Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy												Date: May 2021
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 1203109N *I Satellite Communications (SPACE)*							
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	14.845	14.407	35.956	0.000	-	0.000	-	-	-	-	-	-
2472: *Mobile User Objective Sys (MUOS)*	14.845	14.407	35.956	0.000	-	0.000	-	-	-	-	-	-

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 345

A. Mission Description and Budget Item Justification

The Mobile User Objective System (MUOS) program provides for the development of the next generation Department of Defense (DoD) advanced narrowband communications satellite constellation. MUOS is the only Ultra High Frequency (UHF) satellite system replacing the aging UHF Follow-on (UFO) system, which is currently beyond its design life. MUOS provides legacy UHF satellite communications as well as a Wideband Code Division Multiple Access (WCDMA) capability which significantly increases performance and capacity critical to support Combatant Command priorities.

Starting in FY22, MUOS (Project 2472) funding transfers to United States Space Force (USSF).

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	15.868	70.056	0.000	-	0.000
Current President's Budget	14.407	35.956	0.000	-	0.000
Total Adjustments	-1.461	-34.100	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-34.100			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.850	0.000			
• SBIR/STTR Transfer	-0.611	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Change Summary Explanation

Schedule:
MUOS (Project 2472) - Contract and acquisition planning for MUOS 6 and 7

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 1203109N / *Satellite Communications (SPACE)*	Project (Number/Name) 2472 / *Mobile User Objective Sys (MUOS)*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2472: *Mobile User Objective Sys (MUOS)*	14.845	14.407	35.956	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 345

A. Mission Description and Budget Item Justification

Mobile User Objective System (MUOS) provides a worldwide, multi-service population of mobile and fixed-site terminal users with Ultra High Frequency (UHF) Narrowband, beyond line of sight satellite communications (SATCOM). MUOS significantly increases performance and capacity in support of critical Combatant Command SATCOM priorities. MUOS is the replacement system for the UHF Follow-on (UFO) system, which is currently beyond its design life. MUOS consists of Space, Ground, and User Entry Segments. The Space Segment consists of 5 geosynchronous satellites, one which is an on-orbit spare, and provides both a legacy UHF payload, which is backward compatible with UFO, and a Wideband Code Division Multiple Access (WCDMA) payload, which provides 3G cellular-like capability. The Ground Segment consists of four world-wide Radio Access Facilities (RAFs) and two satellite control facilities. Each RAF includes three 60 ft. antennas, and numerous racks of equipment. The RAF in Hawaii includes a Network Management Facility (NMF). The RAFs in Hawaii and Virginia each include a Switching Facility (SF). The User Entry Segment consists of the MUOS waveform that is ultimately integrated into MUOS-capable terminals. The MUOS legacy capability has been in operational use since 2012, and the WCDMA capability transitioned to Early Combatant Command Use in July 2016.

Starting in FY22, MUOS funding transfers to United States Space Force (USSF).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Mobile User Objective Sys (MUOS)	14.407	35.956	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: FY21 funds the continuation of system optimization and electro-magnetic interference mitigation efforts, continues the development of a modernized geolocation Ground Segment subsystem, and continues to address emerging cybersecurity requirements to ensure capacity is available to the end user. Additionally, FY21 funds E2E MUOS Usability Enhancements and improvements to over-the-air provisioning and profile portability. FY21 also funds migration of MUOS ground infrastructure to Advanced Cryptographic Capability (ACC) from Enhanced FireFly Communications Security (COMSEC) which includes changes to MUOS waveform software and artifacts, software updates to existing KG-175 devices, accelerated integration of ACC on DMR to support					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 1203109N / *Satellite Communications (SPACE)*	**Project (Number/Name)** 2472 / *Mobile User Objective Sys (MUOS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
integration and test of MUOS ACC implementation, and updates to MIL-STD-188-187A and associated terminal certification program. ***FY 2022 Base Plans:*** Starting in FY22, MUOS funding moves to United States Space Force (USSF). ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Starting in FY22, MUOS funding moves to United States Space Force (USSF).					
Accomplishments/Planned Programs Subtotals	14.407	35.956	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• WPN/2433: *Fleet Satellite Comm Follow-On*	63.080	52.401	0.000	-	0.000	-	-	-	-	-	-

Remarks

Starting in FY22, MUOS funding moves to United States Space Force (USSF).

D. Acquisition Strategy

The program has awarded the Ground and User Entry Segment sustainment contracts. Contractor support for MUOS 6 and 7 pre-acquisition activities will be procured via system engineering support contract.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 1203109N / *Satellite Communications (SPACE)*	Project (Number/Name) 2472 / *Mobile User Objective Sys (MUOS)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Contract	C/CPAF	Lockheed Martin : Sunnyvale, CA	7.165	0.000		0.000		0.000		-		0.000	-	-	-
Follow On Contract	SS/IDIQ	General Dynamics : Falls Church, VA	0.000	9.916	Nov 2019	9.939	Nov 2020	0.000		-		0.000	-	-	-
DMR ACC Engineering Contract	C/CPAF	Lockheed Martin : Sunnyvale, CA	0.000	0.000		21.890	Nov 2020	0.000		-		0.000	-	-	-
		Subtotal	7.165	9.916		31.829		0.000		-		0.000	-	-	N/A

Remarks

Starting in FY22, MUOS funding moves to United States Space Force (USSF).

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NIWC PAC : San Diego, CA	1.104	0.000		0.000		0.000		-		0.000	-	-	-
Operational Test & Evaluation	WR	COTF : Norfolk, VA	2.048	0.450	Oct 2019	0.000		0.000		-		0.000	-	-	-
		Subtotal	3.152	0.450		0.000		0.000		-		0.000	-	-	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineering Support	C/CPFF	SBG : Alexandria, VA	3.100	2.000	Jan 2020	2.042	Jan 2021	0.000		-		0.000	-	-	-
Government Engineering	WR	NIWC PAC : San Diego, CA	1.428	2.041	Oct 2019	2.085	Oct 2020	0.000		-		0.000	-	-	-
		Subtotal	4.528	4.041		4.127		0.000		-		0.000	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 1203109N / *Satellite Communications (SPACE)*	**Project (Number/Name)** 2472 / *Mobile User Objective Sys (MUOS)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks Starting in FY22, MUOS funding moves to United States Space Force (USSF).															

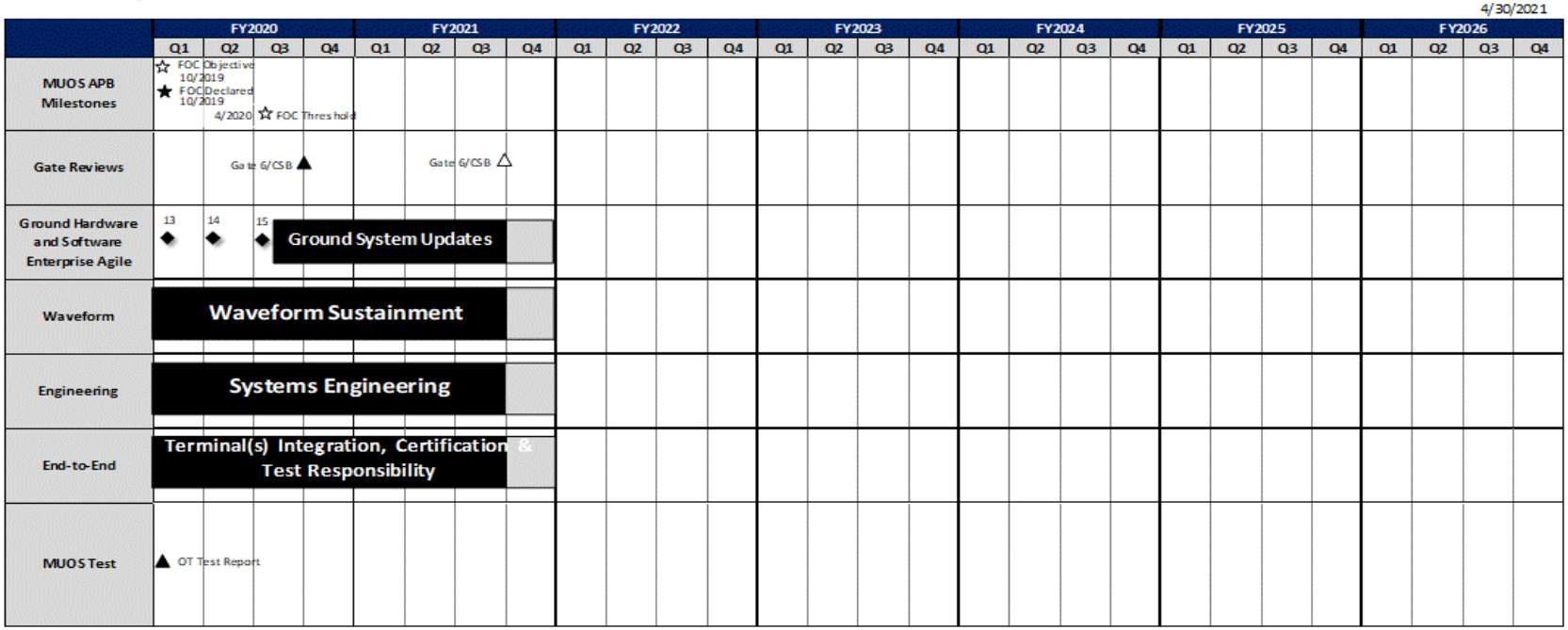
	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	14.845	14.407		35.956		0.000		-		0.000	-	-	N/A

Remarks

Starting in FY22, MUOS funding moves to United States Space Force (USSF).

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 1203109N / *Satellite Communications (SPACE)*	**Project (Number/Name)** 2472 / *Mobile User Objective Sys (MUOS)*

4/30/2021



Acronym	Definition
CSB	Configuration Steering Board
FOC	Full Operational Capability
OT	Operational Test

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 1203109N / *Satellite Communications (SPACE)*	**Project (Number/Name)** 2472 / *Mobile User Objective Sys (MUOS)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2472				
Full Operational Capability (FOC) Objective	1	2020	1	2020
Full Operational Capability (FOC) Declared	1	2020	1	2020
Full Operational Capability (FOC) Threshold	3	2020	3	2020
Gate 6/CSB FY20	4	2020	4	2020
Gate 6/CSB FY21	4	2021	4	2021
Agile Deployment 13	1	2020	1	2020
Agile Deployment 14	2	2020	2	2020
Agile Deployment 15	3	2020	3	2020
Ground System Updates	3	2020	4	2021
Waveform Sustainment	1	2020	4	2021
Systems Engineering	1	2020	4	2021
Terminal Certification, Integration and Test	1	2020	4	2021
OT Test Report	1	2020	1	2020