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

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604280N / <i>JT Tact Radio Sys (JTRS)</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	7.853	6.725	24.985	2.365	-	2.365	0.513	0.000	0.000	0.000	0.000	42.441
3078: <i>Digital Modular Radio</i>	7.853	6.725	24.985	2.365	-	2.365	0.513	0.000	0.000	0.000	0.000	42.441

A. Mission Description and Budget Item Justification

Digital Modular Radio (DMR) with Integrated Waveform (IW) and Mobile User Objective System (MUOS) capable hardware is the Navy's technical solution for the IW/MUOS requirement. The DMR AN/USC-61(C), is the first software defined radio to have become a communications system standard for the U.S. Military. The compact, multi-channel DMR provides multiple waveforms and multi-level information security for voice and data communications. DMR radios currently operate aboard U.S. Navy surface and subsurface vessels, fixed-sites and other Department of Defense communication platforms using frequencies ranging from 2 MHz to 2 GHz. Certified to pass secure voice and data at Multiple Independent Levels of Security (MILS) over High Frequency (HF), Very High Frequency (VHF), Ultra High Frequency (UHF), and Satellite Communications (SATCOM) channels, the DMR system was developed to the U.S. Navy's specifications and meets all the stringent environmental, Electromagnetic Interference (EMI) and performance requirements for use in the U.S. Fleet. This task is to continue the development/integration of the IW and MUOS waveforms for the DMR in accordance with Military Standards 188-181,2,3, and the High Frequency Distribution Amplifier Group (HFDAG). IW uses a Time Division Multiple Access (TDMA) communication system in an attempt to improve satellite bandwidth utilization over legacy SATCOM waveforms. This enables demand assigned services on UHF SATCOM networks to support new applications that require better performance and higher channel throughput. The 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. HFDAG is a follow-on HF solution to fulfill the HF communication capability from 2MHz - 30MHz (transmit) and 2MHz - 30MHz (receive) with ALE, Link 11, FSK, USB, LSB and ISB modes of operation for Navy Modernization Process (NMP) and platforms. HFDAG will utilize the existing DMR as the exciter/receiver.

The budget in FY17 provides funding for the development and integration of the Integrated Waveform (IW) and Mobile User Objective System (MUOS) as well as the software development of the DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	6.945	25.071	2.512	-	2.512
Current President's Budget	6.725	24.985	2.365	-	2.365
Total Adjustments	-0.220	-0.086	-0.147	-	-0.147
• Congressional General Reductions	-	-0.086			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.220	0.000			
• Rate/Misc Adjustments	0.000	0.000	-0.147	-	-0.147

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Appropriation/Budget Activity
1319: *Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0604280N / *JT Tact Radio Sys (JTRS)*

Change Summary Explanation

Decrease in JT Tact Radio Sys (JTRS) by \$0.1M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604280N / <i>JT Tact Radio Sys (JTRS)</i>				Project (Number/Name) 3078 / <i>Digital Modular Radio</i>			
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
3078: <i>Digital Modular Radio</i>	7.853	6.725	24.985	2.365	-	2.365	0.513	0.000	0.000	0.000	0.000	42.441
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Digital Modular Radio (DMR) with Integrated Waveform (IW) and Mobile User Objective System (MUOS) capable hardware is the Navy's technical solution for the IW/ MUOS requirement. The DMR AN/USC-61(C), is the first software defined radio to have become a communications system standard for the U.S. Military. See R-2: A. Mission Description and Budget Item Justification for further details.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: DMR	6.725	24.985	2.365	0.000	2.365
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
Continued the development/integration of the Integrated Waveform (IW) and Mobile User Objective System (MUOS) capabilities into the Digital Modular Radio (DMR) system including system engineering, software development, testing, design reviews, integration, porting and logistics efforts and support acquisition documentation development. Performed IW certification "Dry Run" with Joint Integration Test Command.					
FY 2016 Plans:					
Begin High Frequency Distribution Amplifier Group (HFDAG) test & evaluation including Environmental Testing as well as Shock and Vibe testing. Continue the development/integration of the Integrated Waveform (IW) and Mobile User Objective System (MUOS) capabilities into the Digital Modular Radio (DMR) including system engineering, software development, testing, design reviews, integration, porting and logistics efforts. Perform IW certification efforts with Joint Integration Test Command (JITC). Receive MUOS software drop from vendor for testing and Release Requirements Review (RRR) efforts. Begin DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 Software development efforts.					
FY 2017 Base Plans:					
Continue the development/integration of the Integrated Waveform (IW), complete development/integration of Mobile User Objective System (MUOS) and DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 Software development efforts. Continue IW certification efforts with Joint Integration Test Command (JITC) and receive MUOS software drop from vendor for testing and Release Requirements Review (RRR) efforts.					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / <i>JT Tact Radio Sys (JTRS)</i>	Project (Number/Name) 3078 / <i>Digital Modular Radio</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	6.725	24.985	2.365	0.000	2.365

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>
• OPN/3010: <i>DMR</i> <i>OPN, PE:0303109N</i>	14.410	8.722	17.366	-	17.366	34.030	44.436	53.542	55.300	Continuing	Continuing

Remarks

D. Acquisition Strategy

General Dynamics C4 Systems (GDC4S) owns the technical data rights to the DMR. Due to this fact they are the only contractor with the unique capabilities and technical know how to perform the required design work to complete the IW upgrade and the MUOS interoperability efforts. This scope will be issued as the final increment to GDC4S under the sole source contract, N00039-10-C-0069, as authorized by SPAWAR J&A No. 16,976, signed 3 December 2012 by SPAWAR Executive Director and as authorized by SPAWAR J&A No. 16,351 signed 5 January 2010 by the Assistant Secretary of the Navy (ASN), Research Development and Acquisition (RD&A). SPAWAR Systems Center Pacific (SSC PAC) will continue performing HFDAG system test and evaluation.

E. Performance Metrics

MIL-STD conformance to meet JITC Certification for IW/UHF SATCOM waveform and the MUOS waveform.

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / JT Tact Radio Sys (JTRS)	Project (Number/Name) 3078 / Digital Modular Radio
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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			
IW/MUOS Development	C/CPIF	GDC4S : Scottsdale, AZ	7.853	4.106	Oct 2014	16.598	Oct 2015	0.500	Nov 2016	-		0.500	0.000	29.057	-
HF ALE Development	C/CPIF	GDC4S : Scottsdale, AZ	0.000	0.000		1.994	Mar 2016	1.124	Dec 2016	-		1.124	0.000	3.118	-
Subtotal			7.853	4.106		18.592		1.624		-		1.624	0.000	32.175	-

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			
System Engineering Support	Various	SSC PAC : San Diego, CA	0.000	1.619	Nov 2014	3.540	Nov 2015	0.355	Nov 2016	-		0.355	0.000	5.514	-
Subtotal			0.000	1.619		3.540		0.355		-		0.355	0.000	5.514	-

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			
Developmental Testing	Various	SSC PAC : San Diego, CA	0.000	0.500	Oct 2014	1.418	Oct 2015	0.142	Nov 2016	-		0.142	0.000	2.060	-
JITC Testing	WR	JITC : Ft. Huachuca, AZ	0.000	0.000		0.000		0.100	Dec 2016	-		0.100	0.000	0.100	-
Subtotal			0.000	0.500		1.418		0.242		-		0.242	0.000	2.160	-

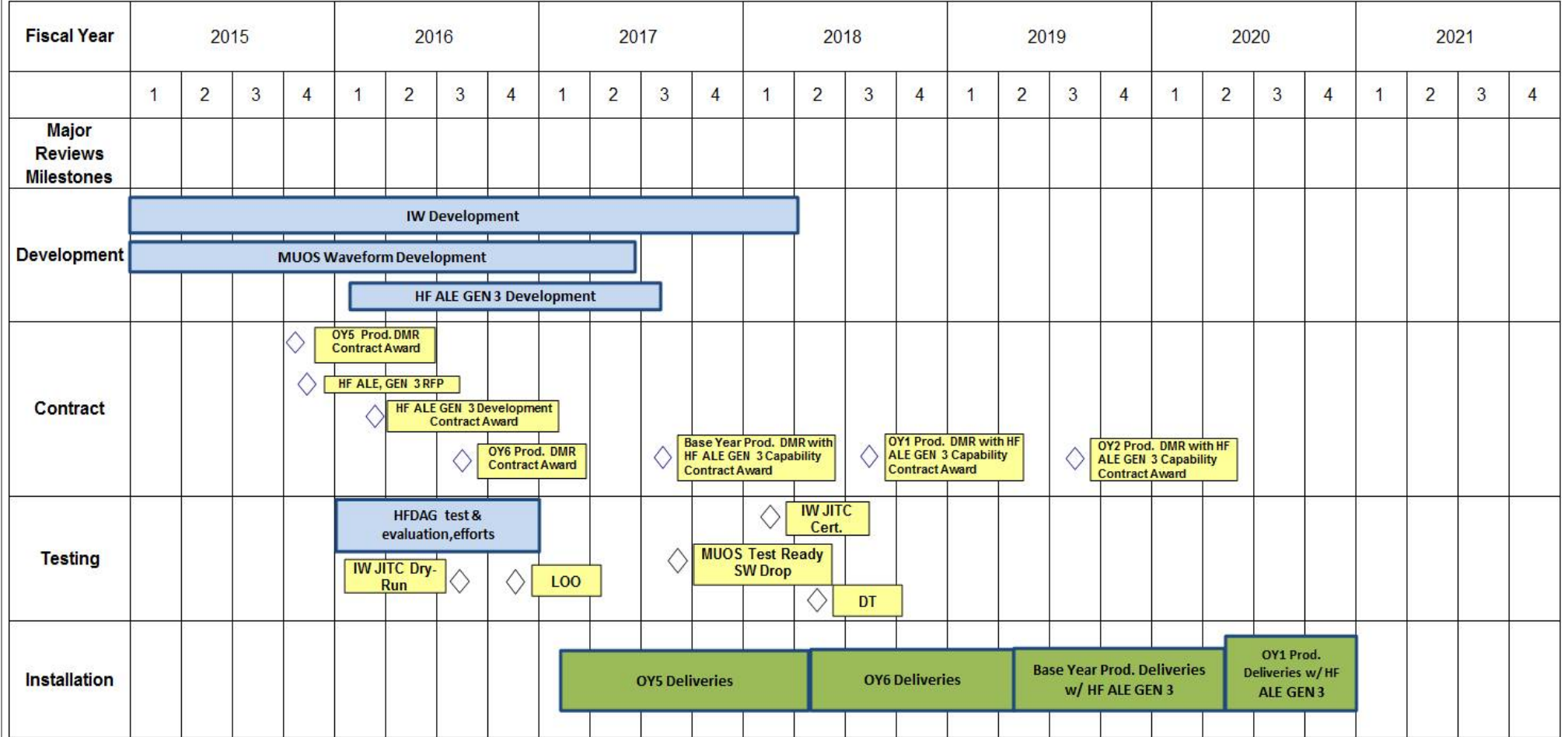
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	C/CPIF	BAH : San Diego, CA	0.000	0.500	Nov 2014	1.435	Nov 2015	0.144	Nov 2016	-		0.144	0.000	2.079	-
Subtotal			0.000	0.500		1.435		0.144		-		0.144	0.000	2.079	-

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

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / <i>JT Tact Radio Sys (JTRS)</i>	Project (Number/Name) 3078 / <i>Digital Modular Radio</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 3078</i>				
IW Development	1	2015	2	2018
MOUS Waveform Development	1	2015	2	2017
HFDAG Test and Evaluation	1	2016	4	2016
DMR Production Contract Award	4	2015	4	2015
HF ALE GEN 3 Development Request for Proposal (RFP)	4	2015	4	2015
MUOS Test Ready Software (SW) Drop	3	2017	3	2017
HF ALE GEN 3 Development Contract Award	1	2016	1	2016
HF ALE GEN 3 Development	1	2016	3	2017
Production Deliveries	1	2017	4	2020
Development Testing (DT)	2	2018	2	2018
IW Dry-Run	3	2016	3	2016
Letter of Observation (LOO)	4	2016	4	2016
IW Certification	1	2018	1	2018