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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	12.768	0.000	11.429	-	11.429	7.123	8.131	3.711	3.782	Continuing	Continuing
659: <i>Family Of Hvy Tac Veh</i>	-	5.771	0.000	0.986	-	0.986	0.500	2.500	0.000	0.000	0.000	9.757
E50: <i>TRAILER DEVELOPMENT</i>	-	0.000	0.000	5.919	-	5.919	1.000	0.000	0.000	0.000	0.000	6.919
VR5: <i>TWV Protection Kits</i>	-	6.997	0.000	4.524	-	4.524	5.623	5.631	3.711	3.782	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element aligns system development and demonstration of Heavy Tactical Vehicles (HTV) with Future Modular Force requirements to support combat and combat support missions. Missions include the following: line haul, local haul, and unit resupply. HTV trucks transport water, ammunition, and general cargo over all terrain and throughout the battle-space. Funding will also be used for developing the Army's next generation of tactical trucks, as part of the Army's Tactical Wheeled Vehicle Modernization Strategy. Funding in this Program Element (PE) supports the Family of Heavy Trucks to include Active Safety technologies, supports periodic evolutionary upgrade of survivability and crew protection for Heavy Tactical Vehicles as described in the Long Term Protection Strategy (LTPS), and supports Trailer Development.

FY 2017 Project 659 funding in the amount of \$.986 million will be used to begin program documentation and pre-Materiel Development Decision (MDD) efforts, as well as, perform requirements and trade analysis to feed into the Technology Development (TD) phase the Enhanced Heavy Equipment Transporter (EHET).

FY 2017 Project E50 funding in the amount of \$5.919 million will be used to start the requirements analysis process through the use of the Dynamic Object Orientated Requirements System (DOORS), as well as, perform a market survey and Whole Systems Trade Analysis (WSTA). The efforts are needed to meet a user approved requirement gap in the Heavy Tactical Trailer fleet as identified in the 25-ton Semi Trailer Low Bed (STLB) Capability Production Document (CPD) approved 10 July 2014.

FY 2017 Project VR5 funding in the amount of \$4.524 million will be used to support the solicitation preparation and rewriting of the Automotive Tank Purchase Description (ATPD) for the HDT. Funding will also be used to develop and test an MRAP-level armor underbody solution for the M915A5 fleet. Testing will include automotive and ballistic testing to achieve Full Materiel Release (FMR) for the armor kit.

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	12.906	0.000	11.509	-	11.509
Current President's Budget	12.768	0.000	11.429	-	11.429
Total Adjustments	-0.138	0.000	-0.080	-	-0.080
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.138	-			
• Other Adjustments 1	-	-	-0.080	-	-0.080

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
659: Family Of Hvy Tac Veh	-	5.771	0.000	0.986	-	0.986	0.500	2.500	0.000	0.000	0.000	9.757
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Heavy Dump Truck (HDT) armor development project has moved to PE 0604622A, Project VR5. FY17PB for Project 659 will fund the Enhanced Heavy Equipment Transporter (EHET), which is a new start.

FY 2015 funding was rescinded in the FY16 Appropriations Act.

A. Mission Description and Budget Item Justification

The Heavy Equipment Transporter System (HETS) is comprised of the M1070A1 Tractor and M1000 Trailer and is used to transport, recover, and evacuate a combat loaded M1 Series main battle tank, an M88, or similar heavy loads. The EHET is a new start program to resolve the need to transport the increased weight of the Abrams System Enhancement Package (SEP) V2 and SEP V3 with Force Protection kits installed as well as alleviating highway transportability limitations. This Program Element (PE) also supports Active Safety technologies for the Family of Heavy vehicles to reduce TWV accidents by 26-59% and result in decreased load on the operator while simultaneously increasing the logistics throughput and reducing maintenance and sustainment cost. Furthermore, Active Safety technologies provide the foundation for future autonomous capability insertion.

FY17 funding will be used to begin program documentation and pre-Materiel Development Decision (MDD) efforts, as well as, perform requirements and trade analysis to feed into the Technology Development (TD) phase.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: EHET Development	-	-	0.261	-	0.261
Description: Perform Pre-Materiel Development Decision (Pre-MDD) Studies					
FY 2017 Base Plans:					
Perform Whole Systems Trade Analysis (WSTA) and Dynamic Object Oriented Requirements System (DOORS) studies.					
Title: EHET System Engineer/Program Management Support (SEPM)	-	-	0.725	-	0.725

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: SEPM includes PM and System Engineering oversight required to manage the program and provide contractor oversight. Salaries, Benefits, Travel, Personnel Training and other Government costs are included for retaining a professional acquisition workforce.</p> <p>FY 2017 Base Plans: Includes program management, engineering and budget support for EHET.</p>					
<p>Title: HDT Test and Evaluation</p> <p>Description: Test and Evaluation (Conduct Testing)</p> <p>FY 2015 Accomplishments: Test and Evaluation</p>	2.327	-	-	-	-
<p>Title: HDT Systems Engineering/Program Management</p> <p>Description: Program Support</p> <p>FY 2015 Accomplishments: Funds will provide program support to the Heavy Tactical Vehicles family.</p>	0.854	-	-	-	-
<p>Title: HDT Prototype Design and Integration</p> <p>Description: Prototype Design and Integration</p> <p>FY 2015 Accomplishments: Prototype Design and Integration</p>	2.590	-	-	-	-
Accomplishments/Planned Programs Subtotals	5.771	-	0.986	-	0.986

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• Family of Heavy Tactical Vehicles: Family of Heavy Tactical Vehicles (FHTV) DA0500	78.425	27.549	39.564	6.122	45.686	39.338	3.966	-	-	0	194.964
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) 659 / <i>Family Of Hvy Tac Veh</i>

D. Acquisition Strategy

The Enhanced Heavy Equipment Transporter (EHETS) acquisition will follow the traditional Joint Capabilities Integration and Development System (JCIDS) process, including a competitive run off, with a pre-Management Decision Document (pre-MDD) entry point in FY16.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604622A / Family of Heavy Tactical Vehicles				659 / Family Of Hvy Tac Veh							
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HDT Prototype Design and Integration	C/FFP	TBD : TBD	5.069	2.590	Jul 2015	-		-		-		-	0	7.659	0
Subtotal			5.069	2.590		-		-		-		-	0.000	7.659	0.000
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Enhanced Heavy Equipment Transporter (EHET) - Whole Systems Trade Analysis (WSTA)	MIPR	Defense Technical Information Center (DTIC) : Ft. Belvoir, VA	0.000	-		-		0.221	Dec 2016	-		0.221	0	0.221	0
EHET - Dynamic Object Oriented Requirements System (DOORS)	MIPR	Defense Technical Information Center (DTIC) : Ft. Belvoir, VA	0.000	-		-		0.040	Dec 2016	-		0.040	0	0.040	0
Heavy Dump Truck (HDT) Prototype Design of Armored Cab	C/IDIQ	TBD : TBD	5.410	-		-		-		-		-	0	5.410	0
Subtotal			5.410	-		-		0.261		-		0.261	0.000	5.671	0.000
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EHET Systems Engineering Program Management (SEPM) Support	MIPR	TACOM LCMC : Warren, MI	0.000	-		-		0.725	Oct 2016	-		0.725	0	0.725	0
HDT SEPM	MIPR	TACOM : Warren, MI	1.365	0.854	Mar 2015	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			1.365	0.854		-		0.725		-		0.725	-	-	-

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) 659 / Family Of Hvy Tac Veh
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Perform pre-MDD Studies																																
Material Development Decision (MDD)																																
Analysis of Alternatives (AoA)																																
Program Milestone Documentation																																
Milestone B																																
Engineering, Manufacturing and Development (EMD) Phase																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) 659 / <i>Family Of Hvy Tac Veh</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Perform pre-MDD Studies	1	2017	1	2018
Materiel Development Decision (MDD)	2	2018	2	2018
Analysis of Alternatives (AoA)	2	2018	4	2019
Program Milestone Documentation	1	2020	4	2020
Milestone B	2	2021	2	2021
Engineering, Manufacturing and Development (EMD) Phase	2	2021	4	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army										Date: February 2016		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles				Project (Number/Name) E50 / TRAILER DEVELOPMENT			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
E50: TRAILER DEVELOPMENT	-	0.000	0.000	5.919	-	5.919	1.000	0.000	0.000	0.000	0.000	6.919
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Semi-Trailer Low Bed (STLB), 25-Ton. This will be a commercially based trailer.

A. Mission Description and Budget Item Justification

The Semi Trailer Low Bed (STLB) is a 25-ton payload capacity semi-trailer with a fixed goose neck, step deck, and rear loading ramps. The STLB is interoperable with a variety of truck tractors residing across the U.S. Army equipment inventory. The STLB will be introduced into a theater of operations to transport Construction Equipment (CE) employed by U.S. Army Engineers to execute horizontal and vertical construction projects in support of U.S. Military or other national goals and objectives. The STLB is employed to transport: CE, miscellaneous equipment, disabled equipment, Class IV (construction materials), and logistical provisions. The STLB supports units in the execution of the following tasks: expand the lodgment, construction/upgrade/rehabilitation and maintenance of Main Supply Routes (MSR), Alternate Supply Routes (ASR), logistical facilities, bituminous roads, helipads, airfields, landing strips, motor pools, parking areas, etc. These types of facilities are required for sustainment operations during decisive action operations. The STLB will also be used during routine exercises/deployments, disaster relief, and other nation building operations. The STLB will be capable of supporting mobility, counter mobility, survivability, counter improvised and sustainment needs and all applicable North Atlantic Treaty Organization (NATO) interoperability criteria. The current 25-ton semi-trailers were manufactured in the 1968 to 1975 timeframe with an average age of 38 to 45 years. The Economic Useful Life (EUL) of the current trailer is 30-years. The existing semi-trailers have far exceeded their EUL and are plagued with problems requiring constant maintenance attention. Repair parts are extremely difficult or impossible to obtain due to inactivity or deletion from the inventory. The burdensome conditions created from the age and maintenance nuisance of the current fleet of 25-ton semi-trailers has placed them in the liability category as opposed to the valued asset category required of units relying on their service.

FY17 funds will be used to start the requirements analysis process through the use of the Dynamic Object Orientated Requirements System (DOORS), as well as, perform a market survey and Whole Systems Trade Analysis (WSTA). The efforts are needed to meet a user approved requirement gap in the Heavy Tactical Trailer fleet as identified in the 25-ton STLB Capability Production Document (CPD) approved 10 July 2014.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Systems Engineering/Program Management (SEPM) Support	-	-	1.899	-	1.899
Description: SEPM includes PM and System Engineering oversight required to conduct requirements analysis, specification development, program management and contractor oversight. Salaries, Benefits, Travel, Personnel Training and other Government costs are included for retaining a professional acquisition workforce.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) E50 / <i>TRAILER DEVELOPMENT</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Labor and travel support includes project management support for initiating project, systems engineering support for development of program documentation, budget/cost analyst support and travel costs to user rep locations to help understand and further define requirements.					
Title: Market Survey Description: Conduct market survey to determine availability of commercially built trailers to meet requirements. FY 2017 Base Plans: Conduct market survey to determine availability of commercially built trailers to meet requirements.	-	-	0.222	-	0.222
Title: Government Required Design and Development Efforts Description: Translate user requirements from Capability Production Document (CPD) to performance specifications. FY 2017 Base Plans: Whole Systems Trade Analysis (WSTA), Dynamic Object Oriented Requirements System (DOORS)	-	-	0.900	-	0.900
Title: Modification of Commercial Design by Original Equipment Manufacturer (OEM) Description: Systems engineering required to assess potential modifications to commercial trailer designs in order to meet military user requirements. FY 2017 Base Plans: Systems engineering required to assess potential modifications to commercial trailer designs in order to meet military user requirements.	-	-	2.898	-	2.898
Accomplishments/Planned Programs Subtotals	-	-	5.919	-	5.919

C. Other Program Funding Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• Family of Heavy Tactical Vehicles: <i>Family of Heavy Tactical Vehicles (FHTV) DA0500</i>	78.425	27.549	39.564	6.122	45.686	39.338	3.966	-	-	0.000	194.964
• Semitrailers, Flatbed: <i>Semitrailer Low Bed, 25 Ton D01650</i>	-	-	-	-	-	7.913	2.974	16.101	16.851	0	43.839

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) E50 / <i>TRAILER DEVELOPMENT</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

Perform market survey of the commercial market to determine if a trailer is available that will either meet requirements or can be modified to meet requirements. Two contractors will be awarded an Indefinite Delivery Indefinite Quantity (IDIQ) contract for prototype trailers each for a run-off test from the Source Selection Evaluation Board (SSEB) selection process. Evaluation of Fair Opportunity Submission Request (FOSR) will result in an award to one contractor for Low Rate Initial Production (LRIP).

E. Performance Metrics

N/A

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) E50 / TRAILER DEVELOPMENT
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Required Design and Development Efforts	MIPR	TARDEC : Warren, MI	0.000	-		-		0.900	Apr 2017	-		0.900	0	0.900	0
Market Survey and Technical Evaluation of Available Commercial Offerings	MIPR	Defense Technical Information Center : Ft. Belvoir, VA	0.000	-		-		0.222	Mar 2017	-		0.222	0	0.222	0
Modification of Commercial Design by Original Equipment Manufacturer (OEM)	C/FFP	TBD : TBD	0.000	-		-		2.898	Dec 2017	-		2.898	0	2.898	0
Subtotal			0.000	-		-		4.020		-		4.020	0.000	4.020	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering/ Program Management (SEPM)	MIPR	TACOM : Warren, MI	0.000	-		-		1.899	Feb 2017	-		1.899	0	1.899	0
Subtotal			0.000	-		-		1.899		-		1.899	0.000	1.899	0.000

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-	0.000	5.919	-	5.919	0.000	5.919	0.000

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) E50 / TRAILER DEVELOPMENT
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Material Development Decision (MDD)																																
Requirements Analysis/Creation of Performance Spec																																
Analysis of Alternatives (AoA)																																
Develop Request for Proposal (RFP)																																
Configuration Steering Board (CSB)																																
Update Performance Spec and RFP																																
Source Selection Evaluation Board (SSEB)																																
Milestone B																																
Award Contracts for Prototypes																																
Build Trailers and Perform Run-off Test																																
Milestone C																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) E50 / <i>TRAILER DEVELOPMENT</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Development Decision (MDD)	2	2017	2	2017
Requirements Analysis/Creation of Performance Spec	1	2017	4	2017
Analysis of Alternatives (AoA)	3	2017	3	2018
Develop Request for Proposal (RFP)	2	2017	4	2017
Configuration Steering Board (CSB)	3	2017	3	2017
Update Performance Spec and RFP	1	2018	2	2018
Source Selection Evaluation Board (SSEB)	4	2018	2	2019
Milestone B	2	2019	2	2019
Award Contracts for Prototypes	3	2019	3	2019
Build Trailers and Perform Run-off Test	3	2019	3	2020
Milestone C	4	2020	4	2020

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
VR5: TWV Protection Kits	-	6.997	0.000	4.524	-	4.524	5.623	5.631	3.711	3.782	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Heavy Dump Truck (HDT) effort was previously funded by PE 0604622A, Project 659. The HDT armor effort has been moved to this project.

A. Mission Description and Budget Item Justification

This program element supports periodic, evolutionary upgrade of survivability and crew protection for Heavy Tactical Vehicles (HTV) as described in the Tactical Wheeled Vehicle (TWV) Strategy and individual variants' Capability Production Documents. The upgrades will leverage the Army Technology Objective's (ATO) survivability and Army Research Laboratory's (ARL) research and development activities to develop and evaluate kits which increase the protection level of all HTVs to the MRAP protection level as well as anticipating changing threat environments, protection gaps, or improving the operating performance, efficiency, and reliability through armor weight reduction. This Program Element (PE) also supports increasing crew protection by leveraging advancements in autonomous ground vehicle technology via development and evaluation of autonomous applique kits that can be applied to the current and future HTV fleet.

The Heavy Dump Truck (HDT) supports construction projects by loading, transporting and dumping payloads of sand and gravel aggregates, crushed rock, hot asphalt mixes, earth, clay, rubble, large boulders and other materials up to gross vehicle weight rating to job sites under world-wide climatic conditions. The HDT also serves as a quarry truck for the quick transport of bulk raw earth material to and from the crushing, screening and washing plant and the asphalt mixing plant. The HDT also serves as a transportation asset for organizational equipment. The HDT is Long Term Armor Strategy (LTAS) compliant with armored protection and includes a material control system coupled with the heated bed and Command, Control, Communications, Computers, and Intelligence (C4I) electrical architecture.

The M915A5 tractor truck manufactured by Daimler Trucks North America LLC is a prime mover of flatbed and tanker semi-trailers used primarily to transport containers, bulk cargo and petroleum products over primary and secondary roads and trails under worldwide climatic conditions. It has a diesel engine, automatic transmission, anti-lock brakes, air conditioning, and a fully sliding 36 inch fifth wheel. It has a Gross Vehicle Weight Rating (GVWR) of 66,000 lbs and is compatible with the following trailers: M872 (34-ton flatbed trailer), M871 (22-1/2 ton flatbed trailer), M127 (12-ton stake trailer), M967/969 (5000-gallon trailer), M1062 (7500-gallon trailer), M1062A1 (9200-gallon trailer), MILVAN, and commercial trailers. The M915A5 has two configurations, a base armor-ready A-Cab and an up-armored B-Kit. M915A5 underbody Protection Kits are required to protect the line haul fleet from current and future threats and add protection to the B-kit configuration.

FY 2017 base funding in the amount of \$4.524 million will be used to support the solicitation preparation and rewriting of the Automotive Tank Purchase Description (ATPD) for the HDT. Funding will also be used to develop and test an MRAP-level armor underbody solution for the M915A5 fleet. Testing will include automotive and ballistic testing to achieve Full Materiel Release (FMR) for the armor kit.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits				
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Heavy Dump Truck (HDT) Armor Development Description: Develop HDT Armor FY 2017 Base Plans: Procure HDT armor test assets		-	-	0.350	-	0.350
Title: HDT System Engineering/Program Management (SEPM) Support Description: SEPM includes PM and System Engineering oversight required to conduct requirements analysis, specifications development, program management and contractor oversight. Salaries, Benefits, Travel, Personnel Training and other Government costs are included for retaining a professional acquisition workforce. FY 2017 Base Plans: Includes labor support for management of project (i.e., cost, schedule, performance); engineering (Technical Data Package (TDP) update, test support); Product Assurance Test and Evaluation (PAT&E) support.		-	-	0.250	-	0.250
Title: M915A5 Underbody Armor - SEPM Description: SEPM includes PM and System Engineering oversight required to conduct requirements analysis, specification development, program management and contractor oversight. Salaries, Benefits, Travel, Personnel Training and other government costs are included for retaining a professional acquisition workforce. FY 2017 Base Plans: Includes labor support for management of project (i.e., cost, schedule, performance, Type Classification/Full Materiel Release); engineering (Technical Data Package update, test support); logistics (including Validation/ Verification-VAL/VER, mechanics, tech writer); provisioning, Product Support Integration Directorate (PSID) support; Product Assurance Test and Evaluation (PAT&E) support. Travel includes 3 trips--2 to witness testing and 1 to conduct the VAL/VER.		-	-	0.739	-	0.739
Title: M915A5 Underbody Armor - Test and Evaluation Description: Develop, test and evaluate Underbody Armor for the M915A5 FY 2017 Base Plans:		-	-	3.185	-	3.185

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Develop and test an MRAP-level armor underbody solution for the M915A5 fleet. Testing will include automotive and ballistic testing to achieve Full Materiel Release (FMR) for the armor kit.					
Title: Heavy Equipment Transport Urban Survivability Kits (HUSK) Systems Engineering/Program Management (SEPM) Description: SEPM support for HUSK FY 2015 Accomplishments: SEPM for HUSK	0.170	-	-	-	-
Title: HUSK Design and Build Armor Kits Description: Design and build prototype kits for the Heavy Tactical Vehicle systems. FY 2015 Accomplishments: Design and build Heavy Equipment Transport Urban Survivability Kit (HUSK) prototype kits in terms of form, fit, and function sufficient to validate the required protection levels and kit interface to the vehicle platform.	1.906	-	-	-	-
Title: HUSK Test and Evaluation Description: Funding is provided for the following efforts. FY 2015 Accomplishments: Validation of Heavy Equipment Transport Urban Survivability Kit (HUSK) design in preparation of Full Materiel Release.	1.531	-	-	-	-
Title: HUSK Logistics Support Description: HUSK Logistics Support FY 2015 Accomplishments: Includes development of update to Heavy Equipment Transporter (HET) manual, parts provisioning, installation instructions, and update of Technical Data Package (TDP) from Level 2 to Level 3.	3.390	-	-	-	-
Accomplishments/Planned Programs Subtotals	6.997	-	4.524	-	4.524

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 005: Family of Heavy Tactical Vehicles (FHTV) (DA0500)	78.425	27.549	39.564	6.122	45.686	39.338	3.966	-	-	0	194.964
• 000: Heavy Tactical Vehicle Protection Kits (D04017)	17.289	23.331	34.208	79.941	114.149	25.124	25.172	28.643	29.371	0	263.079

Remarks

D. Acquisition Strategy

Heavy Dump Truck (HDT) Armor: The FY17-19 dollars will be used to develop and build an armor solution for the HDT. This armored solution will be tested prior to approval for build to incorporate to the HDT production which will be procured after MS C decision in 2QFY18.

M915 Underbelly Armor: Funds will be dedicated to develop and test an MRAP-level armor underbody solution for the M915A5 fleet. Testing will include automotive and ballistic testing to achieve FMR for the armor kit.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)							
2040 / 5				PE 0604622A / Family of Heavy Tactical Vehicles					VR5 / TWV Protection Kits							
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
SBIR/STTR	C/TBD	WARREN, MI : TBD	0.058	-		-		-		-		-	0	0.058	0	
Subtotal			0.058	-		-		-		-		-	0.000	0.058	0.000	
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Heavy Dump Truck (HDT) Prototype Design of Armored Cab	C/DIQ	TBD : TBD	0.000	-		-		0.350	Jun 2017	-		0.350	0	0.350	0	
Heavy Equipment Transport Urban Survivability Kits (HUSK) - Design and Build	MIPR	TARDEC : Warren, MI	2.720	1.906		-		-		-		-	0	4.626	0	
HUSK Logistics Support	MIPR	TARDEC : Warren, MI	0.000	3.390		-		-		-		-	0	3.390	0	
Subtotal			2.720	5.296		-		0.350		-		0.350	0.000	8.366	0.000	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
HDT - HTV Systems Engineering/Program Management (SEPM)	MIPR	TACOM LCMC : Warren, MI	0.000	-		-		0.250	Nov 2016	-		0.250	0	0.250	0	
M915A5 Underbody Armor - SEPM	MIPR	TACOM LCMC : Warren, MI	0.000	-		-		0.739	Nov 2016	-		0.739	0	0.739	0	
HUSK - SEPM	MIPR	TARDEC : Warren, MI	0.667	0.170		-		-		-		-	0	0.837	0	
Subtotal			0.667	0.170		-		0.989		-		0.989	0.000	1.826	0.000	

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
M915A5 Underbody Armor Preproduction	MIPR	TARDEC : Warren, MI	0.000	-		-		0.660	Nov 2016	-		0.660	0	0.660	0
M915A5 Underbody Armor - Ballistic and Automotive Testing	MIPR	Automotive Test Center (ATC) : Abedeen, MD	0.000	-		-		2.100	Nov 2016	-		2.100	0	2.100	0
M915A5 Underbody Armor - Test Support from U.S Army Materiel Systems Analysis Activity (AMSAA)	MIPR	AMSAA : Aberdeen, MD	0.000	-		-		0.200	Nov 2016	-		0.200	0	0.200	0
M915A5 Underbody Armor - Test Support from Army Research Lab (ARL)	MIPR	ARL : Adelphi, MD	0.000	-		-		0.200	Nov 2016	-		0.200	0	0.200	0
M915A5 Underbody Armor - Test Support from Army Evaluation Command (AEC)	MIPR	AEC : Aberdeen, MD	0.000	-		-		0.025	Nov 2016	-		0.025	0	0.025	0
HUSK - Test and Evaluation	MIPR	Various Locations : Various Locations	2.775	1.531		-		-		-		-	0	4.306	0
Subtotal			2.775	1.531		-		3.185		-		3.185	0.000	7.491	0.000
Project Cost Totals			6.220	6.997		0.000		4.524		-		4.524	0.000	17.741	0.000

Remarks

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

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / Family of Heavy Tactical Vehicles	Project (Number/Name) VR5 / TWV Protection Kits
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
HDT Configuration Steering Board (CSB)																												
HDT Solicitation Preparation/Automotive Tank Purchase Description (AT)																												
HDT Issue Request for Proposal (RFP)																												
HDT Contract Award																												
HDT Milestone B/C (Armor/Truck)																												
HDT Armor Development																												
HDT Armor Test Asset Build																												
HDT Armor Build																												
M915A5 Underbody Armor - Test and Evaluation																												
M915A5 Underbody Armor - Type Classification/Full Materiel Release (T)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604622A / <i>Family of Heavy Tactical Vehicles</i>	Project (Number/Name) VR5 / <i>TWV Protection Kits</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
HDT Configuration Steering Board (CSB)	4	2015	4	2015
HDT Solicitation Preparation/Automotive Tank Purchase Description (ATPD), Etc.	1	2017	2	2017
HDT Issue Request for Proposal (RFP)	2	2017	2	2017
HDT Contract Award	2	2018	2	2018
HDT Milestone B/C (Armor/Truck)	2	2018	2	2018
HDT Armor Development	2	2018	2	2019
HDT Armor Test Asset Build	2	2019	4	2020
HDT Armor Build	2	2021	4	2021
M915A5 Underbody Armor - Test and Evaluation	1	2017	4	2017
M915A5 Underbody Armor - Type Classification/Full Materiel Release (TC/FMR)	4	2017	4	2017

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