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

<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 0605031A / <i>Joint Tactical Network (JTN)</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	-	17.305	18.055	16.014	-	16.014	24.258	24.025	23.338	22.895	Continuing	Continuing
EF5: <i>Joint Tactical Network (JTN)</i>	-	17.305	18.055	10.038	-	10.038	7.315	5.670	4.729	3.806	Continuing	Continuing
EX6: <i>Waveforms</i>	-	0.000	0.000	5.976	-	5.976	16.943	18.355	18.609	19.089	Continuing	Continuing

**Note**

In FY 2013, Joint Tactical Networks (JTN) was funded in the Navy Program Element (PE) 0604280N (Joint Tactical Radio System (JTRS)), Project No.3076 (formally known as JTRS Network Enterprise Domain (JNED)). JNED was renamed JTN and the Joint Executive Program Office (JPEO) JTRS transitioned to the JTNC in FY 2013, in accordance with the Acquisition Decision Memorandum (ADM) dated 11 July 2012. FY 2013 and FY 2014 JTNC funding was provided by the JTN Program via PE 0604280N and PE 0605030A, respectively.

As per the ADM dated 20 January 2014, JTN and JTNC became separate entities and PE 0605031A (Project Code EF5) was created for JTN. The 2014 ADM also directed that the waveform development and sustainment responsibilities transition to the Services in 4QFY15. PdM Waveforms (SRW, WNW) transitioned to PM TR; PdM Joint Enterprise Network Manager (JENM) transitioned to PM WIN-T; and Mobile User Objective System (MUOS) and Link16 transitioned to the Navy. For FY 2015 and out, the Army PE 0605031 contains only the JTN (Waveforms & JENM) RDT&E funding. As part of the joint program budget strategy for JENM, each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E funds for joint efforts. Joint funding is held at the Navy PE 0605030N and Air Force PE 0605030F. Prior to the year of execution, the funding is consolidated in the Army PE (0605031A) for execution.

In FY17 and out Waveform funding will now be in the Army PE 0605031A, Project Code EX6, while JENM funding will remain in Army PE 0605031A, Project Code EF5.

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

Join Tactical Networks (JTN) efforts are executed by PdM Waveforms and PdM JENM. They are responsible for the portable, interoperable, mobile ad hoc networking waveforms and network enterprise services to enhance tactical warfighting capabilities. PdM Waveforms and PdM JENM applications are: (1) Interoperable - among all Services, capable of operating in a variety of hardware items, for both Program of Record and commercial Non-Developmental Item (NDI) radios; (2) Secure - meet all DoD and US Government information assurance requirements; (3) Operationally relevant - quickly and effectively meet evolving network mission requirements of Combatant Commanders and the Services; (4) Affordable - drive down procurement and support costs via a robust, competitive Non-Developmental Item (NDI) market which adheres to open government standards.

In accordance with the Joint Tactical Networking Center (JTNC) Acquisition Decision Memorandum (ADM) and Charter dated 20 January, 2014, the JTN active efforts include the Soldier Radio Waveform (SRW), the Wideband Networking Waveform (WNW) and JENM. Due to the PdM Waveforms extensive knowledge and expertise, PdM Waveforms will also enhance, update, and sustain the following Legacy Waveforms on a reimbursable basis: the High Frequency (HF) waveform, the merged HAVE QUICK II (HQII) and Very High Frequency (VHF)/Ultra High Frequency (UHF) Line of Sight (VULOS) waveforms, the Joint Tactical Radio System

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(JTRS) Bowman waveform (JBW), the Single Channel Ground and Airborne Radio System (SINCGARS) waveform and the UHF Satellite Communications (SATCOM) waveform.

FY2017 Base RDTE dollars in the amount of \$16.014 million supports the continued development of the Waveforms and JENM, testing support and the program management office. Starting in FY2017, PdM Waveforms will be executing from project code EX6.

<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	17.999	18.055	21.580	-	21.580
Current President's Budget	17.305	18.055	16.014	-	16.014
Total Adjustments	-0.694	0.000	-5.566	-	-5.566
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.694	-			
• Adjustments to Budget Years	-	-	-5.566	-	-5.566

**Change Summary Explanation**

\$5.566 million of FY17 RDT&E funds were aligned to Operation and Maintenance, Army (OMA) in order to properly execute sustainment activities.

In accordance with the signed JTNC ADM and Charter dated 20 January 2014, Program Element (PE) 0605031A was established to execute JTN requirements in PB2015. FY 2015 was the first year funds were aligned to that PE. The Army has aligned their Service share of JENM and Waveform funding fully within the JTN PE for PB 2016. The Navy and Air Force funding for the JENM joint requirements remains in Navy PE 0605030N (shared) and Air Force PE 0605030F (shared). As part of the joint program budget strategy, each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E funds for joint efforts. Prior to the year of execution, the funding is consolidated in the Army PE for execution.

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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 0605031A / <i>Joint Tactical Network (JTN)</i>				<b>Project (Number/Name)</b> EF5 / <i>Joint Tactical Network (JTN)</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>
EF5: <i>Joint Tactical Network (JTN)</i>	-	17.305	18.055	10.038	-	10.038	7.315	5.670	4.729	3.806	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2013, Joint Tactical Networks (JTN) was funded in the Navy Program Element (PE) 0604280N (Joint Tactical Radio System (JTRS)), Project No.3076 (formally known as JTRS Network Enterprise Domain (JNED)). JNED was renamed JTN and the Joint Executive Program Office (JPEO) JTRS transitioned to the Joint Tactical Networking Center (JTNC) in FY 2013, in accordance with the Acquisition Decision Memorandum (ADM) dated 11 July 2012. FY 2013 and FY 2014 JTNC funding was provided by the JTN Program via PE 0604280N and PE 0605030A, respectively.

As per the ADM dated 20 January 2014, JTN and JTNC became separate entities and PE 0605031A (Project Code EF5) was created for JTN. The 2014 ADM also directed that the waveform development and sustainment responsibilities transition to the Services in 4QFY15. PdM Waveforms Soldier Radio Waveform (SRW) and Wideband Networking Waveform (WNW) transitioned to PM Tactical Radios; PdM Joint Enterprise Network Manager (JENM) transitioned to PM WIN-T; and Mobile User Objective System (MUOS) and Link16 transitioned to the Navy. For FY 2015 and FY 2016, the Army PE 0605031 contains only the JTN (Waveforms & JENM) RDT&E funding. As part of the joint program budget strategy for JENM, each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E funds for joint efforts. Joint funding is held at the Navy PE 0605030N and Air Force PE 0605030F. Prior to the year of execution, the funding is consolidated in the Army PE (0605031A) for execution.

In FY17 and out, PdM Waveforms funding will now be in the Army PE 0605031A, Project Code EX6, while JENM funding will remain in Army PE 0605031A, Project Code EF5.

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

PdM JENM provides the ability to Plan, Monitor, Configure and Control the Army's Software Defined Radio (SDR) communication networks. JENM configures numerous Soldier Defined Radios (SDR) such as the Manpack, Mid-Tier Networking Vehicular Radio (MNVR) and Rifleman, enabling them to utilize the Mobile Ad Hoc Networking (MANET) waveforms such as the SRW, WNW, MUOS and Single Channel Ground and Airborne Radio (SINCGARs) waveforms. Furthermore, JENM provides the Commander the ability to quickly reconfigure critical networks using its' Over the Air Management (OTAM) functionality. JENM enhances the S6's ability to conduct Course of Action Analysis (COA) and the Military Decision Making Process (MDMP) providing commander's critical information regarding their ability to effectively communicate.

In accordance with the JTNC ADM and Charter dated 20 January 2014, the JTN active efforts include the SRW, the WNW and the JENM.

FY 2015 and FY 2016, Army PE 0605031.EF5 contains only the JTN (Waveforms & JENM) RDT&E funding. Starting in FY17, PdM Waveforms will be executing from Project Code EX6.

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<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EF5 / <i>Joint Tactical Network (JTN)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b>Title:</b> SRW Development</p> <p><b>Description:</b> SRW will operate on tactical radio sets to provide a networked battlefield communications capability for users engaged in land combat operations and will support voice, data, and video communications on the immediate battlefield. These forces include vehicles, rotary wing, dismounted soldiers, munitions, sensors, and unmanned air vehicles (UAV). Functional software applications will use SRW radio enabled sets over Internet Protocol (IP) capable networks and sub-networks. SRW will be interoperable with higher throughput, IP based network waveforms, such as Wideband Networking Waveform (WNW). As applicable, these IP-based networking waveforms will enable information exchanges through the Global Information Grid (GIG) to the soldier and provide entirely new capabilities for battlefield communications and information sharing. SRW is currently ported on 21 different radio platforms with 9 different vendors.</p> <p>FY15 effort: JTN Enterprise Over-the-Air Management (OTAM) design provides Non-Developmental Integration (NDI) vendors a portable Operating Environment (OE)-centric OTAM approach extensible to SRW, WNW, and future networking waveforms. The Enterprise OTAM is platform and waveform agnostic and provides remote Unit Task Reorganization and radio management capabilities.</p> <p><b>FY 2015 Accomplishments:</b> Continued to develop, evolve and enhance SRW to provide improved performance and address user concerns identified in operational testing. Maintain test facility to conduct SRW test and evaluation. Released SRW v1.2.1, Enterprise OTAM v1.0 and v1.1. Begin SRW v1.2.2 efforts.</p> <p><b>FY 2016 Plans:</b> Continue to develop, evolve and enhance SRW to provide improved performance. Maintain test facility to conduct SRW test and evaluation. Release of SRW v1.2.2 and v1.3 will provide Emissions Control (EMCON) with Push to Talk (PTT) capability, and network performance. Begin SRW v2.0 efforts.</p>		0.961	2.066	-
<p><b>Title:</b> WNW Development</p> <p><b>Description:</b> WNW is a high data rate Mobile Adhoc NETworking (MANET) waveform application that provides the mid tier tactical Internet backbone and connects tactical forces across the battle sphere. WNW will provide high throughput, dynamically adaptable connectivity for the exchange of IP based voice, data, and video traffic. WNW will feature two signals-in-space (SiS), which are the Orthogonal Frequency Division Multiplexing (OFDM) and Anti-Jam (AJ). WNW will support network nodes on mobile, airborne, and maritime platforms. WNW includes networking services, security, High Assurance IP Equipment (HAPE) capabilities, red black switching, and internal routing of other WNW signals. WNW is currently ported on 7 different radio platforms with 5 different vendors.</p> <p><b>FY 2015 Accomplishments:</b></p>		2.758	5.440	-

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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 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EF5 / <i>Joint Tactical Network (JTN)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Continue enhancements, software modifications and version drop. Maintain test facility to conduct WNW test and evaluation. Develop test plans and procedures for full WNW Waveform Conformance for WNW v4.1 and v5.0. Released v4.2 with performance and reliability improvements critical to mid-tier operations.</p> <p><b>FY 2016 Plans:</b> Orient on an agile software approach to support the System of Systems Risk Reduction of the WNW dependent system at NIE 16.2 and a positive Milestone C decision for MNVR; deliver security updates and an optimized parametric package for Army Aviation WNW subnets, higher order modulation, and Anti-Jam subnets (WNW 4.2.1).</p>				
<p><b>Title:</b> PdM JENM Program Office Support</p> <p><b>Description:</b> Program Management Office support in the development of the JENM system.</p> <p><b>FY 2017 Plans:</b> Funding will provide for JENM program office support to develop the JENM system as well as Dynamic Network Connectivity, a STARNET objective.</p>		-	-	1.551
<p><b>Title:</b> JENM Development</p> <p><b>Description:</b> JENM provides consolidated communications planning, network configuration, network activation, position reporting, fault management, security management, and network health and status reporting needed to establish and maintain a mobile wireless network comprised of JTN network waveforms. JENM can interface with other external network managers, mission planning systems, network planning systems, key management systems, and spectrum planning systems. JENM is considered a mission essential system. JENM is also considered a critical element within the J-TNT configuration management tool kit.</p> <p><b>FY 2015 Accomplishments:</b> JENM released v3.2 in support of MUOS test events, technical evaluation and supported MUOS Multi-Service Operational Test and Evaluation (MOT&amp;E). JENM final engineering release of v3.3 to support all networking waveform program of record radios to include: Handheld, Manpack, and Small Form Fit (HMS), Man Pack (MP), and Rifleman Radio (RR) running the Soldier Radio Waveform (SRW), Single Channel Ground and Airborne Radio System (SINCGARS), MUOS, UHF SATCOM 181/182/183 waveforms; MNVR running SRW and WNW.</p> <p><b>FY 2016 Plans:</b> JENM Functional Qualification Tested (FQT) v3.3 will be released 1QFY16 to support MUOS MOT&amp;E, Mid-Tier Networking Evaluation, JENM Operational Test (OT) and Network Integration Evaluation (NIE) 16.2.</p> <p><b>FY 2017 Plans:</b> JENM will develop software products for Capability Set Fielding Team and support systems engineering for Navy Digital Modular Radio (DMR) for the MUOS system to include the Airborne Radio Communication (ARC) 210, and the Army/Navy Portable</p>		2.477	4.987	8.487

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2015	FY 2016	FY 2017
Radio Communications (PRC) 117G. JENM will initiate development of Dynamic Network Connectivity as part of the STARNET objective.			
<p><b>Title:</b> MUOS Waveform Development</p> <p><b>Description:</b> MUOS Waveform will enable MUOS satellites to provide worldwide communication satellite coverage for DoD requirements. MUOS will provide functionality comparable to commercial mobile phone systems. MUOS offers secure streaming video, netted communications, and voice/data in real time to provide essential connectivity. The JTN program will modify this waveform, making it compatible and certifiable with DoD security requirements while enabling porting to tactical radio sets. MUOS is currently being ported by 8 vendors on 6 different platforms.</p> <p><b>FY 2015 Accomplishments:</b> Continue software testing, upgrades, enhancements, software modifications and software version drop v3.1.3 to meet DoD requirements. On 25June2015 the MUOS waveform was transferred to the MIDS Program Office.</p>	0.871	-	-
<p><b>Title:</b> Legacy Radio Waveforms/Program Office Support</p> <p><b>Description:</b> Legacy Radio Waveforms/Program Office Support: Includes the continued development, incremental upgrades, and software efficiencies of legacy software and other related activities to support the legacy waveform integration into hardware solutions in the field.</p> <p><b>FY 2015 Accomplishments:</b> Continue to support waveform integration, test and evaluation, Legacy Radio Waveforms support and program office support for PdM JENM and PdM Waveforms Program office.</p> <p><b>FY 2016 Plans:</b> Locked control for PdM JENM and PdM Waveforms Program office and Legacy Radio Waveforms support. Shared costs.</p>	10.238	5.562	-
<b>Accomplishments/Planned Programs Subtotals</b>	17.305	18.055	10.038

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	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
• 0605031N: 0605031N; JTN, RDTE,N	-	-	-	-	-	4.691	3.725	3.735	3.798	Continuing	Continuing
• 0605030F: 0605030F; JTNC, RDTE,F	-	-	6.427	-	6.427	6.281	6.194	6.092	6.149	Continuing	Continuing
• 4326750A: 4326750A: JTN, O&M,A	28.408	8.993	-	-	-	-	-	-	-	Continuing	Continuing

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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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<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EF5 / <i>Joint Tactical Network (JTN)</i>
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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>
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**Remarks**

In FY2014, the Joint Tactical Networks (JTN) was funded in the Army Program Element (PE) 0605030A. This was a shared line with JTNC. In FY16 and beyond PE 0605030A will be JTNC only.

In FY 2015 and beyond PE 0605031A contains only the JTN (PdM Waveforms and PdM JENM) RDTE funding.

In accordance with the Acquisition Decision Memorandum (ADM) dated 11 July 2012, the Joint Tactical Radio System (JTRS) Program of Records (PORs) transitioned to Military Department (MILDEP) managed programs. As per the ADM dated 20 January 2014, JTN and JTNC became separate entities. FY 2015 and out, Army PE 0605031 contains only the JTN RDT&E funding. For FY2017 and out, the continuing JTN efforts are funded in Army PE 0605031A (JTN), Navy PE 0605030N (shared), and Air Force PE 0605030F (shared). As part of the joint program budget strategy, each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E funds for JENM joint efforts. Prior to the year of execution, funding is consolidated in the Army PE (0605031A) and software sustainment funds are realigned from RDT&E to O&M,A PE (4326750A) to support the joint program acquisition strategy.

In FY 2017 and out Waveform funding will now be on the Army PE 0605031A, Project Code EX6. JENM funding will remain under Army PE 0605031A Project Code EF5.

**D. Acquisition Strategy**

PdM JENM is responsible for development of common networking services to include interface standards and network managers. PdM JENM develops waveforms and Cryptographic Equipment Applications (CEAs) for use within the software-defined radio community.

**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 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EF5 / <i>Joint Tactical Network (JTN)</i>
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<b>Management Services (\$ in Millions)</b>				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			
JENM Program Management Support	C/CPFF	G2 Software Systems : San Diego, CA	0.000	-		-		0.909		-		0.909	Continuing	Continuing	Continuing
JENM Program Management Support	C/CPIF	Pending Contract Award : Aberdeen, MD	0.000	-		-		0.448		-		0.448	Continuing	Continuing	Continuing
JENM Program Management Support	Allot	USAASC : Aberdeen, MD	0.000	-		-		0.238		-		0.238	Continuing	Continuing	Continuing
JENM Program Management Support	MIPR	SSC PACIFIC : San Diego, CA	0.000	-		-		0.347		-		0.347	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	Booz Allen Hamilton : San Diego, CA	0.000	0.336		0.337		-		-		-	0	0.673	0.673
Program Management	C/CPFF	G2 Software Systems : San Diego, CA	0.000	0.840		0.843		-		-		-	0	1.683	1.683
<b>Subtotal</b>			0.000	1.176		1.180		1.942		-		1.942	-	-	-

<b>Product Development (\$ in Millions)</b>				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			
JENM NMRIL Development	C/CPFF	G2 Software Systems : San Diego, CA	0.000	-		-		0.992		-		0.992	Continuing	Continuing	Continuing
JENM NMRIL Development	C/CPFF	Pending Contract Award : Aberdeen, MD	0.000	-		-		0.875		-		0.875	Continuing	Continuing	Continuing
JENM NMRIL Development	MIPR	SSC PACIFIC : San Diego, CA	0.000	-		-		1.741		-		1.741	Continuing	Continuing	Continuing
Post Formal Qualification Testing-JENM	C/CPIF	Boeing : Huntington Beach, CA	0.000	1.876		2.896		-		-		-	0	4.772	4.991
Post Formal Qualification Testing-WNW	C/CPIF	General Dynamics : Scottsdale, AZ	0.000	1.217		1.540		-		-		-	0	2.757	2.976

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

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<b>Product Development (\$ in Millions)</b>				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			
Post Formal Qualification Testing-SRW	C/CPIF	Harris : Rochester, NY	0.000	1.225		1.329		-		-		-	0	2.554	2.554
Software Communications Architecture (SCA) Compliance	MIPR	NSA : Fort Meade, MD	0.000	0.476		0.477		-		-		-	0	0.953	0.953
Post FQT/Software Support	MIPR	SSC PAC : San Diego, CA	0.000	3.670		3.808		-		-		-	0	7.478	7.604
Post FQT/Software Support	MIPR	CERDEC : APG, MD	0.000	0.305		0.306		-		-		-	0	0.611	0.611
Post FQT/Software Support	MIPR	SSC LANT : Charleston, SC	0.000	2.610		2.619		-		-		-	0	5.229	5.229
Post Formal Qualification Testing-MUOS	C/CPIF	Lockheed Martin Corp. : Sunnyvale, CA	0.000	0.660		-		-		-		-	0	0.660	0.660
Post Formal Qualification Testing-Link 16	C/CPIF	BAE : Wayne, NJ	0.000	0.332		-		-		-		-	0	0.332	0.332
<b>Subtotal</b>			0.000	12.371		12.975		3.608		-		3.608	-	-	-

**Remarks**  
FY 2015 & FY16 PE 0605031A represents the total JTN RDTE budget.

<b>Support (\$ in Millions)</b>				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			
JENM v3 Software Support	C/CPFF	G2 Software Systems : San Diego, CA	0.000	-		-		0.442		-		0.442	Continuing	Continuing	Continuing
JENM v3 Software Support	C/CPFF	Pending Contract Award : Aberdeen, MD	0.000	-		-		0.607		-		0.607	Continuing	Continuing	Continuing
JENM v3 Software Support	MIPR	SSC PACIFIC : San Diego, CA	0.000	-		-		0.694		-		0.694	Continuing	Continuing	Continuing

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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 0605031A / Joint Tactical Network (JTN)	<b>Project (Number/Name)</b> EF5 / Joint Tactical Network (JTN)
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<b>Support (\$ in Millions)</b>				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			
Development/Engineering/Technical Support	C/CPFF	Various : various	0.000	0.861	Jan 2015	0.994		-		-		-	0	1.855	1.985
<b>Subtotal</b>			0.000	0.861		0.994		1.743		-		1.743	-	-	-

<b>Test and Evaluation (\$ in Millions)</b>				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			
JENM v3 System Engineering and Test	MIPR	SSC PACIFIC : San Diego, CA	0.000	-		-		1.104		-		1.104	0	1.104	0
JENM v3 System Engineering and Test	C/CPFF	Pending Contract Award : Aberdeen, MD	0.000	-		-		1.641		-		1.641	Continuing	Continuing	Continuing
JTN Test and Evaluation Support	C/CPFF	Booz Allen Hamilton : San Diego, CA	0.000	0.702		0.704		-		-		-	0	1.406	1.406
JTN Test and Evaluation	FFRDC	MITRE : San Diego, CA	0.000	1.600		1.605		-		-		-	0	3.205	3.205
JTN Test and Evaluation Support	C/CPFF	G2 Software Systems : San Diego, CA	0.000	0.595		0.597		-		-		-	0	1.192	1.192
<b>Subtotal</b>			0.000	2.897		2.906		2.745		-		2.745	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			0.000	17.305	18.055	10.038	-	10.038	-	-	-

**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 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EF5 / <i>Joint Tactical Network (JTN)</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
Wideband Networking Waveform (WNW)	<b>WNW Software Enhancement and Version Drops</b>																											
Soldier Radio Waveform (SRW)	<b>SRW Software Enhancement and Version Drops</b>																											
Mobile User Objective System (MUOS) Waveform					<b>MUOS Software Version Drop v3.1.3</b>																							
JTRS Enterprise Network Manager (JENM)																												
									<b>JENM Software Enhancement and Version Drops</b>																			

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

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EF5 / <i>Joint Tactical Network (JTN)</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Wideband Networking Waveform (WNW)	1	2015	4	2016
Soldier Radio Waveform (SRW)	1	2015	4	2016
Mobile User Objective System (MUOS) Waveform	1	2015	3	2015
JTRS Enterprise Network Manager (JENM)	1	2016	4	2021

**Note**

In FY17 and out Waveform funding will now be on the Army PE 0605031A, Project Code EX6. Starting in FY17, Waveforms Software Enhancements and Versions Drops will reflect on the Project Code EX6 Exhibit R4 and R4A.

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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 0605031A / <i>Joint Tactical Network (JTN)</i>				<b>Project (Number/Name)</b> EX6 / <i>Waveforms</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>
EX6: <i>Waveforms</i>	-	0.000	0.000	5.976	-	5.976	16.943	18.355	18.609	19.089	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2013, Joint Tactical Networks (JTN) was funded in the Navy Program Element (PE) 0604280N (Joint Tactical Radio System (JTRS)), Project No.3076 (formally known as JTRS Network Enterprise Domain (JNED)). JNED was renamed JTN and the Joint Executive Program Office (JPEO) JTRS transitioned to the JTNC in FY 2013, in accordance with the Acquisition Decision Memorandum (ADM) dated 11 July 2012. FY 2013 and FY 2014 Joint Tactical Network Center (JTNC) funding was provided by the JTN Program via PE 0604280N and PE 0605030A, respectively. In accordance with the ADM dated 20 Jan 2014, JTN and JTNC became separate entities and PE 0605031A (Project Code EF5) was created for JTN.

The 2014 ADM also directed that the waveform development and sustainment responsibilities transition to the Services in 4QFY2015. On 25 June 2015, Product Manager (PdM) Waveforms transitioned to Program Manager (PM) Tactical Radios.

PdM Waveforms was previously funded under JTN Army Program Element (APE) 0605031A (Project Code EF5). Starting in FY2017, PdM Waveforms will be executing from Project Code EX6.

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

PdM Waveforms delivers, maintains, and upgrades portable, interoperable, mobile ad hoc networking waveforms and network enterprise services to enhance tactical warfighting capabilities. PdM Waveforms provides the Lower Tactical Internet with a suite of waveforms and network services that are: (1) Interoperable - used by all Services; (2) Capable of operating on a variety of hardware platforms, both Program of Record and non-developmental commercial radios; (3) Secure - meet all Department of Defense and US Government information assurance requirements; (4) Operationally relevant - quickly and effectively meet evolving network mission requirements of Combatant Commanders and the Services; and (5) Affordable - drive down procurement and support costs via a robust, competitive market which adheres to open government standards.

Project code EX6 funds the continued development of the Waveforms. FY2015-FY2016 development efforts were previously executed from JTN APE 0605031A (Project Code EF5).

FY2017 Base RDTE dollars in the amount of \$5.976 million supports the continued development of the waveforms, testing support and the program management office.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Soldier Radio Waveform (SRW)	-	-	2.646
<b>Description:</b> Soldier Radio Waveform (SRW) will operate on tactical radio sets to provide a networked battlefield communications capability for users engaged in land combat operations and will support voice, data, and video communications on the immediate			

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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 0605031A / <i>Joint Tactical Network (JTN)</i>		<b>Project (Number/Name)</b> EX6 / <i>Waveforms</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>battlefield. These forces include vehicles, rotary wing aircraft, dismounted Soldiers, munitions, sensors, and unmanned aerial vehicles (UAV). Functional software applications will use SRW radio enabled sets over Internet Protocol (IP) capable networks and sub-networks. SRW will be interoperable with higher throughput, IP based network waveforms, such as Wideband Networking Waveform (WNW). As applicable, these IP-based networking waveforms will enable information exchanges through the Global Information Grid (GIG) to the Soldier and provide entirely new capabilities for battlefield communications and information sharing. SRW is currently ported on 21 different radio platforms with 9 different vendors.</p> <p><b>FY 2017 Plans:</b> Continue to develop, evolve and enhance SRW to provide improved performance. Maintain test facility to conduct SRW test and evaluation. Release of v2.0 will provide Enhanced Electronic Protection (EEP), network performance and scalability improvements, and address SRW Narrowband requirements.</p>				
<p><b>Title:</b> Wideband Networking Waveform (WNW) Development</p> <p><b>Description:</b> WNW is a high data rate Mobile Adhoc NETworking (MANET) waveform application that provides the mid-tier tactical Internet backbone and connects tactical forces across the battle sphere. WNW will provide high throughput, dynamically adaptable connectivity for the exchange of IP based voice, data, and video traffic. WNW will feature two signals-in-space (SiS), which are the Orthogonal Frequency Division Multiplexing (OFDM) and Anti-Jam (AJ). WNW will support network nodes on mobile, airborne, and maritime platforms. WNW includes networking services, security, High Assurance IP Equipment (HAIZE) capabilities, red black switching, and internal routing of other WNW signals. WNW is currently ported on 7 radio platforms with 5 different vendors.</p> <p><b>FY 2017 Plans:</b> Integrate HAIZE 4.2 interoperable core and designated extensions in collaboration with Joint Enterprise Net Manager (JENM) and Warfighter Information Network-Tactical (WIN-T) high efficiency routing deployments and enhanced electronic protection requirements assessments. Develop capability for expanded scale and high mobility subnets, continued electronic protection enhancements as well as Disruption Tolerant and Virtualized Networking functionality for WNW. Develop, test, and deploy a security enhanced, non-proprietary development environment. Evolve an expanded test bed for validation of performance and interoperability of waveform applications and radio platform services to support to Mid-tier Networking Vehicular Radio (MNVR) and Small Airborne Networking Radio (SANR) milestones.</p>		-	-	2.537
<p><b>Title:</b> Program Management Office Support</p> <p><b>Description:</b> Program Management Office support in the enhancements of Waveforms</p> <p><b>FY 2017 Plans:</b></p>		-	-	0.793

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

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EX6 / <i>Waveforms</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Continues the program management support for PdM Waveforms.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	5.976

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

Line Item	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
• 0605031A.EF5:	17.305	18.055	10.038	-	10.038	7.315	5.670	4.729	3.806	Continuing	Continuing
0605031A.EF5: <i>JTN, RDTE, A</i>											
• 4326750A: 4326750A:	28.408	8.993	-	-	-	-	-	-	-	0	37.401
<i>JTN, O&amp;M, A</i>											

**Remarks**

In FY2014, the JTN (PdM Waveforms) was funded in the APE 0605030A. This was a shared line with JTNC. In FY2016 and beyond APE 0605030A will be JTNC only.

In FY2015 and FY2016 APE 0605031A (Project Code EF5) contains only the JTN (PdM Waveforms and PdM JENM) RDTE funding. Starting in FY2017, PdM Waveforms will be executing from Project Code EX6.

Prior to the year of execution, software sustainment funds are realigned from RDTE to OMA APE 4326750A to support the PdM Waveforms program acquisition strategy.

**D. Acquisition Strategy**

PdM Waveforms is responsible for common core activities including developing and updating legacy and networking waveforms that operate on multiple radios sets and in all operational environments that support network-centric operational warfare. Waveform developments (upgrading, developing, and maintaining) will generally be procured through full and open contract competitions.

**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 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EX6 / <i>Waveforms</i>
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<b>Management Services (\$ in Millions)</b>				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			
Program Management Support (Matrix)	MIPR	CERDEC : APG, MD	0.000	-		-		0.232		-		0.232	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	Various : Aberdeen, MD	0.000	-		-		0.561		-		0.561	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	-		-		0.793		-		0.793	-	-	-

<b>Product Development (\$ in Millions)</b>				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			
Software Development-SRW	C/CPFF	Harris : Rochester, NY	0.000	-		-		0.997		-		0.997	Continuing	Continuing	Continuing
Software Development	C/CPFF	TBD : Aberdeen, MD	0.000	-		-		0.920		-		0.920	Continuing	Continuing	Continuing
Software Development - WNW	MIPR	SSC Atlantic : Charleston, SC	0.000	-		-		0.567		-		0.567	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	-		-		2.484		-		2.484	-	-	-

<b>Support (\$ in Millions)</b>				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			
Development/Engineering/Technical Support	MIPR	CERDEC : Aberdeen, MD	0.000	-		-		0.194		-		0.194	Continuing	Continuing	Continuing
Development/Engineering/Technical Support	C/CPFF	Harris : Rochester, NY	0.000	-		-		0.421		-		0.421	Continuing	Continuing	Continuing
Development/Engineering/Technical Support	MIPR	SSC Atlantic : Charleston, SC	0.000	-		-		0.729		-		0.729	Continuing	Continuing	Continuing
Development/Engineering/Technical Support	C/CPFF	Various : Aberdeen, MD	0.000	-		-		0.862		-		0.862	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	-		-		2.206		-		2.206	-	-	-



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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 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EX6 / <i>Waveforms</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
Wideband Networking Waveform (WNW)													<b>WNW Software Enhancements and Version Drops</b>															
Soldier Radio Waveform (SRW)													<b>SRW Software Enhancements and Version Drops</b>															

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

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605031A / <i>Joint Tactical Network (JTN)</i>	<b>Project (Number/Name)</b> EX6 / <i>Waveforms</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Wideband Networking Waveform (WNW)	1	2017	2	2022
Soldier Radio Waveform (SRW)	1	2017	2	2022

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