

# UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
2040: Research, Development, Test & Evaluation, Army I BA 5: System Development & Demonstration (SDD)					PE 0605812A I Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	22.530	0.000	2.732	-	2.732	1.744	1.801	1.835	2.010	Continuing	Continuing
VU9: Joint Light Tactical Vehicle	-	22.530	0.000	2.732	-	2.732	1.744	1.801	1.835	2.010	Continuing	Continuing

## Note

FY 2012 funding for the Joint Light Tactical Vehicles (JLTV) program is under Program Element (PE) 0604804A, Project L50.  
FY 2013 and out year funding is under Project Element (PE) 0605812A, Project VU9.

## A. Mission Description and Budget Item Justification

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 goal is a FoV 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 objectives include increased performance, protection, and payload over the current legacy HMMWV fleet, minimizing ownership costs by maximizing commonality, fuel efficiency and reliability. The 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.

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

Major FY20 budget activities include evaluation and assessment to improve reliability, reduce operational and sustainment (O&S) costs, or provide incremental upgrades to the base platform. These include: Li-Ion based technologies and mainstream DoD efforts to optimize the JLTV energy storage system architecture and drastically reduce (O&S) costs; acoustic and thermal signature mitigation technologies; Command, Control, Communications, Computers, and Intelligence (C4I) system packaging optimization efforts; integration of future weapon systems (i.e. Howitzer M119A3); integration of Ground Base Air Defense (GBAD), assured Positioning Navigation and Timing (PNT), Handheld Manpack and Small Form Fit (HMS) Block 2, Mounted Family of Computer Systems (MFoCS); tire solutions that provide more robust sidewalls while also providing optimal tire deflection; and Training Aids, Devices, Simulators and Simulation (TADSS).

**UNCLASSIFIED**

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army				Date: March 2019	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army I BA 5: System Development & Demonstration (SDD)		PE 0605812A I Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)			
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	23.467	2.686	2.732	-	2.732
Current President's Budget	22.530	0.000	2.732	-	2.732
Total Adjustments	-0.937	-2.686	0.000	-	0.000
• Congressional General Reductions	-0.019	-			
• Congressional Directed Reductions	-	-2.686			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.918	-			
Change Summary Explanation					
FY 2018 funding rescission of \$5.677M. FY 2018 final enacted budget amount is \$16.853M. FY19 - \$2.686M congressional reduction due to funding being excess to need					

# UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605812A / Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)				Project (Number/Name) VU9 / Joint Light Tactical Vehicle			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
VU9: Joint Light Tactical Vehicle	-	22.530	0.000	2.732	-	2.732	1.744	1.801	1.835	2.010	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

## Note

FY 2012 funding for the Joint Light Tactical Vehicles (JLTV) program is under Program Element (PE) 0604804A, Project L50.  
FY 2013 and out year funding is under Project Element (PE) 0605812A, Project VU9.

## A. Mission Description and Budget Item Justification

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 goal is a FoV 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 objectives include increased performance, protection, and payload over the current legacy HMMWV fleet, minimizing ownership costs by maximizing commonality, fuel efficiency and reliability. The 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.

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

Major FY20 budget activities include evaluation and assessment to improve reliability, reduce operational and sustainment (O&S) costs, or provide incremental upgrades to the base platform. These include: Li-Ion based technologies and mainstream DoD efforts to optimize the JLTV energy storage system architecture and drastically reduce (O&S) costs; acoustic and thermal signature mitigation technologies; Command, Control, Communications, Computers, and Intelligence (C4I) system packaging optimization efforts; integration of future weapon systems (i.e. Howitzer M119A3); integration of Ground Base Air Defense (GBAD), assured Positioning Navigation and Timing (PNT), Handheld Manpack and Small Form Fit (HMS) Block 2, Mounted Family of Computer Systems (MFoCS); tire solutions that provide more robust sidewalls while also providing optimal tire deflection; and Training Aids, Devices, Simulators and Simulation (TADSS).

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

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<b>Title:</b> Joint Light Tactical Vehicles (JLTV) matrix management and travel support	1.281	-	-
<b>Description:</b> Funding is provided for the support of program management government operations.			
<b>Title:</b> Test and Evaluation Events and Analysis	8.096	-	-
<b>Description:</b> Test and Evaluation Events			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Army			<b>Date:</b> March 2019
<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>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<b>Title:</b> Evaluation and Assessment of current and future engineering efforts <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> Continuation of engineering efforts such as: Li-Ion based technologies and mainstream DoD efforts to optimize the JLTV energy storage system architecture and drastically reduce (O&S) costs; acoustic and thermal signature mitigation technologies; Command, Control, Communications, Computers, and Intelligence (C4I) system packaging optimization efforts; integration of future weapon systems (i.e. Howitzer M119A3); integration of Ground Base Air Defense (GBAD), assured Positioning Navigation and Timing (PNT), Handheld Manpack and Small Form Fit (HMS) Block 2, Mounted Family of Computer Systems (MFoCS); tire solutions that provide more robust sidewalls while also providing optimal tire deflection; and Training Aids, Devices, Simulators and Simulation (TADSS).  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Increase in funding due to FY19 R&D Congressional Mark reduction to zero.	7.476	-	2.732
<b>Title:</b> FY 2018 Rescission <b>Description:</b> FY 2018 Rescission	5.677	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	22.530	-	2.732

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

<b>Line Item</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• D15603: JOINT LIGHT TACTICAL VEHICLE	834.440	1,279.437	996.007	-	996.007	1,096.958	1,096.862	1,096.787	1,096.571	0.000	7,497.062
<b>Remarks</b>											
FY 2018 Enacted Budget is \$810.050M. JLTV is a Joint Program with the United States Marine Corps (USMC)											
Marine Corps Ground Combat/Support Systems, Production 5095 - FY18: 233,439 FY19: 599,274 FY20: 558,107 FY21: 484,337 FY22: 441,728 FY23: 423,591 FY24: 432,023											
Marine Corps Ground Combat/Support Systems, RDTE Project 3209 0605813M - FY18: 19,467 FY19: 0 FY20: 2,105 FY21: 0 FY22: 0 FY23: 0 FY24: 0											

## UNCLASSIFIED

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Army		<b>Date:</b> March 2019
<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>
<p><b><u>D. Acquisition Strategy</u></b></p> <p>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.</p> <p>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 requested separately priced firm fixed price (FFP) option(s) for purchase of the Technical Data Package (TDP) with appropriate data rights to allow for possible future competition for production vehicles and spares.</p> <p>During the LRIP phase, JPO JLTV will continue to produce production vehicles for extensive Test and Evaluation activities to support a Full Rate Production (FRP) decision. A ramp up of JLTV quantities will continue to support fielding to U.S. Army and USMC units once the FRP decision is achieved and allow the program to transition into FRP.</p> <p>In support of a FRP decision, by the end of March 2019, the Program Manager (PM) is to provide test vehicles to Army Futures Command (AFC) and Army Test and Evaluation Command (ATEC) for evaluation of situational awareness optimal solution sets to include larger door windows with and without camera mix. Improvements for noise reductions both internal and external, to include mufflers, alternator isolation and new design on gears for gear box, trans-axle and wheel ends are desired to be included with soldier feedback assessment with situational awareness. Additionally, the PM is to provide a cost estimate for troop seats to include automotive style seat belts with integrated roll-over protection. United States Army Training and Doctrine Command (TRADOC) is tasked to review requirements for JLTV trailer to specified type units. Decision brief on JLTV performance improvements is to be provided to senior leaders no later than May 2019.</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> <p><b><u>E. Performance Metrics</u></b></p> <p>N/A</p>		

**UNCLASSIFIED**

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0605812A / Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)				Project (Number/Name) VU9 / Joint Light Tactical Vehicle					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 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	-
Subtotal			10.982	-		-		-		-		-	0.000	10.982	N/A
Remarks															
Funding for Management Services has shifted from RDT&E to Procurement and Operations and Maintenance - Army(OMA).															
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
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/TBD	To Be Determined : To Be Determined	-	7.476	Jun 2019	-		2.732	Jan 2020	-		2.732	Continuing	Continuing	Continuing
Subtotal			19.091	7.476		-		2.732		-		2.732	Continuing	Continuing	N/A
Remarks															
Joint Light Tactical Vehicles (JLTV) is a Joint Services Program with the U.S. Army and U.S. Marine Corps as the two main components. U.S. Army under PE 0605812A, Project VU9, and the U.S. Marine Corps under PE 0605812M, Project 3209. The LRIP/FRP contract awarded in FY15 has a cost sharing agreement between the services to cover shared RDT&E funded test activities.															

**UNCLASSIFIED**

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019					
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0605812A / Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)						Project (Number/Name) VU9 / Joint Light Tactical Vehicle					
Product Development (\$ in Millions)						FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FY 2018 includes troop seats Evaluation and Assessment for JLTV performance improvements to obtain FRP approval.																	
Support (\$ in Millions)						FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Light Tactical Vehicles (JLTV) Program Management Support	Various	TACOM Life Cycle Management Command (LCMC), : Harrison Township, MI	31.570	0.349	Sep 2018	-		-		-		-		-	0.000	31.919	-
GFE Management / GFE / Integration	MIPR	Various : TBD	18.504	0.932	Sep 2018	-		-		-		-		-	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	-
Subtotal			76.702	1.281		-		-		-		-		-	0.000	77.983	N/A
Remarks																	
Funding for Support Costs decreases due to the end of the development phase as well as programmatic support shifting from RDT&E to Procurement and Operations and Maintenance - Army (OMA).																	

**UNCLASSIFIED**

<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2020 Army												<b>Date:</b> March 2019		
<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>Test and Evaluation (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</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>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Complete Engineering and Manufacturing Development (EMD) Test - Limited User Test (LUT)	MIPR	Army Evaluation Center (AEC) : Aberdeen Proving Ground, MD	41.342	-		-		-		-		-	0.000	41.342	-
Development Testing, MOT&E and Live Fire T&E - Log demo, and corrosion.	Various	TBD : Various	34.898	8.096		-		-		-		-	0.000	42.994	-
FY 2018 Rescission	TBD	N/A : N/A	-	5.677		-		-		-		-	0.000	5.677	-
<b>Subtotal</b>			76.240	13.773		-		-		-		-	0.000	90.013	N/A

  

	<b>Prior Years</b>	<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	183.015	22.530		0.000		2.732		-		2.732	Continuing	Continuing	N/A

  

**Remarks**



**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2020 Army</b>			<b>Date:</b> March 2019		
<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	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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 Up Systems Level (FUSL) Test																												
Full Rate Production Decision																												
Multi-Service Operational Test and Evaluation (MOT&E)																												
Evaluation and Assessment of current and future engineering efforts																												
Army Initial Operating Capability (IOC)																												
Army First Unit Equipped (FUE)																												

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Army			<b>Date:</b> March 2019
<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**

<b>Events</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Test Vehicles and LRIP Contract	4	2015	3	2019
Full Up Systems Level (FUSL) Test	2	2017	1	2018
Full Rate Production Decision	3	2019	3	2019
Multi-Service Operational Test and Evaluation (MOT&E)	2	2018	3	2018
Evaluation and Assessment of current and future engineering efforts	3	2018	4	2024
Army Initial Operating Capability (IOC)	1	2020	1	2020
Army First Unit Equipped (FUE)	2	2019	2	2019