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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2021 Army **Date:** February 2020

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605812A / <i>Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	0.000	7.232	1.742	-	1.742	1.799	1.833	2.008	2.008	Continuing	Continuing
VU9: <i>Joint Light Tactical Vehicle</i>	-	0.000	7.232	1.742	-	1.742	1.799	1.833	2.008	2.008	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The JLTV Family of Vehicles (FoV), to include a companion trailer, is a United States Army (USA) acquisition lead, joint program with the U.S. Marine Corps (USMC). The JLTV is capable of performing multiple mission roles and designed to provide protected, sustained, networked mobility for personnel and payloads across the full range of military operations. JLTV objectives include increased protection and performance over the current fleet; and, minimizing ownership costs by maximizing commonality, fuel efficiency, reliability, and maintaining effective competition throughout the life cycle. Commonality of components, maintenance procedures, training, etc., among vehicles is expected to be inherent in FoV solutions across mission variants to minimize total ownership cost. Unique service requirements have been minimized. The JLTV Trailer (JLTV-T) is the companion trailer to the JLTV and safely carries its payload while maintaining the same mobility characteristics of the prime mover. The trailer requirement as defined in the Capability Production Document (CPD), dated 21 November 2014 was validated on 7 June 2019 by the Army and required the JLTV and JLTV-T to be fielded as a system. On November 2019, Army Futures Command validated the JLTV-T Army Procurement Objective (APO) of 18,224.

This program element supports modernization of the JLTV FoV by investigating technology insertions including, but not limited to: condition based maintenance, vetronics, Victory Architecture, autonomous operations and other emerging technologies. This program element also supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement operating concepts.

The FY 2021 budget supports the procurement of test assets and the finalization of engineering efforts such as: Li-Ion based technologies and survivability enhancements to optimize the JLTV system architecture and drastically reduce operations and support (O&S) costs; Ongoing development of Command, Control, Communications, Computers, and Intelligence (C4I) system packaging optimization efforts such as Integrated Tactical Network (ITN) and Integrated Vision Augmentation System (IVAS); Ongoing testing to ensure cyber vulnerabilities are considered and mitigated.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	0.000	2.732	1.744	-	1.744
Current President's Budget	0.000	7.232	1.742	-	1.742
Total Adjustments	0.000	4.500	-0.002	-	-0.002
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	4.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.002	-	-0.002

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Army										<b>Date:</b> February 2020		
<b>Appropriation/Budget Activity</b> 2040 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0605812A / <i>Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)</i>				<b>Project (Number/Name)</b> VU9 / <i>Joint Light Tactical Vehicle</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
VU9: <i>Joint Light Tactical Vehicle</i>	-	0.000	7.232	1.742	-	1.742	1.799	1.833	2.008	2.008	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Title:</b> Evaluation and Assessment of current and future engineering efforts	-	7.108	1.264
<b>Description:</b> Funding is provided for the support of JLTV evaluation and assessment of current and future engineering efforts.			
<b>FY 2020 Plans:</b>			
Development of Training Aids, Devices, Simulators, and Simulations (TADSS) which includes both a Diagnostic and Troubleshooting Trainer (DTT) and Hands on Trainer (HOT) systems. Continuation of engineering efforts such as: Li-Ion based technologies, fuel cell technology and mainstream DoD efforts to optimize the JLTV system architecture and drastically reduce			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Army		<b>Date:</b> February 2020		
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605812A / Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)	<b>Project (Number/Name)</b> VU9 / Joint Light Tactical Vehicle		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p>(O&amp;S) costs; Command, Control, Communications, Computers, and Intelligence (C4I) system packaging optimization efforts such as Integrated Tactical Network (ITN) and Integrated Vision Augmentation System (IVAS); Development of vehicle safety technologies to enhance occupant safety; Transportability optimization to include Dual Row Airdrop Systems; Ongoing testing to ensure cyber vulnerabilities are considered and mitigated.</p> <p><b>FY 2021 Plans:</b> Finalization of engineering efforts such as: Li-Ion based technologies and survivability enhancements to optimize the JLTV system architecture and drastically reduce (O&amp;S) costs; Ongoing development of Command, Control, Communications, Computers, and Intelligence (C4I) system packaging optimization efforts such as Integrated Tactical Network (ITN) and Integrated Vision Augmentation System (IVAS); Ongoing testing to ensure cyber vulnerabilities are considered and mitigated.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Decrease in funding due to the anticipated reduction of engineering efforts and completion of TADSS.</p>				
<p><b>Title:</b> Test Assets</p> <p><b>FY 2021 Plans:</b> Procurement of test assets.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> The increase from FY 2020 to FY 2021 of \$.478M is for the procurement of test assets.</p>		-	-	0.478
<p><b>Title:</b> FY 2020 SBIR/STTR Transfer</p> <p><b>Description:</b> Funding transferred in accordance with Title 15 USC 638</p> <p><b>FY 2020 Plans:</b> Funding transferred in accordance with Title 15 USC 638</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638</p>		-	0.124	-
<b>Accomplishments/Planned Programs Subtotals</b>		-	7.232	1.742

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<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605812A / <i>Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)</i>	<b>Project (Number/Name)</b> VU9 / <i>Joint Light Tactical Vehicle</i>
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**C. Other Program Funding Summary (\$ in Millions)**

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• D15603: JOINT LIGHT TACTICAL VEHICLE	1,279.437	972.407	0.000	-	0.000	-	-	-	-	0.000	2,251.844
• D15610: JOINT LIGHT TACTICAL VEHICLE FAMILY OF VEHICLES	-	-	894.414	-	894.414	711.668	845.930	845.224	845.175	Continuing	Continuing
• D15615: JOINT LIGHT TACTICAL VEHICLE (JLTV)	-	-	822.023	-	822.023	635.934	795.771	787.381	748.085	Continuing	Continuing
• D15618: JOINT LIGHT TACTICAL VEHICLE TRAILER (JLTV-T)	-	-	72.391	-	72.391	75.734	50.159	57.843	97.090	Continuing	Continuing

**Remarks**

JLTV is a Joint Program with the United States Marine Corps (USMC)

(\$ in Millions)

Marine Corps Ground Combat/Support Systems, Production 5095 - FY 2019: \$572.774 FY 2020: \$555.648 FY 2021: \$381.675 FY 2022: \$322.743 FY 2023: \$300.711 FY 2024: \$415.470 FY 2025: \$424.338

Marine Corps Ground Combat/Support Systems, RDTE Project 3209 0605813M - FY 2019: \$0 FY 2020: \$2.105 FY 2021: \$2.541 FY 2022: \$2.023 FY 2023: \$3.357 FY 2024: \$2.106 FY 2025: \$2.147

**D. Acquisition Strategy**

The JLTV Family of Vehicles (FoV), to include a companion trailer, is a United States Army (USA) lead, joint program with the U.S. Marine Corps (USMC).

The JLTV Program entered the Production and Deployment Phase with the Acquisition Decision Memorandum authorization on 25 August 2015. With Milestone C approval, the Low Rate Initial Production (LRIP) fixed price contract was awarded to Oshkosh Defense LLC on 25 August 2015. This contract consists of a three year LRIP period with options for five additional years of Full Rate Production (FRP) deliveries. JPO JLTV procured the Technical Data Package (TDP) with appropriate data rights to allow for possible future competition for production vehicles and spares. Current contract options may be exercised through 30 November 2023 assuming contractual quantity headspace is still available. Current funding indicates headspace quantity of 16,901 may be achieved in FY 2021, with competitive follow on contract award also anticipated in FY 2022. A split procurement will occur between the existing Oshkosh contract and the new competitively awarded contract based on the approved acquisition strategy.

Program achieved a successful FRP decision May 2019. The FRP Acquisition Decision Memorandum was signed June 2019.

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<p>The trailer requirement as defined in the Capability Production Document (CPD), dated 21 November 2014 was validated on 7 June 2019 by the Army and required the JLTV and JLTV-T to be fielded as a system. On November 2019, Army Futures Command validated the JLTV-T Army Procurement Objective (APO) of 18,224.</p> <p>The JLTV program will continually monitor emerging technologies and capabilities through its partnerships with U.S. Army and Marine Corps science and technology organizations as well as through industry market research and partnerships. The JLTV program will look for opportunities to implement increased capabilities throughout the systems Life Cycle.</p>		

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2021 Army</b>											<b>Date:</b> February 2020				
<b>Appropriation/Budget Activity</b> 2040 / 5				<b>R-1 Program Element (Number/Name)</b> PE 0605812A / Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)					<b>Project (Number/Name)</b> VU9 / Joint Light Tactical Vehicle						

<b>Management Services (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Joint Light Tactical Vehicles (JLTV) Contract Service Support	SS/CPFF	Booz-Allen Hamilton, : McLean, VA	10.191	-		-		-		-		-	0.000	10.191	-
JLTV Contract Service Support for Cost Analysis for JLTV CARD	SS/CPFF	Camber Corporation, : Huntsville, AL	0.591	-		-		-		-		-	0.000	0.591	-
JLTV Service Support	MIPR	US Army Combined Arms Support Commands - CASCOM, : Ft. Lee, VA	0.200	-		-		-		-		-	0.000	0.200	-
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.124		-		-		-	0.000	0.124	-
<b>Subtotal</b>			10.982	-		0.124		-		-		-	0.000	11.106	N/A

**Remarks**

Funding for Management Services has shifted from RDT&E to Procurement and Operations and Maintenance - Army(OMA).

<b>Product Development (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
JLTV Live Fire Test Support	C/FFP	Oshkosh Corporation : Oshkosh, WI	19.091	-		-		-		-		-	0.000	19.091	-
Evaluation and Assessment of current and future engineering efforts	C/Various	To Be Determined : To Be Determined	7.476	-		7.108	Jan 2020	1.264	Jan 2021	-		1.264	Continuing	Continuing	Continuing
Test assets	TBD	TBD : TBD	-	-		-		0.478	Jun 2021	-		0.478	0.000	0.478	-
<b>Subtotal</b>			26.567	-		7.108		1.742		-		1.742	Continuing	Continuing	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army** **Date:** February 2020

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<b>Product Development (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

**Remarks**  
FY 2021 supports the procurement of test assets under the new production contract to support live fire testing.

<b>Support (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Joint Light Tactical Vehicles (JLTV) Program Management Support	Various	TACOM Life Cycle Management Command (LCMC), : Harrison Township, MI	31.919	-		-		-		-		-	0.000	31.919	-
GFE Management / GFE / Integration	MIPR	Various : TBD	19.436	-		-		-		-		-	0.000	19.436	-
JLTV EMD/LRIP phase.	MIPR	Tank-Automotive Research, Development, and Engineering Center - TARDEC : Warren, MI	14.245	-		-		-		-		-	0.000	14.245	-
JLTV Prototype EMD/LRIP - Budget	MIPR	TACOM Life Cycle Management Command (LCMC), : Warren, MI	12.383	-		-		-		-		-	0.000	12.383	-
<b>Subtotal</b>			77.983	-		-		-		-		-	0.000	77.983	N/A

**Remarks**  
Funding for Support Costs has shifted from RDT&E to Procurement and Operations and Maintenance - Army(OMA).



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Army</b>		<b>Date:</b> February 2020
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Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Test Vehicles and LRIP Contract																												
Full Rate Production Decision			2																									
Evaluation and Assessment / Test for follow on contract																												
Army Initial Operating Capability (IOC)							3																					
Army First Unit Equipped (FUE)			1																									
Competitive Contract Award															4													

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Army		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605812A / <i>Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)</i>	<b>Project (Number/Name)</b> VU9 / <i>Joint Light Tactical Vehicle</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Test Vehicles and LRIP Contract	4	2015	3	2019
Full Rate Production Decision	3	2019	3	2019
Evaluation and Assessment / Test for follow on contract	3	2018	4	2025
Army Initial Operating Capability (IOC)	3	2020	3	2020
Army First Unit Equipped (FUE)	3	2019	3	2019
Competitive Contract Award	4	2022	4	2022