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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Navy **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605813M / <i>Joint Light Tactical Veh (JLTV) Sys Dev &amp; Dem</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	2.239	2.094	2.541	2.005	-	2.005	-	-	-	-	-	-
3209: <i>Joint Light Tactical Vehicle</i>	2.239	2.094	2.541	2.005	-	2.005	-	-	-	-	-	-

**Program MDAP/MAIS Code:**  
**Project MDAP/MAIS Code(s):** 279

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

This is a CMC Force Design program. Funding supports the JLTV Family of Vehicles (FoV) to include the development and testing of Command, Control, Communications, Computers, & Intelligence (C4I) for integration with the JLTV. JLTV is a joint program between the U.S. Army and the U.S. Marine Corps, of which the U.S. Army is the lead service. The JLTV FoV is capable of performing multiple mission roles designed to provide protected, sustained, and networked mobility for personnel and payloads across the full Range of Military Operations (ROMO). JLTV features include increased performance, protection, and payload over the current legacy HMMWV fleet, reducing ownership costs by maximizing commonality, fuel efficiency and reliability. The commonality of components, maintenance procedures, training, etc, among vehicles are inherent in FoV solutions across mission variants to minimize total ownership costs. Unique service requirements have been minimized.

RDT&E funding supports modernization of the current JLTV by investigating technology insertions including, but not limited to: condition based maintenance, vetronics, autonomous operations and other emerging technologies; engineering change orders (ECOs) and retrofits to maintain the configuration of the RDT&E Government Systems Integration Laboratory (GSIL) trucks being used to integrate various weapons platforms.

Future C4ISR integration activities include integration of systems such as: Marine Air Defense Integrated System (MADIS); Network on the Move (NOTM) Ground Combat Vehicles; Communications Emitter Sensing and Attack Systems (CESAS); Military GPS User Equipment (MGUE); and Remote Weapons System (RWS) Cannon. This line funds costs allocable to the JLTV program.

FY 2022 budget activities include systems engineering/integration activities, design analysis and tests conducted at the Joint GSIL. Efforts will focus on enhancing performance of Command, Control, Communications, Computers and Intelligence Surveillance and Reconnaissance (C4ISR) system capabilities as they relate to the JLTV; developmental efforts required for the integration of future C4ISR requirements on the JLTV; cyber security vulnerability assessments and development of associated solutions of the JLTV system and integrated GFE and software.

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<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605813M / <i>Joint Light Tactical Veh (JLTV) Sys Dev &amp; Dem</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	2.105	2.541	2.023	-	2.023
Current President's Budget	2.094	2.541	2.005	-	2.005
Total Adjustments	-0.011	0.000	-0.018	-	-0.018
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.011	0.000			
• Rate/Misc Adjustments	0.000	0.000	-0.018	-	-0.018

**Change Summary Explanation**

The net funding decrease from FY 2021 to FY 2022 of \$0.536M is due to completion of various GSIL C4I integration capabilities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0605813M / <i>Joint Light Tactical Veh (JLTV) Sys Dev &amp; Dem</i>				<b>Project (Number/Name)</b> 3209 / <i>Joint Light Tactical Vehicle</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3209: <i>Joint Light Tactical Vehicle</i>	2.239	2.094	2.541	2.005	-	2.005	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code:</b> 279												

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

This is a CMC Force Design program. Funding supports the JLTV Family of Vehicles (FoV) to include the development and testing of Command, Control, Communications, Computers, & Intelligence (C4I) for integration with the JLTV. JLTV is a joint program between the U.S. Army and the U.S. Marine Corps, of which the U.S. Army is the lead service. The JLTV FoV is capable of performing multiple mission roles designed to provide protected, sustained, and networked mobility for personnel and payloads across the full Range of Military Operations (ROMO). JLTV features include increased performance, protection, and payload over the current legacy HMMWV fleet, reducing ownership costs by maximizing commonality, fuel efficiency and reliability. The commonality of components, maintenance procedures, training, etc, among vehicles are inherent in FoV solutions across mission variants to minimize total ownership costs. Unique service requirements have been minimized.

RDT&E funding supports modernization of the current JLTV by investigating technology insertions including, but not limited to: condition based maintenance, vetronics, autonomous operations and other emerging technologies; engineering change orders (ECOs) and retrofits to maintain the configuration of the RDT&E Government Systems Integration Laboratory (GSIL) trucks being used to integrate various weapons platforms.

Future C4ISR integration activities include integration of systems such as: Marine Air Defense Integrated System (MADIS); Network on the Move (NOTM) Ground Combat Vehicles; Communications Emitter Sensing and Attack Systems (CESAS); Military GPS User Equipment (MGUE); and Remote Weapons System (RWS) Cannon. This line funds costs allocable to the JLTV program.

FY 2022 budget activities include systems engineering/integration activities, Condition Based Maintenance (CBM) development, and engineering design analysis and test efforts. Efforts will focus on the initiation of design, integration and testing for the Next Generation Powertrain which will consider parallel hybrid, series hybrid, and a full electric option; Cyber Scans to evaluate emerging threats and technologies; JLTV Utility Multipurpose Protected Shelter (JUMPS) to support emerging requirements such as Protected Ambulance, and Protected Command and Control; and enhancing performance of Command, Control, Communications, Computers and Intelligence Surveillance and Reconnaissance (C4ISR) system capabilities as they relate to the JLTV; developmental efforts required for the integration of future C4ISR requirements on the JLTV; cyber security vulnerability assessments and development of associated solutions of the JLTV system and integrated GFE and software; and activities at NAVSEA Penn State for the development of a methodology for Condition Based Maintenance (CBM) data architecture for the JLTV. This includes a new methodology for data collection and data transport, development of analytics to derive a JLTV CBM+ performance baseline, and evaluate data sets from the sample data.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605813M / Joint Light Tactical Veh (JLTV) Sys Dev & Dem	<b>Project (Number/Name)</b> 3209 / Joint Light Tactical Vehicle
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The net funding decrease from FY 2021 to FY 2022 of \$0.536M is due to completion of various design study and analysis engineering efforts.

The Marine Corps affirms with a high degree of confidence that the programs in this line item are executable.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p><b>Title:</b> Government Systems Integration Laboratory (GSIL) Analysis and Support Engineering</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2021 Plans:</b> Continue systems analysis and integration activity at the GSIL to assess the JLTV requirements associated with power, weight and space for upgraded legacy C4I systems as well as the introduction of future capabilities such as Marine Air Defense Integrated System (MADIS), Communications Emitter Sensing and Attack Systems (CESAS), Military GPS User Equipment, Marine Corps Handheld device and other Electronic Warfare and radio communication platforms.</p> <p><b>FY 2022 Base Plans:</b> Continue systems analysis and integration activities at the Government Systems Integration Lab (GSIL), Naval Information Warfare Center Atlantic (NIWC) to assess the JLTV Marine Corps requirements associated with software upgrades and cyber vulnerabilities assessment to the JLTV Driver Smart Display Unit (DSDU); and conduct evaluation and integration solution for C4I and weapons systems capabilities such as Marine Air Defense Integrated System (MADIS), Communications Emitter Sensing and Attack Systems (CESAS), Military GPS User Equipment, Marine Corps Handheld Device, Intercom and other Electronic Warfare and communication capabilities.</p> <p><b>FY 2022 OCO Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> The net funding increase from FY 2021 to FY 2020 of \$0.040M is due to expected increase to working capital fund efforts.</p>	1.000	0.210	0.250	0.000	0.250
	-	-	-	-	-
<p><b>Title:</b> Design Study and Analysis</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2021 Plans:</b> Development and continuation of engineering efforts including: 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</p>	1.094	1.681	0.955	0.000	0.955
	-	-	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy				<b>Date:</b> May 2021	
<b>Appropriation/Budget Activity</b> 1319 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0605813M / <i>Joint Light Tactical Veh (JLTV) Sys Dev &amp; Dem</i>		<b>Project (Number/Name)</b> 3209 / <i>Joint Light Tactical Vehicle</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>					
Tactical Network (ITN) and Integrated Vision Augmentation System (IVAS); Ongoing testing to ensure cyber vulnerabilities are considered and mitigated; development and integration of Anti-Idle technology; JLTV Utility Multipurpose Protected Shelter (JUMPS) to support emerging requirements such as Protected Ambulance, and Protected Command and Control; and Field Service Representative (FSR) support.					
<b>FY 2022 Base Plans:</b> Development and continuation of engineering efforts including: Initiation of design, integration and testing for the Next Generation Powertrain which will consider parallel hybrid, series hybrid, and a full electric option; Cyber Scans to evaluate emerging threats and technologies; Integrated Tactical Network (ITN) rapid prototyping to support emerging characterization events; development and integration of Anti-Idle technology; and JLTV Utility Multipurpose Protected Shelter (JUMPS) to support emerging requirements such as Protected Ambulance, and Protected Command and Control.					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> The net funding decreases from FY2021 to FY2022 of \$0.726M is due to completion of various engineering efforts.					
<b>Title:</b> Condition Based Maintenance					
<b>Articles:</b>					
	0.000	0.650	0.800	0.000	0.800
	-	-	-	-	-
<b>FY 2021 Plans:</b> NAVSEA Penn State development of a methodology for Condition Based Maintenance (CBM) data architecture for the JLTV. This includes a new methodology for data collection and data transport, development of analytics to derive a JLTV CBM+ performance baseline, and evaluate data sets from the sample data.					
<b>FY 2022 Base Plans:</b> Continue work on the development of a methodology for Condition Based Maintenance (CBM) data architecture for the JLTV. This includes a new methodology for data collection and data transport, development of analytics to derive a JLTV CBM+ performance baseline, and evaluate data sets from the sample data.					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Navy		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605813M / <i>Joint Light Tactical Veh (JLTV) Sys Dev &amp; Dem</i>	<b>Project (Number/Name)</b> 3209 / <i>Joint Light Tactical Vehicle</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
The net funding increases from FY2021 to FY2022 of \$0.150M is due to increased development efforts on CBM.					
<b>Accomplishments/Planned Programs Subtotals</b>	2.094	2.541	2.005	0.000	2.005

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPA/D15603: <i>JLTV (Army)</i>	906.307	836.623	496.122	-	496.122	-	-	-	-	-	-
• RDT&E/VU9:	7.119	1.678	2.783	-	2.783	-	-	-	-	-	-
0605812A - <i>JLTV (Army)</i>											
• PMC/5095: <i>JLTV (MC)</i>	555.648	368.675	322.013	-	322.013	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

Joint Light Tactical Vehicle (JLTV) is a Joint Service Program with the U.S. Army and U.S. Marine Corps as the two main components. The U.S. Army is the JLTV service lead. The JLTV Program entered the Production and Deployment Phase with the Acquisition Decision Memorandum authorization on 25 August 2015. With Milestone C approval, the 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 FRP deliveries. JPO JLTV procured the Technical Data Package (TDP) with appropriate data rights to allow for future competition for production vehicles and spares. Current contract options may be exercised through 30 November 2023. The follow-on JLTV contract is scheduled to be awarded in Q4FY 2022. JLTV intends to competitively award the follow-on contract as a single award five year requirements contract with five one year options.

A split procurement will occur between the existing Oshkosh contract and the new competitively awarded contract based on the approved acquisition strategy.

The approved Full Rate Production (FRP) joint cost position validated the requirement for continuing RDT&E for system enhancements.

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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605813M / <i>Joint Light Tactical Veh (JLTV) Sys Dev &amp; Dem</i>	<b>Project (Number/Name)</b> 3209 / <i>Joint Light Tactical Vehicle</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Condition Based Maintenance	C/CPFF	Pennsylvania State University : State College, PA	0.000	0.000		0.650	May 2021	0.800	Dec 2021	-		0.800	-	-	-
<b>Subtotal</b>			0.000	0.000		0.650		0.800		-		0.800	-	-	N/A

**Remarks**  
Development of a methodology for Condition Based Maintenance (CBM) data architecture for the JLTV. This includes a new methodology for data collection and data transport, development of analytics to derive a JLTV CBM+ performance baseline, and evaluate data sets from the sample data.

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Integration Laboratory (GSIL)	MIPR	NIWC Atlantic : Charleston, SC	2.239	1.000	Apr 2020	0.210	Mar 2021	0.250	Dec 2021	-		0.250	-	-	-
<b>Subtotal</b>			2.239	1.000		0.210		0.250		-		0.250	-	-	N/A

**Remarks**  
Systems analysis and integration activities at the Government Systems Integration Lab (GSIL), Naval Information Warfare Center Atlantic (NIWC) to assess the JLTV Marine Corps requirements associated with software upgrades and cyber vulnerabilities assessment to the JLTV Driver Smart Display Unit (DSDU); and conduct evaluation and integration solution for C4I and weapons systems capabilities such as Marine Air Defense Integrated System (MADIS), Communications Emitter Sensing and Attack Systems (CESAS), Military GPS User Equipment, Marine Corps Handheld Device, Intercom and other Electronic Warfare and communication capabilities.

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Design Study and Analysis	C/CPFF	Oshkosh Defense : Oshkosh, WI	0.000	1.094	Aug 2020	1.681	May 2021	0.955	Feb 2022	-		0.955	-	-	-
<b>Subtotal</b>			0.000	1.094		1.681		0.955		-		0.955	-	-	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605813M / <i>Joint Light Tactical Veh (JLTV) Sys Dev &amp; Dem</i>	<b>Project (Number/Name)</b> 3209 / <i>Joint Light Tactical Vehicle</i>
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Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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**  
 Development and continuation of engineering efforts including: Initiation of design, integration and testing for the Next Generation Powertrain which will consider parallel hybrid, series hybrid, and a full electric option; Cyber Scans to evaluate emerging threats and technologies; Integrated Tactical Network (ITN) rapid prototyping to support emerging characterization events; development and integration of Anti-Idle technology; and JLTV Utility Multipurpose Protected Shelter (JUMPS) to support emerging requirements such as Protected Ambulance, and Protected Command and Control.

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	2.239	2.094	2.541	2.005	-	2.005	-	-	N/A

**Remarks**

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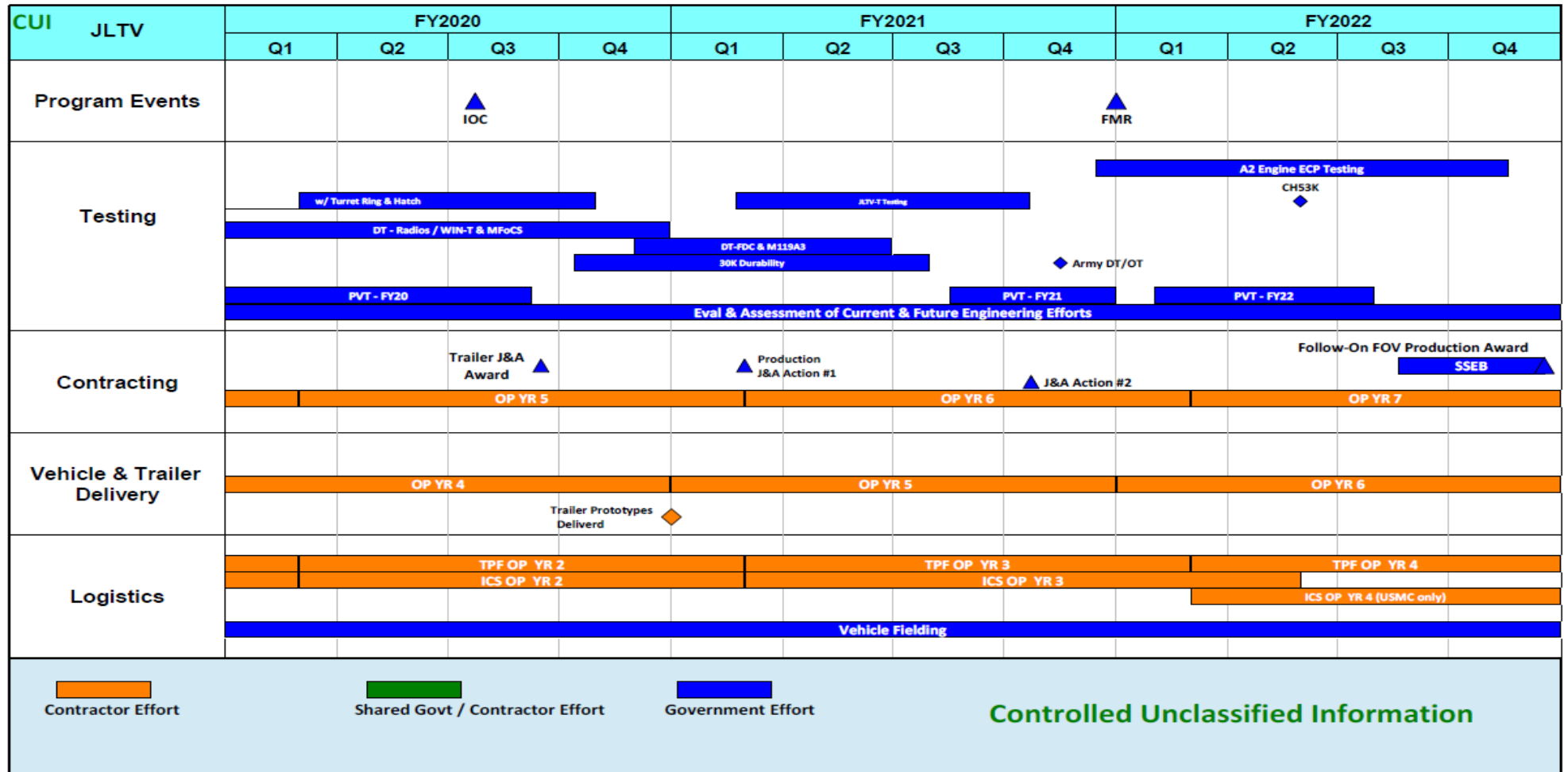
Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy

Date: May 2021

Appropriation/Budget Activity  
1319 / 5

R-1 Program Element (Number/Name)  
PE 0605813M / Joint Light Tactical Veh (JLTV) Sys Dev & Dem

Project (Number/Name)  
3209 / Joint Light Tactical Vehicle



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Navy		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605813M / <i>Joint Light Tactical Veh (JLTV) Sys Dev &amp; Dem</i>	<b>Project (Number/Name)</b> 3209 / <i>Joint Light Tactical Vehicle</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3209</b>				
Production J&A Award	2	2021	2	2021
Follow-on Production Contract Award	4	2022	4	2022