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

<b>Appropriation/Budget Activity</b> 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	<b>R-1 Program Element (Number/Name)</b> PE 0604290A / Mid-tier Networking Vehicular Radio (MNVR)
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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	-	9.355	8.763	12.172	-	12.172	10.700	0.000	8.000	1.700	Continuing	Continuing
DW1: Mid-Tier Wideband Networking Vehicular Radio Mnvr	-	9.355	8.763	12.172	-	12.172	10.700	0.000	8.000	1.700	Continuing	Continuing

**Note**

Milestone C (MS C) moved from 4QFY 2015 to 3QFY 2016 to conduct Vice Chief of Staff, Army (VCSA) directed Mid-Tier Assessment at Network Integration Evaluation (NIE) 16.2.

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

The Mid-tier Networking Vehicular Radios (MNVR) enables the extension of data services within the tactical network through seamless integration of the upper and lower tiers; providing software-defined, multi-channel networking radios for a wide variety of Army tactical vehicles to meet the Army's requirement for the Mid-tier Wideband Networking (MWN) capability. The MNVR provides self-forming and self-healing communication networks from the brigade to the platoon level throughout the full range of military operations.

The MNVR, a modified Non-Developmental Item (NDI), supports Army Mission Command operational requirements with a multi-channel, Type 1 (supporting multiple independent levels of security), vehicular mounted radio hosting networking waveforms Wideband Networking Waveform (WNW) and Soldier Radio Waveform (SRW). The MNVR narrows the data capability gap at the Brigade Combat Team (BCT) company level and provides the capability to build a data extension to the lowest echelons, and then enables the extension of services from the Forward Operating Base (FOB) to the platform. MNVR provides a dynamic, scalable, On-the-Move (OTM) network architecture, connecting the Soldier to the Mission Command (MC) Network and enhances capability to exchange voice and data simultaneously and faster than current systems. The advanced network waveforms provide rapid distribution of data and imagery with increased information assurance protection and automatic routing across complex terrain. The system operates Internet Protocol (IP) based networking waveforms offering increased data throughput through self-forming, self-healing, managed communication networks. Its route and retransmit functionality links waveforms in different frequency bands, within the 2 Megahertz (MHz) to 2 Gigahertz (GHz) range, to form one coherent network. MNVR nomenclature has been designated as AN/VRC-118(V)1.

A single award contract was awarded on 24 September 2013, Indefinite Delivery Indefinite Quantity (IDIQ), firm fixed price, 3-year ordering period. Production of 232 radios for Test & Evaluation and certification purposes was completed in 3QFY 2014. Upon successful MS C decision in 3QFY 2016, Product Manager (PdM) MNVR will prepare for Initial Operational Test and Evaluation (IOT&E) of the current system, and procure platform integration assets.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Army	<b>Date:</b> February 2016
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<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 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	9.725	8.763	7.432	-	7.432
Current President's Budget	9.355	8.763	12.172	-	12.172
Total Adjustments	-0.370	0.000	4.740	-	4.740
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-0.370	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	4.740	-	4.740

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Army										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 2040 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>				<b>Project (Number/Name)</b> DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
DW1: <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>	-	9.355	8.763	12.172	-	12.172	10.700	0.000	8.000	1.700	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

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The MNVR, a modified Non-Developmental Item (NDI), supports Army Mission Command operational requirements with a multi-channel, Type 1 (supporting multiple independent levels of security), vehicular mounted radio hosting networking waveforms, Wideband Networking Waveform (WNW) and Soldier Radio Waveform (SRW). The MNVR narrows the data capability gap at the Brigade Combat Team (BCT) company level and provides the capability to build a data extension to the lowest echelons, and then enables the extension of services from the Forward Operating Base (FOB) to the platform. MNVR provides a dynamic, scalable, On-the-Move (OTM) network architecture, connecting the Soldier to the Mission Command (MC) Network and enhances capability to exchange voice and data simultaneously and faster than current systems. The advanced network waveforms provide rapid distribution of data and imagery with increased information assurance protection and automatic routing across complex terrain. The system operates Internet Protocol (IP) based networking waveforms offering increased data throughput through self-forming, self-healing, managed communication networks. Its route and retransmit functionality links waveforms in different frequency bands, within the 2 Megahertz (MHz) to 2 Gigahertz (GHz) range, to form one coherent network. MNVR nomenclature has been designated as AN/VRC-118(V)1.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Mid-tier Networking Vehicular Radio (MNVR)	9.355	8.763	12.172
<b>Description:</b> RDTE funding supports efforts to test and certify industry solutions for a modified NDI radio; contract management, and test & certification efforts through IOT&E.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Army		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	<b>Project (Number/Name)</b> DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b><i>FY 2015 Accomplishments:</i></b> FY 2015 supports efforts needed to execute the modified NDI strategy for a mid-tier networking vehicular radio capability; focus is on test, system certification and initial sustainment planning for the AN/VRC-118(V)1 MNVR. Planned activities, in accordance with the MNVR acquisition plan include: Counter-Remote Control Improvised Explosive Device Electronic Warfare (CREW) testing; conduct of Limited User Test (LUT) at Network Integration Evaluation (NIE) 15.2, from which an Operational Test Agency Milestone Assessment Report (OMAR) will be developed to inform a MS C decision; Government Regression Testing (GRT); Logistics Demonstration (Log Demo); and Tropical Testing.</p> <p><b><i>FY 2016 Plans:</i></b> FY 2016 supports efforts needed to execute the modified NDI strategy for a mid-tier networking vehicular radio capability; focus is on continued test and system certification efforts for the AN/VRC-118(V)1 MNVR. Planned activities include participation in a VCSA directed Mid-Tier Assessment at NIE 16.2, ongoing GRT, System of System (SoS) Risk Reduction Testing, range testing in a dense foliage environment, and preparation for IOT&amp;E.</p> <p><b><i>FY 2017 Plans:</i></b> FY 2017 supports system test and evaluation efforts needed to execute the modified NDI strategy for a mid-tier networking vehicular radio capability; focus is on continued test and system certification efforts for the AN/VRC-118(V)1 MNVR. Planned activities include conduct of IOT&amp;E, from which an OMAR will be developed to inform a Full-Rate Production (FRP) decision in 3QFY 2018; development of a Request for Proposal (RFP) for follow-on radio contract award; Initial Operating Capability (IOC); and continued MNVR Systems Test and Evaluation efforts.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	9.355	8.763	12.172

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

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPA Funding - B51001: <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	4.692	27.762	25.017	-	25.017	41.658	50.892	46.053	50.408	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The MNVR is a modified NDI industry solution for a multi-channel vehicular radio hosting networking waveforms. This modified NDI approach takes advantage of competitively priced, mature and producible technology that meets technical specifications.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Army		<b>Date:</b> February 2016
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An Acquisition Decision Memorandum (ADM) was signed on 20 September 2013 by the Defense Acquisition Executive (DAE), approving a Materiel Development Decision (MDD). The ADM designated MNVR as an ACAT 1D Special Interest Program under the continued oversight of the DAE. The ADM also approved the award of a competitive contract, and authorized the procurement of up to 232 modified NDI radios for Test & Evaluation, Platform Integration and Certification purposes in order to inform a MS C decision.

In 3QFY 2016, the MNVR program will provide all statutory and regulatory documentation in requesting a MS C decision, which will allow the program to move forward into Low Rate Initial Production (LRIP). PdM MNVR will proceed to IOT&E in order to obtain a FRP decision in FY 2018.

**E. Performance Metrics**

N/A

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

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604290A / Mid-tier Networking Vehicular Radio (MNVR)	<b>Project (Number/Name)</b> DW1 / Mid-Tier Wideband Networking Vehicular Radio MnvR
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<b>Management Services (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 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>			
Management Services - PMO	Various	Aberdeen Proving Ground : Maryland	35.935	0.489		0.105		0.316		-		0.316	Continuing	Continuing	0
<b>Subtotal</b>			35.935	0.489		0.105		0.316		-		0.316	-	-	0.000

<b>Product Development (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 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>			
System Development Analysis and Product Source Selection	C/FFP	Aberdeen Proving Ground : Maryland	14.301	-		-		-		-		-	Continuing	Continuing	0
<b>Subtotal</b>			14.301	-		-		-		-		-	-	-	0.000

**Remarks**  
Initial Operational Test & Evaluation (IOT&E) has been shifted to start 3QFY 2017. IOT&E assets will be procured with OPA funds, post MS C, now scheduled for 3QFY 2016.

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 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>			
Systems Test and Evaluation	RO	Multiple : Various	21.873	8.866		8.658		11.856		-		11.856	Continuing	Continuing	0
<b>Subtotal</b>			21.873	8.866		8.658		11.856		-		11.856	-	-	0.000

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	72.109	9.355	8.763	12.172	-	12.172	-	-	0.000

**Remarks**

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

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	<b>Project (Number/Name)</b> DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>
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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
Developmental Test (Govt Integration Test) 1																												
Limited User Test (LUT) at NIE 15.2																												
Logistics Demonstration																												
Government Regression Testing (GRT) 1.2																												
Mission Command Network Refinement (MCNR) at NIE 16.2																												
(1) Milestone C (MS C)																												
Low Rate Initial Production / Limited Deployment									LRIP / LD																			
Log Demonstration																												
Initial Operational Test and Evaluation (IOT&E)																												
Request for Proposal (RFP) Release Follow-on Contract																												
Source Selection Performance Demonstrations (SSPDs)													SSPDs															
Initial Operating Capability (IOC)									IOC																			
(2) Full Rate Production (FRP) Decision																	FRP Decision											

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

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604290A / <i>Mid-tier Networking Vehicular Radio (MNVR)</i>	<b>Project (Number/Name)</b> DW1 / <i>Mid-Tier Wideband Networking Vehicular Radio Mnvr</i>
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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				
(1) Contract Award																																
Full Rate Production (FRP)																																
Government Integration Test (GIT)																																
Follow-On Operational Test & Evaluation (FOT&E)																																
FOT&E Gov't Regression Testing																																

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Army		<b>Date:</b> February 2016
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Developmental Test (Govt Integration Test) 1	1	2015	1	2015
Limited User Test (LUT) at NIE 15.2	3	2015	3	2015
Logistics Demonstration	4	2015	4	2015
Government Regression Testing (GRT) 1.2	1	2016	2	2016
Mission Command Network Refinement (MCNR) at NIE 16.2	3	2016	3	2016
Milestone C (MS C)	3	2016	3	2016
Low Rate Initial Production / Limited Deployment	4	2016	4	2018
Log Demonstration	2	2017	2	2017
Initial Operational Test and Evaluation (IOT&E)	3	2017	3	2017
Request for Proposal (RFP) Release Follow-on Contract	3	2017	3	2017
Source Selection Performance Demonstrations (SSPDs)	1	2018	4	2018
Initial Operating Capability (IOC)	3	2017	4	2017
Full Rate Production (FRP) Decision	3	2018	3	2018
Contract Award	1	2019	1	2019
Full Rate Production (FRP)	1	2019	4	2022
Government Integration Test (GIT)	2	2019	4	2019
Follow-On Operational Test & Evaluation (FOT&E)	2	2020	3	2020
FOT&E Gov't Regression Testing	4	2020	4	2020

**Note**

06 May 2013: Joint Requirements Review Council (JROC) approved the MNVR Capability Production Document (CPD)  
 09 May 2013: Defense Acquisition Executive (DAE) changed basis of the program from Directed Requirement to the MNVR CPD  
 - Directed that MNVR would not field until all MS C requirements met. Delayed fielding from Capability Set (CS) 15 to CS 17  
 20 Sept 2013: DAE signs MNVR Milestone Decision Document (MDD)

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Army		<b>Date:</b> February 2016
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24 Sept 2013: Army Contracting Command (ACC) awards MNVR contract to Harris Corporation; executed delivery order of 232 radios. May 2015: MNVR conducted a successful LUT at Network Integration Evaluation (NIE) 15.2 in preparation for MS C.		