Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604280N *I JT Tact Radio Sys (JTRS)*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	14.578	24.300	2.365	4.310	-	4.310	0.015	0.017	6.522	6.522	Continuing	Continuing
3078: *Digital Modular Radio*	14.578	24.300	2.365	4.310	-	4.310	0.015	0.017	6.522	6.522	Continuing	Continuing

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 for the continued development/integration of the IW and MUOS waveforms into 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 FY18 provides funding to complete Integrated Waveform (IW) and Mobile User Objective System (MUOS) integration and testing as well as finishing the software development of the DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 which will determine the most reliable HF frequencies to achieve faster and more dependable linking.

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Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604280N *I JT Tact Radio Sys (JTRS)*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	24.985	2.365	0.513	-	0.513
Current President's Budget	24.300	2.365	4.310	-	4.310
Total Adjustments	-0.685	0.000	3.797	-	3.797
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.685	0.000			
• Program Adjustments	0.000	0.000	3.770	-	3.770
• Rate/Misc Adjustments	0.000	0.000	0.027	-	0.027

Change Summary Explanation

FY18 funding of $3.77M was realigned from OPN 3010 to RDTEN 0604280N in order to complete the testing and delivery of DMR IW and MUOS SATCOM capability, the Navy's technical solution for the IW/MUOS requirement.

In addition, FY18 funding is also necessary to complete the DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 software development.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3078: *Digital Modular Radio*	14.578	24.300	2.365	4.310	-	4.310	0.015	0.017	6.522	6.522	Continuing	Continuing
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: DMR	24.300	2.365	4.310	0.000	4.310
Articles:	-	-	-	-	-

Description: Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. DMR is the Navy's primary solution for providing the UHF SATCOM Integrated Waveform (IW) and Mobile User Objective System (MUOS) waveform to the Fleet.

FY 2016 Accomplishments:

Merged and continued 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. Performed IW certification efforts with Joint Integration Test Command (JITC). Began DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 Software development efforts.

FY 2017 Plans:

Begin High Frequency Distribution Amplifier Group (HFDAG) test & evaluation including Environmental Testing. Continue the development/integration of the Integrated Waveform (IW)/ Mobile User Objective System (MUOS) and DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 Software development efforts to include system acceptance and regression testing. Complete IW certification efforts with Joint Integration Test Command (JITC) including a dry run and Laboratory developmental testing. Receive pre-release of MUOS software drop from vendor for testing.

FY 2018 Base Plans:

Conduct at-sea development testing and waveform conformance testing of the IW/MUOS waveforms into the DMR system. Conduct a Government Run for Record in support of IW/MUOS and HF ALE software. Complete the development of IW/MUOS software and DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Software efforts and JITC interoperability certification. Receive final MUOS software drop from vendor for testing and Release Requirements Review (RRR) efforts. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	24.300	2.365	4.310	0.000	4.310

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/3010: *DMR OPN, PE:0303109N*	8.277	17.366	23.695	-	23.695	39.654	53.772	60.540	66.651	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.