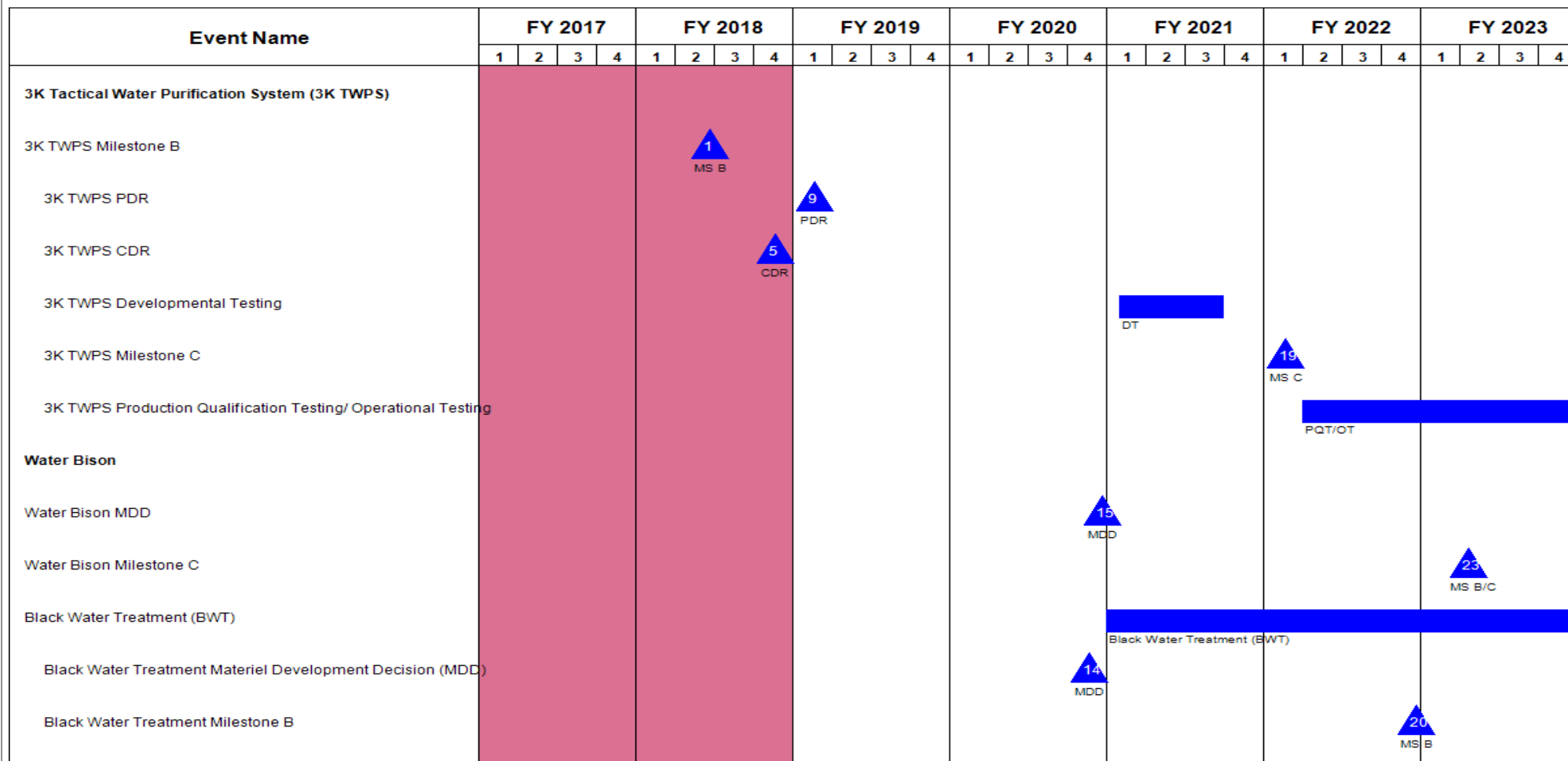
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army													Date: February 2018		
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>						Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>			
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Petroleum Expeditionary Analysis Kit (PEAK)	MIPR	TARDEC : Warren, MI	-	-		0.032	Sep 2018	0.247	Jan 2019	-		0.247	0.000	0.279	-
Subtotal			0.517	-		0.433		4.594		-		4.594	0.000	5.544	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			7.873	6.541		8.005		10.774		-		10.774	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army **Date:** February 2018

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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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity

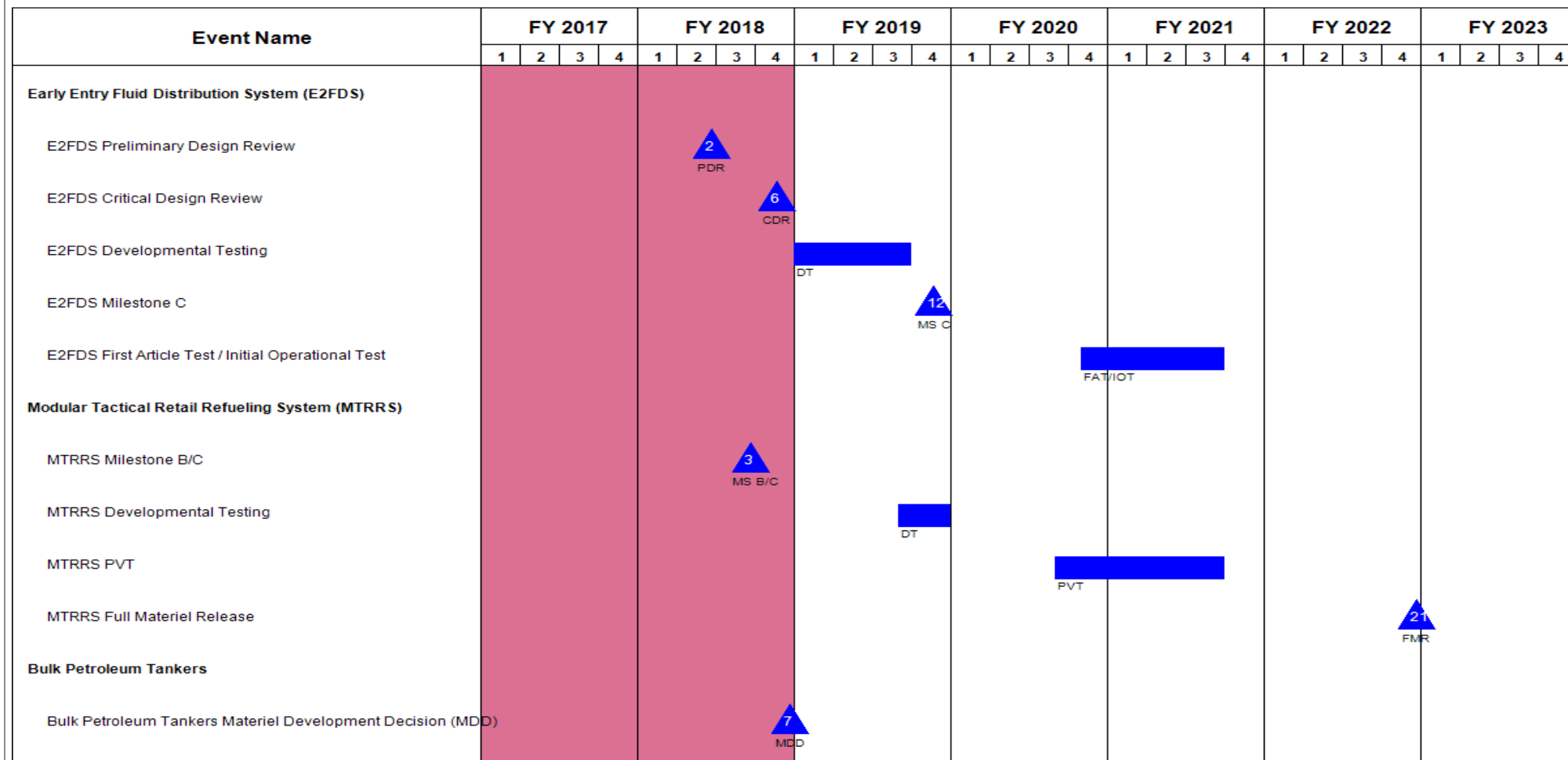
2040 / 5

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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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>		Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Modular Fuel System (MFS)	<div>OT</div>																																			
Tactical Petroleum Tankers																													<div>24</div> <div>MS B</div>							
Tactical Petroleum Tankers Milestone B																																				
Petroleum Expeditionary Analysis Kit (PEAK)	<div>Petroleum Expeditionary Analysis Kit (PEAK)</div>																																			
PEAK Reqts. Refinement & Tech. Dev.																																				
PEAK Materiel Development Decision (MDD)																																				
PEAK Mileston B																																				
PEAK Milestone C																																				
PEAK Full Materiel Release (FMR)																																				
Small Unit Water Purifier (SUWP)																																				
SUWP Materiel Development Decision (MDD)																																				
Gray Water Recycling																																				

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / <i>Logistics and Engineer Equipment - Eng Dev</i>		Project (Number/Name) L41 / <i>Water And Petroleum Distribution - Ed</i>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Gray Water Recycling Material Development Decision (MDD)													13															
Gray Water Recycling Milestone B														16														
Gray Water Recycling Milestone C																					22							
Tactical Petroleum Tankers Material Development Decision (MDD)									11																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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
3K Tactical Water Purification System (3K TWPS)	2	2016	2	2023
3K TWPS Milestone B	2	2018	2	2018
3K TWPS PDR	1	2019	1	2019
3K TWPS CDR	4	2018	4	2018
3K TWPS Developmental Testing	1	2021	3	2021
3K TWPS Milestone C	1	2022	1	2022
3K TWPS Production Qualification Testing/ Operational Testing	2	2022	1	2024
Water Bison	1	2021	4	2024
Water Bison MDD	4	2020	4	2020
Water Bison Milestone C	2	2023	2	2023
Black Water Treatment (BWT)	1	2021	1	2024
Black Water Treatment Materiel Development Decision (MDD)	4	2020	4	2020
Black Water Treatment Milestone B	4	2022	4	2022
Early Entry Fluid Distribution System (E2FDS)	1	2017	4	2020
E2FDS Preliminary Design Review	2	2018	2	2018
E2FDS Critical Design Review	4	2018	4	2018
E2FDS Developmental Testing	1	2019	3	2019
E2FDS Milestone C	4	2019	4	2019
E2FDS First Article Test / Initial Operational Test	4	2020	3	2021
Modular Tactical Retail Refueling System (MTRRS)	1	2017	4	2022
MTRRS Milestone B/C	3	2018	3	2018
MTRRS Developmental Testing	3	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018	
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	
	Start		End	
Events	Quarter	Year	Quarter	Year
MTRRS PVT	3	2020	3	2021
MTRRS Full Materiel Release	4	2022	4	2022
Bulk Petroleum Tankers	1	2017	2	2020
Bulk Petroleum Tankers Materiel Development Decision (MDD)	4	2018	4	2018
Modular Fuel System (MFS)	1	2017	2	2017
MFS Operational Test (OT)	1	2017	2	2017
Tactical Petroleum Tankers	2	2018	2	2022
Tactical Petroleum Tankers Milestone B	3	2023	3	2023
Petroleum Expeditionary Analysis Kit (PEAK)	1	2017	4	2021
PEAK Reqts. Refinement & Tech. Dev.	1	2017	4	2020
PEAK Materiel Development Decision (MDD)	3	2018	3	2018
PEAK Mileston B	1	2019	1	2019
PEAK Milestone C	3	2021	3	2021
PEAK Full Materiel Release (FMR)	4	2021	4	2021
Small Unit Water Purifier (SUWP)	4	2017	4	2021
SUWP Materiel Development Decision (MDD)	3	2019	3	2019
Gray Water Recycling	1	2020	4	2033
Gray Water Recycling Material Development Decision (MDD)	1	2020	1	2020
Gray Water Recycling Milestone B	4	2020	4	2020
Gray Water Recycling Milestone C	4	2022	4	2022
Tactical Petroleum Tankers Material Development Decision (MDD)	3	2019	3	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) L43 / ENGINEER SUPPORT EQUIPMENT - ED			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
L43: ENGINEER SUPPORT EQUIPMENT - ED	-	2.352	3.795	0.341	-	0.341	1.230	3.169	0.198	1.422	0.000	12.507
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 and photo support sets. 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), Airfield Damage Repair Kit (ADRK), 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. Project will explore Additive Manufacturing for Engineer systems. Funding will support the procurement of market samples and testing for Soldier Portable Sets, Kits, and Outfits (SKO), Special Tools initiative, 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).

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 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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Family of Power Utility Kits (FoPUK)	0.750	2.341	0.050	-	0.050
Description: Conduct Market Research, Develop, and Initiate procurement activities for Family of Power Utility Kits (FoPUK).					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L43 / ENGINEER SUPPORT EQUIPMENT - ED				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: Procure and test Production Representative System (PRS), Engineering and Quality Assurance, and Program Management.						
FY 2019 Base Plans: TM Development, Validation, Log Demo, Verification, Engineer/QA/PM Support						
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 because program approval was delayed and funds shifted to FY18 to align with program.						
Title: Urban Search and Resue (USR) Description: Conduct Market Research, prepare documentation, and procure market samples for the Urban Search and Rescue (USR).		1.252	-	-	-	-
Title: Supervisory Propulsion, Emergency and Recovery Set (SPEaRS) Description: Prepare documentation, conduct market research, procure production representative, and complete required testing.		0.350	0.430	0.084	-	0.084
FY 2018 Plans: Documentation preparation, production representative system, testing support. Provide Engineer, Quality Assurance, and program management support.						
FY 2019 Base Plans: TM Development, Engineer/QA/PM Support						
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 because funding alignment with POM funding in FY19						
Title: Engineering and Quality Assurance Description: Engineering and Quality Assurance of engineering SKOs		-	0.300	0.124	-	0.124
FY 2018 Plans: Engineering and Quality Assurance of engineering SKOs						
FY 2019 Base Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L43 / ENGINEER SUPPORT EQUIPMENT - ED				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Engineering and Quality Assurance of engineering SKOs						
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 because support costs were allocated to specific programs in the R-3.						
Title: Airfield Damage Repair Kit (ADRK) Description: Conduct Market Research and Procure Market Samples for the ADRK. FY 2018 Plans: Documentation preparation, product representative set, Engineer Quality Assurance, and Program management. FY 2019 Base Plans: Engineer/QA/PM Support FY 2018 to FY 2019 Increase/Decrease Statement: Increase from FY18 to FY19 due to alignment with anticipated POM funding and cancellation of US&R		-	0.150	0.015	-	0.015
Title: Program Managment Support Description: Program support costs associated with emerging program development. FY 2018 Plans: Salary support in the product office for emerging programs. FY 2019 Base Plans: Salary support in the product office for emerging programs. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 because support costs were allocated to specific programs in the R-3.		-	0.249	0.048	-	0.048
Title: Special Tools Description: Develop Rapid Deployment Sets, Kits, and Outfits (SKOs) - Special Tool and support to Engineer combat and constructions sets along with diving and boats / motors equipment. FY 2018 Plans: Market Research for Special Tools, PRS Hardware, Test, Engineer/QA/PM Support FY 2019 Base Plans:		-	0.325	0.020	-	0.020

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018							
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total						
Market Research for Special Tools, PRS Hardware, Test, Engineer/QA/PM Support											
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Decrease from FY18 to FY19 because of decrease in total requirements.											
Accomplishments/Planned Programs Subtotals		2.352	3.795	0.341	-						
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• R07001: <i>Enhanced Rapid Airfield Construction Capap</i>	2.779	2.563	0.980	-	0.980	0.979	3.557	9.819	18.037	0.000	38.714
• R12001: <i>Family of Boats and Motors</i>	3.567	4.302	5.806	-	5.806	3.916	2.244	0.304	2.584	0.000	22.723
Remarks											
D. Acquisition Strategy Programs will progress from pre Milestone Decision Document (MDD) activities through market research, market samples, Description for Purchase, development, production representative systems and testing. Modernization and Optimization of existing tools and testing of market samples will progress from Engineering and Manufacturing Development (EMD) and transition into production. All efforts will support the two level maintenance concept utilizing commercial technologies and incorporating them into SKOs to support next generation weapon and support systems.											
E. Performance Metrics N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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>			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	MIPR	PM SKOT : MI	-	0.159	Dec 2016	0.249	Dec 2017	0.048	Dec 2018	-		0.048	Continuing	Continuing	-
Subtotal			-	0.159		0.249		0.048		-		0.048	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Conduct Market Research for Family of Power Utility Kits (FoPUK)	MIPR	TBS : TBS	-	0.540		1.451		0.040	Oct 2018	-		0.040	Continuing	Continuing	-
Market Samples for Supervisory, Propulsion, Emergency and Recovery Set (SPEARS)	MIPR	TBS : TBS	-	0.263		-		0.040	Oct 2018	-		0.040	Continuing	Continuing	-
Conduct Market Research for Urban Search and Rescue	MIPR	TBS : TBS	-	0.893		-		-		-		-	0.000	0.893	-
Airfield Damage Repair Kit (ADRK)	TBD	TBS : TBS	-	-		0.055		-		-		-	0.000	0.055	-
Special Tools hardware	TBD	TBD : TBD	-	-		0.100		0.005	Jan 2019	-		0.005	0.000	0.105	-
Subtotal			-	1.696		1.606		0.085		-		0.085	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 - FoPUK	MIPR	ECBC/ARDEC : Rock Island, IL	-	-		0.590		0.010	Oct 2018	-		0.010	Continuing	Continuing	-
Engineering and Quality Assurance (ES&SUS)	MIPR	ECBC/ARDEC : Rock Island, IL	-	0.110		-		-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev						Project (Number/Name) L43 / ENGINEER SUPPORT EQUIPMENT - ED			
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineer and Quality Assurance Support - SPEARS	MIPR	ECBC/ARDEC : Rock Island, IL	-	0.087		0.080		0.045	Oct 2018	-		0.045	Continuing	Continuing	-
Engineering and Quality Assurance - US&R	MIPR	ECBC/ARDEC : Rock Island, IL	-	0.300		-		-		-		-	Continuing	Continuing	-
General Engineer Support for Engineer Portfolio SKOs	MIPR	ECBC : Rock Island, IL	-	-		0.080		0.083	Oct 2018	-		0.083	Continuing	Continuing	-
Packaging Support for Engineer Portfolio SKOs	MIPR	ECBC : Rock Island, IL	-	-		0.080		0.040	Oct 2018	-		0.040	Continuing	Continuing	-
Technical Manual Support	MIPR	TACOM Publications : Warren, MI	-	-		0.140		-		-		-	Continuing	Continuing	-
Engineer and Quality Assurance Airfield Damage Repair Kit (ADRK)	MIPR	ECBC/ARDEC : Rock Island, IL	-	-		0.095		0.015	Oct 2018	-		0.015	Continuing	Continuing	-
Special Tools	TBD	TBD : TBD	-	-		0.225		0.015	Oct 2018	-		0.015	Continuing	Continuing	-
Subtotal			-	0.497		1.290		0.208		-		0.208	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Family of Power Utility Kits	MIPR	ATEC : Aberdeen	-	-		0.300		-		-		-	0.000	0.300	-
SPEARS testing	MIPR	ATEC : Aberdeen	-	-		0.350		-		-		-	0.000	0.350	-
Subtotal			-	-		0.650		-		-		-	0.000	0.650	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	2.352		3.795		0.341		-		0.341	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army							Date: February 2018			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev			Project (Number/Name) L43 / ENGINEER SUPPORT EQUIPMENT - ED				
	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
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>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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 Family of Power Utility Kit																												
Market research, develop, build, test Urban Search and Rescue																												
Procurement of test articles and testing of Rigid Inflatable Boat																												
Procure Test Articles and Test Soldier Portable Sets																												
Procurement of test articles and testing of Airfield Damage Repair Kit																												
Procurement of test articles and testing of Special Tools																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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 Family of Power Utility Kit	1	2017	4	2020
Market research, develop, build, test Urban Search and Rescue	1	2017	4	2020
Procurement of test articles and testing of Rigid Inflatable Boat	1	2016	2	2018
Procure Test Articles and Test Soldier Portable Sets	1	2018	4	2022
Procurement of test articles and testing of Airfield Damage Repair Kit	2	2018	4	2019
Procurement of test articles and testing of Special Tools	1	2018	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) L46 / Maintenance Support Equipment			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
L46: Maintenance Support Equipment	-	1.813	2.053	1.412	-	1.412	1.897	1.947	1.829	2.044	0.000	12.995
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, Soldier portable 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.

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 Standard Automotive Tool Set (SATS) maintenance modules, Armament Repair Shop Set 2, Mobile Ammunition Processing Facility (MAPF), Special Tools initiatives, shelter mounted system development; packaging development; and technical support for emerging JCIDS materiel requirements documents. Additive Manufacturing upgrades to the Metal Working and Machining Shop Set (MWMSS) to include a 3-D printing and associated digital library capability. Modernization upgrades increase effectiveness while improving efficiency, reliability and maintainability while supporting emerging Army systems as well as using lower cost set components.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Next Generation Shop Equipment, Welding (SEW)	0.893	0.565	0.256	-	0.256

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) L46 / Maintenance Support Equipment		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: Develop and Test new components of Shop Equipment, Welding FY 2018 Plans: Production Representative System (PRS) development, test, log development, Engineering, Quality Assurance, and Program Management. FY 2019 Base Plans: Test, Technical Manual Development, Validation, Log Demo, Verification, Engineering, Quality Assurance, and Program Management. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 because funded testing in FY18 and it will be complete by FY19.						
Title: Armament Repair Shop Set (ARSS) 2 Description: ARSS Shelter Modernization FY 2018 Plans: Build the PRS with depot and test the PRS. Provide Engineer, Quality Assurance, and Program Management support. FY 2019 Base Plans: Test, Technical Manual Development, Validation, Log Demo, Verification, Engineering, Quality Assurance, and Program Management. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 because testing and prototype hardware development procured in FY18 and not in FY19.		-	0.537	0.528	-	0.528
Title: Special Tools Description: Develop Rapid Deployment Sets, Kits, and Outfits (SKOs) - Special Tool and support to Tactical and Combat Vehicles. FY 2018 Plans:		0.043	0.015	0.010	-	0.010

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L46 / Maintenance Support Equipment			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Market Research for Special Tools, PRS Hardware, Test, Engineering, Quality Assurance, and Program Management. FY 2019 Base Plans: Market Research for Special Tools, PRS Hardware, Test, Engineering, Quality Assurance, and Program Management. FY 2018 to FY 2019 Increase/Decrease Statement: Increase from FY18 to FY19 because funded support for additional platform systems.						
Title: Refrigeration Tool Kit (RTK) Description: Develop RTK Individual and Base equipment, procure test articles and development of log products. FY 2018 Plans: TM Development, Validation, Log Demo, Verification, Engineering, Quality Assurance, and Program Management. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 because RTK will be in production in FY19 and will no longer require RDTE funds.		0.263	0.153	-	-	-
Title: MWMSS Additive Manufacturing Description: Develop Additive Manufacturing capability for Army systems, Limited User Experiment and Evaluation. FY 2019 Base Plans: Market Research, Development and Test of 3-D printing/Additive Manufacturing/Digital Library. FY 2018 to FY 2019 Increase/Decrease Statement: Increase from FY18 to FY19 because this is a new requirement in FY19.		-	-	0.015	-	0.015
Title: Mobile Maintenance Equipment Shop Set Description: Modernization / Redesign efforts of maintenance support equipment of the Mobile Maintenance Equipment Systems in support of technological advances, environmental/safety constraints and to support emerging systems		0.454	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) L46 / Maintenance Support Equipment		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Mobile Ammunition Processing Facility (MAPF) Description: Concept and design development for MAPF. FY 2018 Plans: Market Research, Engineering, Quality Assurance, and Program Management. FY 2018 to FY 2019 Increase/Decrease Statement: Increase from FY18 to FY19 because we funded prototype hardware with FY19 and not with FY18.		-	0.209	-	-	-
Title: The Fire Suppression Refill System (FSRS) Description: Development and Integration efforts for the FSRS. FY 2018 Plans: Test Article Build, Test, Log Development, Engineering, Quality Assurance, and Program Management. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 because FSRS will be in production in FY19 and will no longer require RDTE funds.		-	0.200	-	-	-
Title: Next Generation Shop Equipment Contact Maintenance (SECM) Description: Modernization upgrades to the SECM, mounted onto a Joint Light Tactical Vehicle (JLTV) FY 2019 Base Plans: Market Research, Engineering, Quality Assurance, and Program Management. FY 2018 to FY 2019 Increase/Decrease Statement: Increase from FY18 to FY19 because this is a new requirement in FY19.		-	-	0.185	-	0.185
Title: Program Management Support Description: Program support costs associated with emerging program development. FY 2018 Plans: Salary support in the product office for emerging programs. FY 2019 Base Plans:		-	0.153	0.196	-	0.196

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army									Date: February 2018		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) L46 / Maintenance Support Equipment			
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Salary support in the product office for emerging programs.											
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease from FY18 to FY19 because budget decreased from FY18 to FY19, therefore Program Management support with decrease.											
Title: Packaging Support							0.037	0.083	0.083	-	0.083
Description: Full Packaging Program Support and Packaging Data Management											
FY 2018 Plans: Develop and Maintain Logistics Packaging, Packing and Palletization data											
FY 2019 Base Plans: Develop and Maintain Logistics Packaging, Packing and Palletization data											
Title: Engineering and Quality Assurance Support							0.123	0.138	0.139	-	0.139
Description: Engineering Support from the Edgewood Chemical Biological Center (ECBC) and Quality Assurance Support from Armament Research, Development and Engineering Center (ARDEC)											
FY 2018 Plans: Engineer and Quality Assurance Support for RDTE funded Ordnance Portfolio Sets, Kits, and Outfits (SKOs).											
FY 2019 Base Plans: Engineer and Quality Assurance Support for RDTE funded Ordnance Portfolio SKOs											
FY 2018 to FY 2019 Increase/Decrease Statement: Increase from FY17 to FY18 because of requirements change.											
Accomplishments/Planned Programs Subtotals							1.813	2.053	1.412	-	1.412
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• ML5345: Items Less Than \$5.0M (Maint Eq)	3.404	2.728	4.985	0.268	5.253	4.521	4.304	4.971	5.121	0.000	30.302
• G05301: Mobile Maintenance Equipment Systems	35.159	34.898	37.722	-	37.722	54.843	49.958	56.638	50.771	0.000	319.989

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018	
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>FY 2019</u>	<u>FY 2019</u>	<u>FY 2019</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Complete</u>	<u>Total Cost</u>
<u>Remarks</u>											
<u>D. Acquisition Strategy</u>											
<p>Programs will progress from pre Milestone Decision Document (MDD) activities through market research, market samples, Description for Purchase, development, production representative systems and testing. Modernization and Optimization of existing tools and testing of market samples will progress from Engineering and Manufacturing Development (EMD) and transition into production. All efforts will support the two level maintenance concept utilizing commercial technologies and incorporating them into SKOs to support next generation weapon and support systems.</p>											
<u>E. Performance Metrics</u>											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev						Project (Number/Name) L46 / Maintenance Support Equipment			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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	-	0.159		0.153		0.196	Dec 2017	-		0.196	Continuing	Continuing	-
Subtotal			-	0.159		0.153		0.196		-		0.196	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Armament Repair Shopt Set 2 design and development	MIPR	Tobyhanna Army Depot/TBD : Tobyhanna, PA	-	-		0.186		0.053	Mar 2019	-		0.053	Continuing	Continuing	-
Develop Rapid Deployment Sets, Kits, & Outfits - Special Tool Initiative.	MIPR	ECBC : Rock Island, IL	0.300	-		-		-		-		-	Continuing	Continuing	-
Refrigeration Tool Kit (RTK) Logistics Demonstration	MIPR	ECBC : Rock Island, IL	0.131	0.263		-		-		-		-	0.000	0.394	-
Modernization/Redesign efforts of Truck/Trailer transported shelters for next generation systems	MIPR	ECBC : Rock Island, IL	1.730	0.295		-		-		-		-	0.000	2.025	-
Procure Ground Based Special Tools in support of Tactical Vehicles	MIPR	PM SKOT : Harrison, MI	0.300	0.043		-		-		-		-	0.000	0.343	-
Next Generation Shop Equipment Welding (SEW) concept design and development	MIPR	ECBC : Rock Island, IL	1.600	0.893		-		-		-		-	0.000	2.493	-
Subtotal			4.061	1.494		0.186		0.053		-		0.053	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) L46 / Maintenance Support Equipment					
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineer and Quality Assurance in support of SKOs	MIPR	ECBC / ARDEC : (IL, MI)	1.302	0.123		0.138	Dec 2017	0.138	Dec 2018	-		0.138	Continuing	Continuing	-
Packaging Support	MIPR	ARDEC : Rock Island, IL	0.111	0.037		0.083	Dec 2017	0.083	Dec 2018	-		0.083	Continuing	Continuing	-
Next Generation Shop Equipment Welding (SEW) support	MIPR	ECBC / ARDEC / PM SKOT : (IL, MI)	-	-		0.250	Dec 2017	0.256	Dec 2018	-		0.256	Continuing	Continuing	-
Refrigeration Tool Kit (RTK) support	MIPR	ECBC / ARDEC / PM SKOT : (IL, MI)	-	-		0.153	Dec 2017	-		-		-	Continuing	Continuing	-
Armament Repair Shop Set 2 support	MIPR	ECBC / ARDEC / PM SKOT : (IL, MI)	-	-		0.101	Dec 2017	0.167	Dec 2018	-		0.167	Continuing	Continuing	-
Additive Manufacturing support	MIPR	ECBC : IL	-	-		-		0.015	Dec 2018	-		0.015	Continuing	Continuing	-
Mobile Ammunition Processing Facility (MAPF) support	MIPR	ECBC / ARDEC / PM SKOT : (IL, MI)	-	-		0.209	Dec 2017	-		-		-	Continuing	Continuing	-
Fire Suppression Refill System (FSRS) support	MIPR	PM SKOT : MI	-	-		0.040	Dec 2017	-		-		-	Continuing	Continuing	-
Next Generation Shop Equipment Contact Maintenance support	MIPR	ECBC/PM SKOT : (IL, MI)	-	-		-		0.185	Dec 2018	-		0.185	Continuing	Continuing	-
Special Tools support	MIPR	ECBC : IL	-	-		0.015	Dec 2017	0.010	Dec 2018	-		0.010	Continuing	Continuing	-
Subtotal			1.413	0.160		0.989		0.854		-		0.854	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ARSS 2 Testing	MIPR	ATEC : Aberdeen Test Center	-	-		0.250		0.309	Dec 2018	-		0.309	0.000	0.559	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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>			
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 the Next Generation Shop, Equipment Welding	MIPR	ATEC : Aberdeen Test Center	-	-		0.315		-		-		-	0.000	0.315	-
Fire Suppression Refill System (FSRS) testing	MIPR	ATEC : Aberdeen Test Center	-	-		0.160	Jul 2017	-		-		-	0.000	0.160	-
Subtotal			-	-		0.725		0.309		-		0.309	0.000	1.034	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			5.474	1.813		2.053		1.412		-		1.412	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army	Date: February 2018
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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) L46 / <i>Maintenance Support Equipment</i>
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Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Next Generation SEW Development and Test																												
ARSS 2 - Shelter Modernization Development and Test																												
Special Tools Development and Test																												
RTK Logistics Development																												
Additive Manufacturing Limited User Experiment and Evaluation																												
Mobile Maintenance Equipment Shop Set Modernization and Red																												
NG SECM Development and Test																												
FSRS Integration and Logisitcs Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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
Next Generation SEW Development and Test	1	2016	2	2019
ARSS 2 - Shelter Modernization Development and Test	1	2018	4	2020
Special Tools Development and Test	1	2016	4	2023
RTK Logistics Development	1	2017	4	2018
Additive Manufacturing Limited User Experiment and Evaluation	1	2019	4	2023
Mobile Maintenance Equipment Shop Set Modernization and Redesign Efforts	1	2017	4	2017
NG SECM Development and Test	1	2019	4	2021
FSRS Integration and Logisitcs Development	1	2016	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
L47: Improved Environmental Control Units Ed	-	1.210	1.951	2.340	-	2.340	2.152	2.206	3.948	6.989	0.000	20.796
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 critical equipment systems in combat, combat support, combat service support units, and combat support hospitals. The IECUs are required to replace currently fielded ECUs 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 ECUs will yield significant fuel and weight savings, reduction in scheduled maintenance and increased reliability. The new family of IECUs will utilize a new refrigerant which complies with mandated Environmental Protection Agency (EPA) requirements. Funding supports the development of trailer-mounted systems, shelter system integration, as well as supporting the new ECU requirements coming from the Command Post Integrated Infrastructure (CPI2) Army Standard Family of Soft Walled Shelters (ASF-SWS) and Army Standard Family of Rigid Wall Shelters (ASF-RWS) Capabilities Development Documents (CDDs). In addition, the field has identified an emerging requirement for an integrated fuel-fired /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. Funding also supports continued evaluation of IECUs and variants at Network Integration Evaluation (NIE) to support new operational concepts.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Technology Development	0.400	0.375	0.950	-	0.950
Description: Concept development for 9/18/36/60K BTUH Improved Environmental Control Unit (IECU), multiple trailer-mounted variants, Rigid Walled variants and integrated heating/cooling systems.					
FY 2018 Plans: Study technologies with variable capacity compressors, applicability of smart electronic controls that vary the capacity and efficiency, which allow for operation at the maximum temperature while being most efficient at lower temperatures. Current ECUs may have variable speed fans and/or compressors but may not have					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L47 / Improved Environmental Control Units Ed				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
the electronic controls necessary that would allow a true reduction in capacity and corresponding increase in efficiency. FY 2019 Base Plans: Initiate development for next generation 60K IECU incorporating the latest technological advances to include: Chemical/Biological hardening; improved transportability; and utilization of next generation environmentally friendly refrigerants. FY 2018 to FY 2019 Increase/Decrease Statement: Increase in funding required to initiate the 60K IECU effort.						
Title: Government System Test and Evaluation Description: Testing of prototype performance for the trailer mounted and other variants of the IECUs and soft wall shelter ECUs. FY 2018 Plans: Support Engineering and Manufacturing Development (EMD) effort on the 9/18/36K IECU family and comply with tightening statutory and regulatory restrictions. Conduct testing on possible product improvements to the existing family of IECUs. FY 2019 Base Plans: Conduct performance testing in environmental chambers to measure changes in output and power consumption on 9/18/36/60K BTUH IECUs with new variable capacity compressors and smart controls. FY 2018 to FY 2019 Increase/Decrease Statement: Increase in funding required to support an extensive series of tests on multiple variants of the IECU family.		0.200	0.300	0.700	-	0.700
Title: Engineering Development Description: Support engineering, logistics, and testing efforts for multiple trailer-mounted variants, soft wall ECUs, and integrated heating/cooling units. Match and right-size current IECU family to the ASF-RWS and ASF-SWS variants and/or develop and test new variants to provide the most efficient system solution. FY 2018 Plans:		0.400	0.898	0.307	-	0.307

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) L47 / Improved Environmental Control Units Ed				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Support continuing technology transitions and insertions through prototype demonstrations for follow-on IECU variants that meet the requirements to support the Command Post Integrated Infrastructure (CPI2), and the Army Standard Family of Rigid Wall Shelter (ASF-RWS) program. FY 2019 Base Plans: Conduct analysis and testing to match and right-size the current family of IECUs to the ASF-RWS variants that are under development. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease in funding due to reduced scope of effort to right-size IECUs to the ASF-RWS in FY 19.						
Title: Government Program Management Description: Provide oversight and management of engineering, logistics, contracts, and testing efforts for the 9/18/36/60K IECU family and multiple trailer-mounted variants prepare for IECU variants to transition to production. Provide oversight and management of follow-on ECU variants. FY 2018 Plans: Manage continuing technology insertions and demonstrations of prototypes for follow-on variants that meet requirements of the ASF-RWS and comply with tightening statutory and regulatory restrictions. FY 2019 Base Plans: Oversee the design and integration of the variable capacity compressors and smart controls into the standard 9/18/36/60K BTUH IECUs in addition to testing. Manage continuing technology improvements to include the development of IECU prototypes that utilize advanced non-ozone depleting referigerants. Coordinate with the ASF-RWS program of record to ensure proper integration of required ECUs. FY 2018 to FY 2019 Increase/Decrease Statement: Increase in funding required to support required technical oversight and program management over two major development efforts that are underway in FY19.		0.210	0.378	0.383	-	0.383
Accomplishments/Planned Programs Subtotals		1.210	1.951	2.340	-	2.340

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018	
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>FY 2019</u>	<u>FY 2019</u>	<u>FY 2019</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Complete</u>	<u>Total Cost</u>
• MF9303: OPA 3, <i>Improved Environmental Control Units , MF9303</i>	18.601	7.675	9.852	0.270	10.122	16.775	22.016	27.490	29.499	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
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 Integrated Infrastructure (CPI2). Evaluate requirements versus existing IECU Fleet and developed/test initial prototypes of ECUs in support of ASF-SWS and ASF-RWS CDDs. This effort will support the development of Purchase Descriptions (PDs) and Technical Data Packages (TDPs) for eventual competitive procurement.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
9,18 and 36K Improved Environmental Control Unit (IECU)	Various	PM E2S2 : various	1.174	-		0.160		0.183		-		0.183	0.000	1.517	Continuing
Trailer Variants	Various	PM E2S2 : various	0.516	0.059		0.058		-		-		-	0.000	0.633	Continuing
60K IECU	Various	PM E2S2 : various	0.060	0.081		0.160		0.200		-		0.200	0.000	0.501	-
Integrated heating/cooling units	Various	PM E2S2 : various	0.035	0.070		-		-		-		-	0.000	0.105	-
SBIR/STTR	Various	various : various	0.137	-		-		-		-		-	0.000	0.137	-
Subtotal			1.922	0.210		0.378		0.383		-		0.383	0.000	2.893	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
9 ,18 and 36K Improved Environmental Control Unit (IECU)	C/CPFF	Mainstream Engineering : Vero Beach, FL	2.064	-		-		0.307		-		0.307	0.000	2.371	Continuing
Trailer Mounted variants	MIPR	CERDEC Night Vision Lab : Ft Belvoir, VA	0.425	0.100		0.211		-		-		-	0.000	0.736	-
60K IECU	C/CPFF	TBD : TBD	2.125	0.200		0.337		0.950		-		0.950	0.000	3.612	-
Integrated heating/cooling units	MIPR	CERDEC Night Vision Lab : Ft. Belvoir, VA	0.225	0.100		-		-		-		-	0.000	0.325	-
Subtotal			4.839	0.400		0.548		1.257		-		1.257	0.000	7.044	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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					
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
9, 18 and 36K Improved Environmental Control Unit (IECU)	MIPR	CERDEC : Fort Belvoir, VA	2.117	-		-		-		-		-	0.000	2.117	-
60K IECU	Various	CERDEC : Fort Belvoir, VA	3.982	0.200		0.225		-		-		-	0.000	4.407	-
Trailer variants	MIPR	CERDEC : Fort Belvoir, VA	0.720	0.100		0.500		-		-		-	0.000	1.320	-
Integrated heating/cooling units	MIPR	CERDEC : Fort Belvoir, VA	0.221	0.100		-		-		-		-	0.000	0.321	-
Subtotal			7.040	0.400		0.725		-		-		-	0.000	8.165	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
9,18 and 36K Improved Environmental Control Unit (IECU)	MIPR	ATEC : APG, MD	0.478	-		-		0.450		-		0.450	0.000	0.928	-
Trailer Variants	MIPR	ATEC : APG, MD	0.374	0.050		-		-		-		-	0.000	0.424	Continuing
60K IECU	MIPR	ATEC : APG, MD	0.225	0.100		0.300		0.250		-		0.250	0.000	0.875	-
Integrated heating/cooling units	MIPR	ATEC : APG, MD	0.150	0.050		-		-		-		-	0.000	0.200	-
Subtotal			1.227	0.200		0.300		0.700		-		0.700	0.000	2.427	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			15.028	1.210		1.951		2.340		-		2.340	0.000	20.529	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
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>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Technology insertions/prototype demo for IECU in support of CP12																												
Study Technologies for ECU compressors and smart controls																												
Procure and test prototypes of ECU compressors and smart controls.																												
Design and Testing for potential product improvements to IECU Family																												
Concept Development for High Efficiency ECUs																												
Concept Development for Integrated Trailer-Mounted Systems																												
Award development contract for Next Generation 60K IECU																												
Develop prototype 60K IECU's																												
Conduct Development Test on 60K IECU																												
Conduct Operational Testing on 60K IECU																												
Transition 60K IECU to production																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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
Technology insertions/prototype demo for IECU in support of CPI2 & ASF-RWS Progr	1	2017	4	2018
Study Technologies for ECU compressors and smart controls	1	2018	4	2018
Procure and test prototypes of ECU compressors and smart controls.	1	2019	4	2020
Design and Testing for potential product improvements to IECU Family	1	2018	4	2021
Concept Development for High Efficiency ECUs	1	2020	4	2023
Concept Development for Integrated Trailer-Mounted Systems	1	2020	4	2023
Award development contract for Next Generation 60K IECU	2	2019	2	2019
Develop prototype 60K IECU's	2	2019	3	2020
Conduct Development Test on 60K IECU	4	2020	2	2021
Conduct Operational Testing on 60K IECU	3	2021	3	2021
Transition 60K IECU to production	1	2022	1	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev				Project (Number/Name) VR7 / Combat Service Support Systems			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
VR7: Combat Service Support Systems	-	4.159	3.743	4.533	-	4.533	6.132	4.819	5.271	3.064	0.000	31.721
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development (EMD) of critical soldier support and sustainment systems that provide more endurance and agility to combat operations enabling success of Army Expeditionary Forces in future multi-domain scenarios. Project includes highly mobile shelter systems (rigid and soft wall), expeditionary base camp subsystems, field service systems, mortuary affairs equipment, field heaters, and other combat service support equipment. These systems will fill identified theater capability gaps, improve safety, improve unit sustainability, improve resource and energy efficiency and increase combat effectiveness. This project supports Engineering and Manufacturing Development (EMD), Prototyping, and testing of critical tactical support systems that support mobile Joint Service command and control, medical, force projection and maintenance platforms. This project develops critical enablers that support the Army Campaign Plan and Army Modernization Strategy by maintaining readiness through fielding and integrating new equipment. This project also ensures Army Expeditionary Forces are capable of rapid deployment while reducing sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands in lift, combat zone footprint, and costs for logistical support.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Expeditionary Shelter Protection System (ESPS)	0.994	0.450	0.450	-	0.450
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 2018 Plans: Award development contract, procure and build test items and initiate Development Testing/Operational Testing (DT/OT) for ESPS. Initiate preparation of logistics and programmatic documentation.					
FY 2019 Base Plans: Complete DT and logistics requirements, prepare documentation and obtain Type Classification Standard pending Army decision on future production.					
Title: Family of Space Heaters	0.271	-	0.150	-	0.150

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018				
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev	Project (Number/Name) VR7 / Combat Service Support Systems				
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 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 2019 Base Plans: Conduct evaluations for potential product improvements to the existing Family of Space Heaters. Prepare and coordinate Engineering Change Proposals that incorporate improvements into heater performance specifications.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increase required to support EMD efforts on transitioning technology.</p>							
<p>Title: Resource and Energy Efficiency Enabling Solutions</p> <p>Description: Reduces the resource, operational energy and logistics footprint of critical soldier support and sustainment systems while maintaining or improving operational effectiveness. The goal is to significantly reduce fuel, water, and power requirements to sustain multi-domain operations in addition to reducing maintenance and spare parts requirements. Systems such as Command Posts, Expeditionary Operating Bases, and Combat Support Hospitals require a significant amount of logistics and sustainment support which cost valuable resources, require extra human effort (that means a risk in the form of Soldiers on the road), limit endurance, restrict agility, and increase vulnerability.</p> <p>FY 2018 Plans: Conduct evaluation on Net-Zero energy efficiency solutions for Force Provider. Initiate DT on alternative energy subsystems and mature expeditionary shelter energy efficiency upgrades that can integrate into the Force Provider module. Transition proven and validated capabilities into full-rate production and/or reset.</p> <p>FY 2019 Base Plans: Continue to integrate and evaluate resource and operational energy-saving solutions for Command Posts, Expeditionary Operating Bases, and Combat Support Hospitals. Complete testing on energy-efficient appliances, improved energy-efficient expeditionary lighting systems, and smart base non-intrusive monitoring.</p>			1.600	0.199	0.200	-	0.200

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) VR7 / Combat Service Support Systems		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Collect data to inform and support development of logistics support and the Engineering Change Proposal to transition proven and validated capabilities into full-rate production and/or reset.						
FY 2018 to FY 2019 Increase/Decrease Statement: Funding levels stable between FY18 and FY19.						
Title: Laundry and Shower Improvements 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. FY 2018 Plans: Complete prototype upgrade kits for Developmental Testing on improvements developed for the Laundry Advanced System (LADS). FY 2019 Base Plans: Conduct Developmental Testing on the Laundry Advanced System (LADS) modification kits. FY 2018 to FY 2019 Increase/Decrease Statement: Slight decrease in funding. Funding needed to complete prototype design, development, and fabrication and transition into Developmental Testing.		0.800	0.897	0.850	-	0.850
Title: Expeditionary Solid Waste Disposal (ESWDS) 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, 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 backhaul which poses an additional logistics burden. FY 2018 Plans: Complete procurement of prototype systems. Conduct Developmental and Operational Test (DT & OT) on ESWDS. Complete program documentation for transition to production. FY 2018 to FY 2019 Increase/Decrease Statement:		0.244	1.250	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018				
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604804A / Logistics and Engineer Equipment - Eng Dev		Project (Number/Name) VR7 / Combat Service Support Systems				
B. Accomplishments/Planned Programs (\$ in Millions)				FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Completed EMD in FY18.								
<p>Title: Containerized Ice Making System (CIMS)</p> <p>Description: Develops an add-on ice making capability that automatically dispenses and seals 10 pound bags at a rate of a minimum of 3,600 pounds of ice per day. This capability is based upon current Army 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 2018 Plans: Initiate developmental and operational testing (DT & OT) on selected prototypes. Develop Programmatic documentation, specification and contract solicitation. Transition into production</p> <p>FY 2019 Base Plans: Complete logistics requirements, prepare documentation and obtain Type Classification Standard decision pending Army decision on future production.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Decrease in funding due to due to fact that required DT/OT will be complete in FY18 and FY19 effort will be focused on preparing for transition to production.</p>				0.250	0.400	0.300	-	0.300
<p>Title: Army Standard Family of Rigid Wall Shelters (ASF-RWS)</p> <p>Description: The ASF-RWS program will conduct formal development to incorporate the latest technologies into a fully supportable and modernized family. The intent is to eliminate the proliferation of non-standard shelters and their associated logistics burden, thereby reducing the lifecycle cost of RWS across the Services. The program will produce approved Technical Data Packages (TDPs) to support procurements by materiel developers and Program Managers (PMs) requiring RWS. Once developed and formally type-classified, ASF-RWS procurements are customer funded by PMs as a cost under their program(s). The ASF-RWS will consist of three variants: (1) Expandable/Non-Expandable; (2) Vehicle Mounted; and (3) Panelized/Collapsible with a focus on the following features and improvements: reduced cost, reduced weight, improved energy efficiency, improved corrosion resistance, and improved transportability.</p> <p>FY 2018 Plans:</p>				-	0.547	2.583	-	2.583

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: February 2018	
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Prepare documentation and obtain Milestone B decision authorizing ASF-RWS to enter Engineering Manufacturing Development (EMD). Award ASF - RWS developmental contract for the expandable / non-expandable variants.</p> <p><i>FY 2019 Base Plans:</i> Continue design and development of the Expandable / Non-Expandable Shelter variants. Initiate development of logistics support documentation. Initiate Developmental Testing.</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Effort supports advanced component development of multiple variants of the ASF(RWS). Funding increase due to the transition of the Expandable/ Non-Expandable RWS variant into EMD where significant prototype development efforts will occur.</p>					
Accomplishments/Planned Programs Subtotals	4.159	3.743	4.533	-	4.533

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• VR8: <i>Combat Service Support Systems - Ad</i>	4.004	5.062	3.222	-	3.222	3.447	3.116	2.587	2.637	0.000	24.075
<u>Remarks</u>											
D. Acquisition Strategy Accelerate product development and testing to transition into production.											
<u>E. Performance Metrics</u> N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
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					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	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 Force Sustainment Systems : Natick, MA	1.087	0.299	Oct 2016	0.713		0.758	Nov 2018	-		0.758	Continuing	Continuing	-
CBI Support	Various	PD CBI : Warren, MI	3.747	-		-		-		-		-	0.000	3.747	-
SBIR+STTR	TBD	Various : Various	0.077	-		-		-		-		-	0.000	0.077	-
Subtotal			4.911	0.299		0.713		0.758		-		0.758	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Soldier Support Equipment	TBD	Various : Various	6.851	1.570	Nov 2016	2.416		0.175	Nov 2018	-		0.175	Continuing	Continuing	-
Contingency Basing Infrastructure	Various	Various : Various	1.531	-		-		-		-		-	0.000	1.531	-
Laundry Improvements	Various	Various : Various	-	-		-		0.100	Nov 2018	-		0.100	0.000	0.100	-
Army Standard Family of Rigid Wall Shelters (ASF- RWS)	Various	Various : Various	-	-		-		1.750	Dec 2018	-		1.750	0.000	1.750	-
Subtotal			8.382	1.570		2.416		2.025		-		2.025	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Soldier Support Equipment	Various	Various : Various	5.438	2.290	Nov 2016	0.614		0.475	Dec 2018	-		0.475	Continuing	Continuing	-
Contingency Basing Infrastructure	Various	Various : Various	1.206	-		-		-		-		-	0.000	1.206	-
Laundry Improvements	Various	Various : Various	-	-		-		0.695	Dec 2018	-		0.695	0.000	0.695	-
Army Standard Family of Rigid Wall Shelters (ASF- RWS)	Various	Various : Various	-	-		-		0.580	Mar 2019	-		0.580	0.000	0.580	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018		
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>				

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			6.644	2.290		0.614		1.750		-		1.750	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	19.937	4.159	3.743	4.533	-	4.533	Continuing	Continuing	N/A

Remarks

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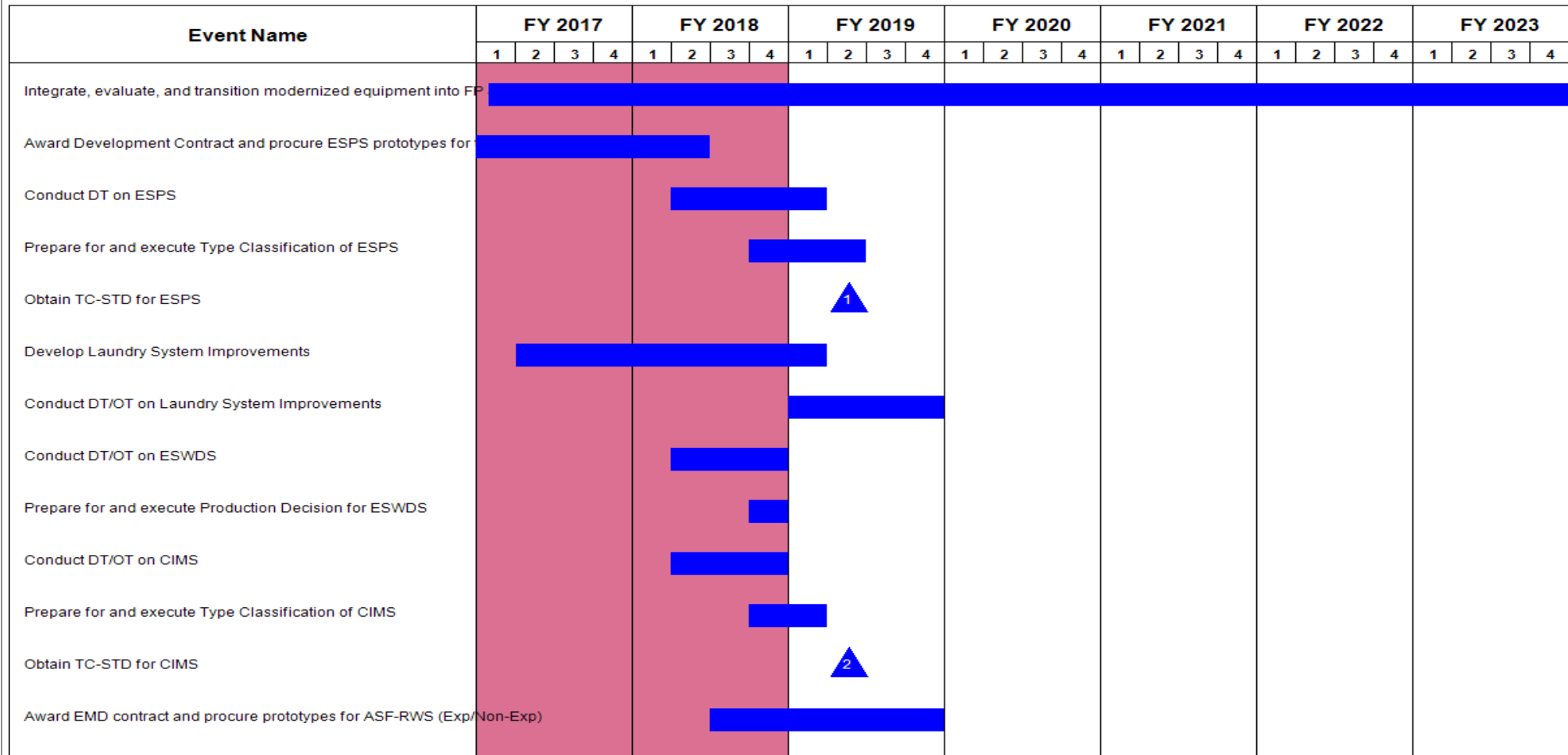
Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army

Date: February 2018

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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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
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>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	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 on ASF-RWS (Exp/Non-Exp) variants																												
Prepare for and obtain Milestone C / TC-STD decision for ASF-RWS (Exp/Non-Exp)																												
Award EMD contract and procure prototypes for ASF-RWS (Veh Mtd)																												
Conduct DT/OT on ASF-RWS (Veh Mtd) variants																												
Prepare for and obtain Milestone C / TC-STD decision for ASF-RWS (Veh Mtd)																												
Award EMD contract and procure prototypes for ASF-RWS (Coll/Panel)																												
Conduct DT/OT on ASF-RWS (Coll/Panel) variants																												
Prepare for and obtain Milestone C / TC-STD decision for ASF-RWS (Coll/Panel)																												
Award EMD contract and procure prototypes for ASF-SWS (Mission Cmd)																												
Conduct DT on ASF-SWS (Mission Cmd) variants																												
Prepare for and obtain Milestone C / TC-STD decision for ASF-SWS (Mission Cmd)																												
Award EMD contract and procure prototypes for ASF-SWS (General Purpose)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
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
Integrate, evaluate, and transition modernized equipment into FP & Command Posts	1	2016	4	2023
Award Development Contract and procure ESPS prototypes for testing	3	2016	2	2018
Conduct DT on ESPS	2	2018	1	2019
Prepare for and execute Type Classification of ESPS	4	2018	2	2019
Obtain TC-STD for ESPS	2	2019	2	2019
Develop Laundry System Improvements	2	2017	1	2019
Conduct DT/OT on Laundry System Improvements	1	2019	4	2019
Conduct DT/OT on ESWDS	2	2018	4	2018
Prepare for and execute Production Decision for ESWDS	4	2018	4	2018
Conduct DT/OT on CIMS	2	2018	4	2018
Prepare for and execute Type Classification of CIMS	4	2018	1	2019
Obtain TC-STD for CIMS	2	2019	2	2019
Award EMD contract and procure prototypes for ASF-RWS (Exp/Non-Exp)	3	2018	4	2019
Conduct DT/OT on ASF-RWS (Exp/Non-Exp) variants	1	2019	2	2020
Prepare for and obtain Milestone C / TC-STD decision for ASF-RWS (Exp/Non-Exp)	3	2020	4	2020
Award EMD contract and procure prototypes for ASF-RWS (Veh Mtd)	1	2020	4	2020
Conduct DT/OT on ASF-RWS (Veh Mtd) variants	1	2021	4	2021
Prepare for and obtain Milestone C / TC-STD decision for ASF-RWS (Veh Mtd)	4	2021	1	2022
Award EMD contract and procure prototypes for ASF-RWS (Coll/Panel)	2	2021	1	2022
Conduct DT/OT on ASF-RWS (Coll/Panel) variants	2	2022	4	2022
Prepare for and obtain Milestone C / TC-STD decision for ASF-RWS (Coll/Panel)	4	2022	1	2023
Award EMD contract and procure prototypes for ASF-SWS (Mission Cmd)	3	2020	4	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018		
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	
		Start		End	
Events		Quarter	Year	Quarter	Year
Conduct DT on ASF-SWS (Mission Cmd) variants		4	2021	3	2022
Prepare for and obtain Milestone C / TC-STD decision for ASF-SWS (Mission Cmd)		3	2022	1	2023
Award EMD contract and procure prototypes for ASF-SWS (General Purpose)		3	2022	4	2023