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 0303138N *I AFLOAT NETWORKS*							
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	250.382	21.996	34.630	30.890	-	30.890	-	-	-	-	-	-
0725: *Communication Automation*	0.000	0.807	7.000	8.790	-	8.790	-	-	-	-	-	-
9999: *Congressional Adds*	0.000	0.000	5.000	0.000	-	0.000	-	-	-	-	-	-
9C87: *CANES Integration*	250.382	21.189	22.630	22.100	-	22.100	-	-	-	-	-	-
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** M417												

Note

1) To ensure resources are aligned to enable rapid capability delivery, funding has been realigned into PE 0303138N Project 0725 from PE 0204163N Project 0725 as part of RDTEN PE Consolidation starting in FY20.

2) To ensure enterprise Naval Aviation network solutions, funding for ADNS Advanced Networking Tactical System (ANTS) in FY21, FY22, and FY23 was realigned into PE 0303138N Project 0725 from PE 0605414N Project 3278.

There are no New Starts associated with the Program Element (PE) transfers listed above.

A. Mission Description and Budget Item Justification

Consolidated Afloat Networks and Enterprise Services (CANES) is the Navy's Program of Record (POR) to replace and modernize existing afloat networks with the necessary hardware, software and enterprise services infrastructure to enable information warfare from and within the tactical domain. CANES provides complete infrastructure inclusive of hardware, software, processing, storage and end user devices for the Unclassified, Coalition, Secret and Sensitive Compartmented Information (SCI) enclaves to a wide variety of Navy surface combatants, submarines and Maritime Operations Centers. CANES services include application hosting, data transport and storage, system management, cyber security, email, web, chat, collaboration, and voice and video services. CANES is based on the overarching concept of reducing the number of afloat networks and providing enhanced efficiency through a single engineering focus on integrated technical solutions. It allows for streamlined acquisition, contracting, test events, sustainment, and significant lifecycle efficiencies through consolidation of multiple configuration management baselines, logistics, and training efforts into a single unified support structure.

More than two hundred (200) hosted applications and systems inclusive of Command and Control, Intelligence, Surveillance and Reconnaissance, Information Operations, Logistics and Business domains require the CANES infrastructure to operate in the tactical environment. Specific programs, such as Distributed Common Ground System - Navy (DCGS-N), Global Command and Control System - Maritime (GCCS-M), Naval Tactical Command Support System (NTCSS), and Undersea Warfare Decision Support System (USW-DSS), no longer provide their own independent network hardware and now depend on CANES to field, host, and sustain their capabilities. The CANES Application Integration program provides common software governance, testing, processes, and tools to application developers, and evaluates

and confirms compatibility between CANES and the hosted applications prior to fielding. CANES also provides a set of capabilities called Agile Core Services (ACS) which brings common network services to allow hosted application developers to focus on the unique capabilities they provide.

CANES is funded and programmed to develop regular technical updates with an agile and robust hardware and software baseline development cycle necessary to pace rapidly evolving cyber security threats and meet emerging operational demands within the tactical domain. In order to deliver a mission effective, secure and affordable afloat network, CANES implements a Development Operations (DevOps) framework to improve its engineering processes and speed the deployment of new cyber security, application hosting and baseline updates.

In FY 2022, CANES will complete the development of Technical Insertion (TI) 4 hardware and software baseline requirements including Agile Core Services (ACS), E2C laboratory engineering efforts and implementation of a Development Operations development and testing environment, perform Application Integration System Integration Testing (SIT) to support TI 4 software development efforts; and begin development of Technical Insertion (TI) 5 hardware and software baselines.

Automated Digital Network System (ADNS) provides cyber hardened warfighting critical afloat to shore wide area networking. Capabilities include routing, switching, baseband, configuration and monitoring capabilities that interconnect fleet tactical and coalition partner enclaves worldwide. ADNS is the method by which Tactical Navy units transfer Internet Protocol (IP) data to Navy and Department of Defense communities on the Global Information Grid (GIG). ADNS is the gateway to tactical Wide Area Network (WAN) afloat for Internet Protocol network operations, supporting information dissemination and external connectivity. ADNS enables services and applications to interconnect to the Defense Information Systems Network (DISN) ashore via multiple Radio Frequency (RF) resources, to include emerging Assured Command and Control (C2) capabilities and pier connectivity.

In FY 2022, ADNS will perform technical analyses and engineering efforts associated with the implementation of new technology to enable rapid introduction of new products and technology, prevent obsolescence, and mitigate end of life support issues. ADNS will continue the development and design of ADNS hardware and software in support of Advanced Networking Tactical System (ANTS) on Unmanned Carrier Aviation (UCA) platforms. ADNS will also begin a software baseline development for the next variant of ADNS. This development will include the start of requirements definition, Analysis of Alternatives (AoA), future test planning and initial system architecture development.

Programs will implement digital system-of-systems engineering by using tools such as Model Based System Engineering (MBSE) and Digital Twins to create adaptable digital models to optimize system engineering from design, development and testing to operations and sustainment. Programs will use Development, Security and Operations (DevSecOps) processes for continuous development, integration, testing and deployment, along with common platform services such as Agile Core Services (ACS), for faster fielding of capability.

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 0303138N *I AFLOAT NETWORKS*

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	22.873	29.684	29.115	-	29.115
Current President's Budget	21.996	34.630	30.890	-	30.890
Total Adjustments	-0.877	4.946	1.775	-	1.775
• Congressional General Reductions	-	-0.054			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.014	0.000			
• SBIR/STTR Transfer	-0.863	0.000			
• Rate/Misc Adjustments	0.000	0.000	1.775	-	1.775

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: 9999: *Congressional Adds*		
Congressional Add: *Network and data center intelligent agent program*	0.000	5.000
Congressional Add Subtotals for Project: 9999	0.000	5.000
Congressional Add Totals for all Projects	0.000	5.000

Change Summary Explanation

Project 0725, Communication Automation: The FY22 funding request was increased by $1.790M in support of software baseline development for the next variant of ADNS.

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 0303138N / *AFLOAT NETWORKS*				Project (Number/Name) 0725 / *Communication Automation*			
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**
0725: *Communication Automation*	0.000	0.807	7.000	8.790	-	8.790	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

FY21, FY22, and FY23 funding for Advanced Tactical Networks System (ANTS) has been realigned into PE 0303138N Project 0725 from PE 0605414N Project 3278.

A. Mission Description and Budget Item Justification

Automated Digital Network System (ADNS)provides cyber hardened warfighting critical afloat to shore wide area networking. Capabilities include routing, switching, baseband, configuration and monitoring capabilities that interconnect fleet tactical and coalition partner enclaves worldwide. ADNS utilizes off the shelf equipment and network protocols as specified by the Joint Technical Architecture. ADNS Increment (INC) III combines all Navy Tactical Voice, Secure Communications Interoperability Protocol (SCIP) Inter-Working Function, video, and data requirements into a converged IP data stream. ADNS INC III supports higher bandwidth satellites, providing up to 25 megabytes per second (Mbps) of throughput on Unit Level ships and up to 50 Mbps on Force Level ships. INC III architecture also incorporates an Internet Protocol (IP)v4/IPv6 dual stack and Cipher-Text (CT) security architecture to align to the Global Information Grid (GIG) in order to mesh Navy Tactical surface, subsurface, airborne platforms, and Aegis Ashore sites into single IP environments with gateway functions to coalition and joint networks, in addition to greater security utilizing the High Assurance Internet Protocol Encryptor (HAIPE) devices. ADNS will investigate emerging technologies to integrate with additional Department of Defense PEO (Program Executive Office) Command, Control, Communications, Computers & Intelligence (C4I) Programs to improve inter-strike group networking and extend the network to the tactical edge.

FY22 ADNS RDTEN will design and test ADNS hardware and software in support of Advanced Networking Tactical System (ANTS) on Unmanned Carrier Aviation (UCA) platforms to ensure enterprise alignment of Naval Aviation network solutions. ADNS RDTEN investment will continue to support Interface Design Development (IDD) and integration with network applications, development of Line-Of-Sight (LOS) link, Defense Information Systems Network (DISN) integration, and development of CT piers. ADNS development will include addressing network management, intra and inter domain routing, Quality of Service (QoS), and Concept of Operations discussions. ADNS will continue network-based Cyber Security technology and virtualization to increase performance of the Navy's ADNS routing and transport architecture. ADNS will also begin a software baseline development for the next variant of ADNS. This development will include the start of requirements definition, Analysis of Alternatives (AoA), future test planning and initial system architecture development.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**
Title: Automated Digital Network System (ADNS)	0.807	7.000	8.790	0.000	8.790
Articles:	-	-	-	-	-
FY 2021 Plans:					

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 0725 / *Communication Automation*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Design, develop, and test ADNS hardware and software solutions in support of Advanced Networking Tactical System (ANTS) on Unmanned Carrier Aviation (UCA) platforms to ensure enterprise alignment of Naval Aviation network solutions. Conduct ANTS Formal Qualification Test (FQT) and First Flight Test on UCA platform. Continue the Interface Design Description (IDD) and integration with network applications, develop LOS link, DISN integration and development of Cipher-Text (CT) piers. Investigate and recommend platform network devices, network design support to include procurement, integration and testing of the WAN. Continue network-based Cyber Security technology and virtualization of ADNS. Perform technical analyses and engineering efforts associated with implementation of new technology to enable rapid introduction of new products and technology, prevent obsolescence, and mitigate end of support issues. ***FY 2022 Base Plans:*** Continue to design, develop, and test ADNS hardware and software solutions in support of Advanced Networking Tactical System (ANTS) on Unmanned Carrier Aviation (UCA) platforms to ensure enterprise alignment of Naval Aviation network solutions. Continue the IDD and integration with network applications, develop LOS link, DISN integration and development of CT piers. Investigate and recommend platform network devices, network design support to include procurement, integration and testing of the WAN. Continue network-based Cyber Security technology and virtualization of ADNS. Perform technical analyses and engineering efforts associated with implementation of new technology to enable rapid introduction of new products and technology, prevent obsolescence, and mitigate end of life support issues. ADNS will also begin software baseline development for the next variant of ADNS. This development will include the start of requirements definition, Analysis of Alternatives (AoA), future test planning and initial system architecture development. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** FY22 funding increase of $1.790M is in support of software baseline development for the next variant of ADNS.					
Accomplishments/Planned Programs Subtotals	0.807	7.000	8.790	0.000	8.790

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
• OPN/3050: *Ship Communications Automation*	128.187	124.288	90.724	-	90.724	-	-	-	-	-	-

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 0725 / *Communication Automation*

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

Remarks

OPN/3050 funding profile captures more than Automated Digital Networking System (ADNS) OPN budget control. BLI 3050 funds Command and Control Official Information eXchange (C2OIX), Shore Tactical Assured Command and Control (STACC), Operation Rolling Tide (ORT), Enterprise Pier Connectivity Architecture (EPCA), and ADNS programs.

D. Acquisition Strategy

Automated Digital Network System (ADNS): Evolutionary acquisition approach with overlapping development and implementation phases for defined Increment (INC) I, II, and III baselines. INC I, II, and III will use competitively awarded contracts to implement changes consistent with acquisition initiatives. ADNS leverages Commercial-Off-The-Shelf (COTS) and Government Off-the-Shelf (GOTS) products while capitalizing on acquisition reform initiatives to achieve material savings in the logistics, installation, integration and training areas. Where feasible, differing types of advantageous contract vehicles will be used to provide flexibility, decrease contract administrative costs, and encourage acquisition streamlining through the use of COTS/GOTS products.

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 0303138N / *AFLOAT NETWORKS*	Project (Number/Name) 0725 / *Communication Automation*	

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
Systems Engineering-ADNS	WR	NIWC : PAC/LANT	0.000	0.479	Dec 2019	5.090	Dec 2020	6.801	Dec 2021	-		6.801	-	-	-
Systems Engineering-ADNS	WR	NUWC : Newport, RI	0.000	0.164	Oct 2019	0.177	Oct 2020	0.180	Oct 2021	-		0.180	-	-	-
Integration and Test-ADNS	C/CPFF	Systems Technology Forum LTD. : San Diego, CA	0.000	0.082	Mar 2020	0.088	Mar 2021	0.112	Mar 2022	-		0.112	-	-	-
		Subtotal	0.000	0.725		5.355		7.093		-		7.093	-	-	N/A

Support ($ 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
Certification Authority-ADNS	C/CPFF	BAH : San Diego, CA	0.000	0.082	Jan 2020	0.617	Jan 2021	0.788	Jan 2022	-		0.788	-	-	-
		Subtotal	0.000	0.082		0.617		0.788		-		0.788	-	-	N/A

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
Test and Evaluation-ADNS	WR	NIWC : PAC/LANT	0.000	0.000		0.500	Dec 2020	0.684	Dec 2021	-		0.684	-	-	-
		Subtotal	0.000	0.000		0.500		0.684		-		0.684	-	-	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
Program Management	C/CPFF	STF : San Diego, CA	0.000	0.000		0.528	Dec 2020	0.225	Dec 2021	-		0.225	-	-	-
		Subtotal	0.000	0.000		0.528		0.225		-		0.225	-	-	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 0303138N / *AFLOAT NETWORKS*	Project (Number/Name) 0725 / *Communication Automation*	

	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	0.000	0.807		7.000		8.790		-		8.790	-	-	N/A

Remarks

Prior to FY21, ADNS Airborne Advanced Networking Tactical System (ANTS) funding resides in PE 0605414N, project 3278. Starting in FY21, the funding was realigned to PE 0303138N, project 0725 to ensure enterprise alignment of Naval Aviation network solutions.

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 0725 / *Communication Automation*

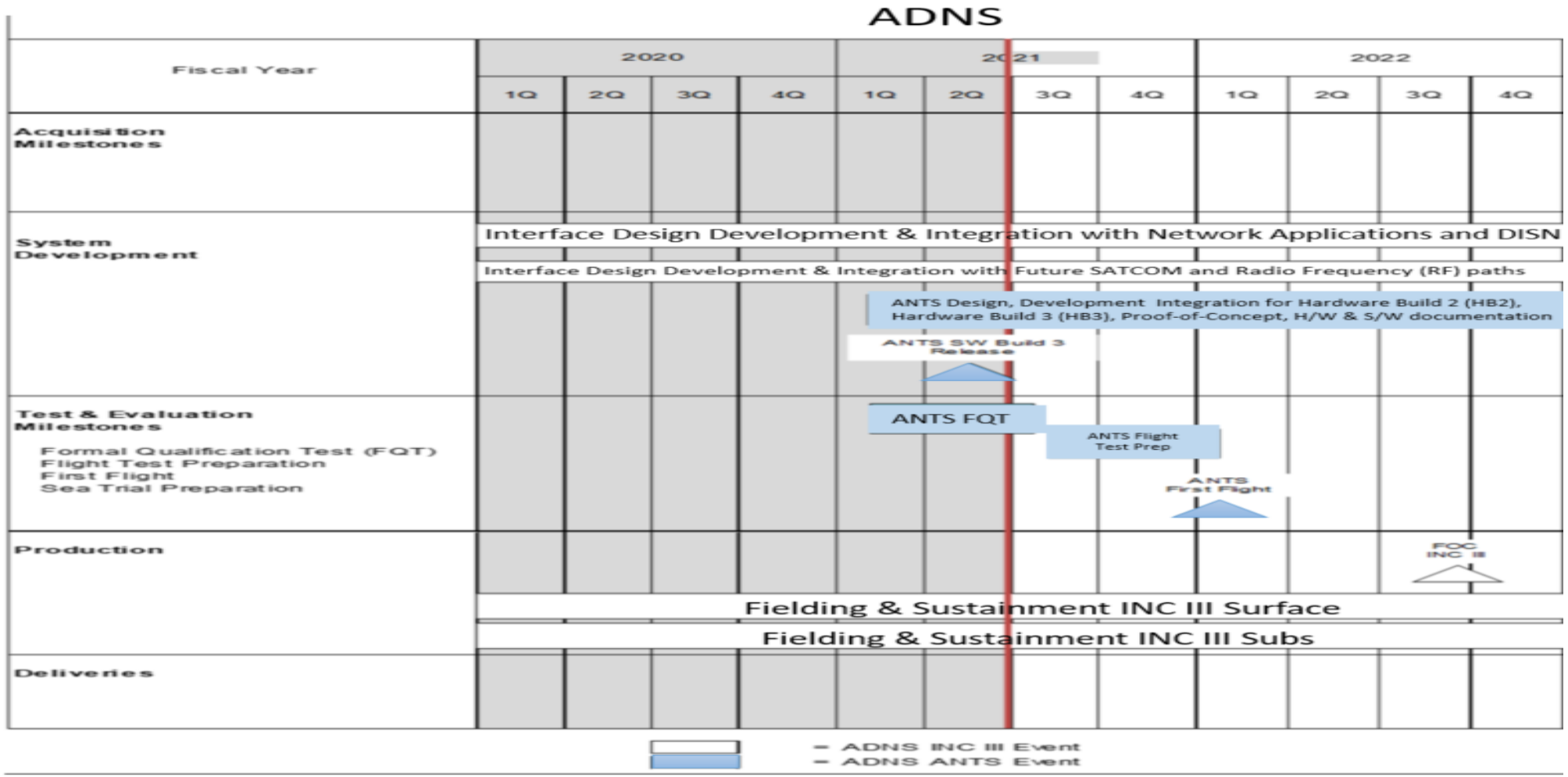


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 0725 / *Communication Automation*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0725				
System Development: ADNS: Increment III Interface Design Development and Integration with Network Application and Defense Information System Network (DISN)	1	2020	4	2022
System Development: ADNS: Increment III Interface Design Development and Integration with SATCOM and Radio Frequency (RF) paths	1	2020	4	2022
Production: ADNS: Increment III_Fielding and Sustainment INC III Surface	1	2020	4	2022
Production: ADNS: Increment III_Fielding and Sustainment INC III Submarines	1	2020	4	2022
Production: ADNS: Increment III_Full Operational Capability	3	2022	3	2022
System Development ADNS: ANTS Design, Development & Integration for Hardware Build 2 (HB2), Hardware Build 3 (HB3), Proof-of-Concept, H/W & S/W documentation	1	2021	4	2022
Test & Evaluation Milestones: ANTS SW Build 3 Release	2	2021	2	2021
Test & Evaluation Milestones: ANTS Formal Qualification Test (FQT)	1	2021	2	2021
Test & Evaluation Milestones: ANTS Flight Test Preparation	3	2021	4	2021
Test & Evaluation Milestones: ANTS Flight Test	4	2021	4	2021

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 0303138N / *AFLOAT NETWORKS*	Project (Number/Name) 9999 / *Congressional Adds*	

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
9999: *Congressional Adds*	0.000	0.000	5.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Congressional add in PB21.

A. Mission Description and Budget Item Justification

Consolidated Afloat Networks and Enterprise Services (CANES) is the Navy's Program of Record (POR) to replace and modernize existing afloat networks with the necessary hardware, software and enterprise services infrastructure to enable information warfare from and within the tactical domain. CANES provides complete infrastructure inclusive of hardware, software, processing, storage and end user devices for the Unclassified, Coalition, Secret and Sensitive Compartmented Information (SCI) enclaves to a wide variety of Navy surface combatants, submarines and Maritime Operations Centers. CANES services include application hosting, data transport and storage, system management, cyber security, email, web, chat, collaboration, and voice and video services. CANES is based on the overarching concept of reducing the number of afloat networks and providing enhanced efficiency through a single engineering focus on integrated technical solutions. It allows for streamlined acquisition, contracting, test events, sustainment, and significant lifecycle efficiencies through consolidation of multiple configuration management baselines, logistics, and training efforts into a single unified support structure.

The Network and Data Center Intelligent Assistant (NADIA) project enables automated operation and troubleshooting of complex data centers and networks through the utilization of Artificial Intelligence/Machine Learning (AI/ML). This project will enhance the onboard management of CANES Network and Cyber Security Operations for Afloat Units.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021
Congressional Add: Network and data center intelligent agent program	0.000	5.000
FY 2020 Accomplishments: N/A		
FY 2021 Plans: Develop automation tools such as Root-Cause Analysis, Smart Display, and Smart Search Engine and integrate them into the existing CANES Network Management system.		
Congressional Adds Subtotals	0.000	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 9999 / *Congressional Adds*

D. Acquisition Strategy

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 0303138N / *AFLOAT NETWORKS*	Project (Number/Name) 9999 / *Congressional Adds*	

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
Primary Software Development	C/CPFF	NIWC : San Diego, CA and Charleston, SC	0.000	0.000		5.000	Jun 2021	0.000		-		0.000	-	-	-
		Subtotal	0.000	0.000		5.000		0.000		-		0.000	-	-	N/A

	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	0.000	0.000		5.000		0.000		-		0.000	-	-	N/A

Remarks

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 9999 / *Congressional Adds*

		DATE: April 2021
Appropriation/Budget Activity 1319 / 07	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent SVS (CANES)	PROJECT NUMBER AND NAME **C690 / Network and Data Center Intelligent Assistant (NADIA)**

Fiscal Year	2020				2021				2022			
Quarter	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestone												
Engineering and Manufacturing Development							NADIA - SW Development					
Test & Evaluation Milestones Development Test Operational Test												
Application Integration Application Integration Test **Milestone** Limited Deployment (LD) Full Deployment (FD)												
Deliveries												

TI: Technical Insertion; DT: Development Testing; DTA: Development Testing Assist; FOT&E: Force Level Follow-On Test and Evaluation; SIT: Software Integration Test; FD: Full Deployment

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
Engineering Design	3	2021	2	2022

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 0303138N / *AFLOAT NETWORKS*				Project (Number/Name) 9C87 / *CANES Integration*			
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**
9C87: *CANES Integration*	250.382	21.189	22.630	22.100	-	22.100	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: M417

A. Mission Description and Budget Item Justification

Consolidated Afloat Networks and Enterprise Services (CANES) is the Navy's Program of Record (POR) to replace and modernize existing afloat networks with the necessary hardware, software and enterprise services infrastructure to enable information warfare from and within the tactical domain. CANES provides complete infrastructure inclusive of hardware, software, processing, storage and end user devices for the Unclassified, Coalition, Secret and Sensitive Compartmented Information (SCI) enclaves to a wide variety of Navy surface combatants, submarines and Maritime Operations Centers. CANES services include application hosting, data transport and storage, system management, cyber security, email, web, chat, collaboration, and voice and video services. CANES is based on the overarching concept of reducing the number of afloat networks and providing enhanced efficiency through a single engineering focus on integrated technical solutions. It allows for streamlined acquisition, contracting, test events, sustainment, and significant lifecycle efficiencies through consolidation of multiple configuration management baselines, logistics, and training efforts into a single unified support structure.

More than two hundred (200) hosted applications and systems inclusive of Command and Control, Intelligence, Surveillance and Reconnaissance, Information Operations, Logistics and Business domains require the CANES infrastructure to operate in the tactical environment. Specific programs, such as Distributed Common Ground System - Navy (DCGS-N), Global Command and Control System - Maritime (GCCS-M), Naval Tactical Command Support System (NTCSS), and Undersea Warfare Decision Support System (USW-DSS), no longer provide their own independent network hardware and now depend on CANES to field, host, and sustain their capabilities. The CANES Application Integration program provides common software governance, testing, processes, and tools to application developers, and evaluates and confirms compatibility between CANES and the hosted applications prior to fielding. CANES also provides a set of capabilities called Agile Core Services (ACS) which brings common network services to allow hosted application developers to focus on the unique capabilities they provide.
CANES is funded and programmed to develop regular technical updates with an agile and robust hardware and software baseline development cycle necessary to pace rapidly evolving cyber security threats and meet emerging operational demands within the tactical domain. In order to deliver a mission effective, secure and affordable afloat network, CANES implements a Development Operations (DevOps) framework to improve its engineering processes and speed the deployment of new cyber security, application hosting and baseline updates.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**
Title: CANES Integration	21.189	22.630	22.100	0.000	22.100
Articles:	-	-	-	-	-
FY 2021 Plans: Continue development of Technical Insertion (TI) 4 hardware and software baseline development including Agile Core Services (ACS) and Enterprise Engineering and Certification (E2C) laboratory engineering efforts.					

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 9C87 / *CANES Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Perform systems engineering efforts to complete functional baselines and update technical data packages in support of TI 4. Perform Operational Testing in support of CANES submarine variant and perform Development Testing Assist (DTA) to support TI 4 and related software development efforts. Investigate and evaluate new technologies to improve network services capabilities and cyber security. ***FY 2022 Base Plans:*** Complete development of Technical Insertion (TI) 4 hardware and software baseline development including Agile Core Services (ACS) and Enterprise Engineering and Certification (E2C) laboratory engineering efforts. Perform systems engineering efforts to complete functional baselines and update technical data packages in support of TI 4. Perform Application Integration System Integration Testing (SIT) to support completion of TI 4 software development efforts. Start development of Technical Insertion (TI) 5 hardware and software baseline development including ACS, E2C laboratory engineering efforts. Investigate and evaluate new technologies to improve network services capabilities and cyber security. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding decrease of $0.53M from FY21 to FY22 reflects decrease in program development costs as approved in the program Life Cycle Cost Estimate.					
Accomplishments/Planned Programs Subtotals	21.189	22.630	22.100	0.000	22.100

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
• OPN/2915: *CANES*	406.399	389.585	412.002	-	412.002	-	-	-	-	-	-
• OPN/2925: *CANES Intell*	56.428	48.654	51.593	-	51.593	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

CANES is an ACAT IAC Major Automated Information System (MAIS) program. The program office employed a multiple-phase, multiple-award down-select contract strategy to reduce program risks and maintain competition in both design development and limited production during contract performance. Milestone C was achieved in 1QFY13 and Full Deployment Decision (FDD) was achieved in 1QFY16. In 2QFY15, a separate full and open indefinite delivery indefinite quantity (IDIQ) multiple award contract (MAC) production contract was awarded to support future production. CANES is programmed to develop regular technical updates to its hardware and software baselines to ensure that no cyber security vulnerabilities exist due to hardware and software obsolescence.

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 9C87 / *CANES Integration*

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
Prior Year Product Development	Various	Various : Various	179.731	0.000		0.000		0.000		-		0.000	-	-	-
Primary Hardware Development	WR	NIWC : San Diego, CA and Charleston, SC	16.950	7.844	Nov 2019	8.330	Nov 2020	8.576	Nov 2021	-		8.576	-	-	-
Primary Software Development	WR	NIWC : San Diego, CA and Charleston, SC	17.525	8.210	Nov 2019	9.056	Nov 2020	9.098	Nov 2021	-		9.098	-	-	-
Systems Engineering	C/CPFF	Booz Allen Hamilton (BAH) : San Diego, CA	0.985	0.627	Dec 2019	0.627	Dec 2020	0.777	Dec 2021	-		0.777	-	-	-
Systems Engineering	WR	NIWC : San Diego, CA and Charleston, SC	7.231	2.573	Dec 2019	2.670	Dec 2020	2.711	Dec 2021	-		2.711	-	-	-
Systems Engineering	MIPR	US ARMY CECOM (MITRE) : San Diego, CA	1.617	0.776	Mar 2020	0.770	Mar 2021	0.000	Mar 2022	-		0.000	-	-	-
		Subtotal	224.039	20.030		21.453		21.162		-		21.162	-	-	N/A

Support ($ 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
Prior Year Support	Various	Various : Various	5.621	0.000		0.000		0.000		-		0.000	-	-	-
Studies & Design	WR	NIWC : San Diego, CA	0.580	0.430	Nov 2019	0.463	Nov 2020	0.468	Nov 2021	-		0.468	-	-	-
Certification Authority	C/CPFF	Booz Allen Hamilton (BAH) : San Diego,CA	1.284	0.421	Dec 2019	0.421	Dec 2020	0.410	Dec 2021	-		0.410	-	-	-
		Subtotal	7.485	0.851		0.884		0.878		-		0.878	-	-	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 0303138N / *AFLOAT NETWORKS*	Project (Number/Name) 9C87 / *CANES Integration*	

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
Prior Year Test & Evaluation	Various	Various : Various	6.187	0.000		0.000		0.000		-		0.000	-	-	-
Operational Test & Evaluation	MIPR	JITC : Fairfax, VA	0.317	0.250	Feb 2020	0.235	Feb 2021	0.000		-		0.000	-	-	-
		Subtotal	6.504	0.250		0.235		0.000		-		0.000	-	-	N/A

Management Services ($ in Millions)

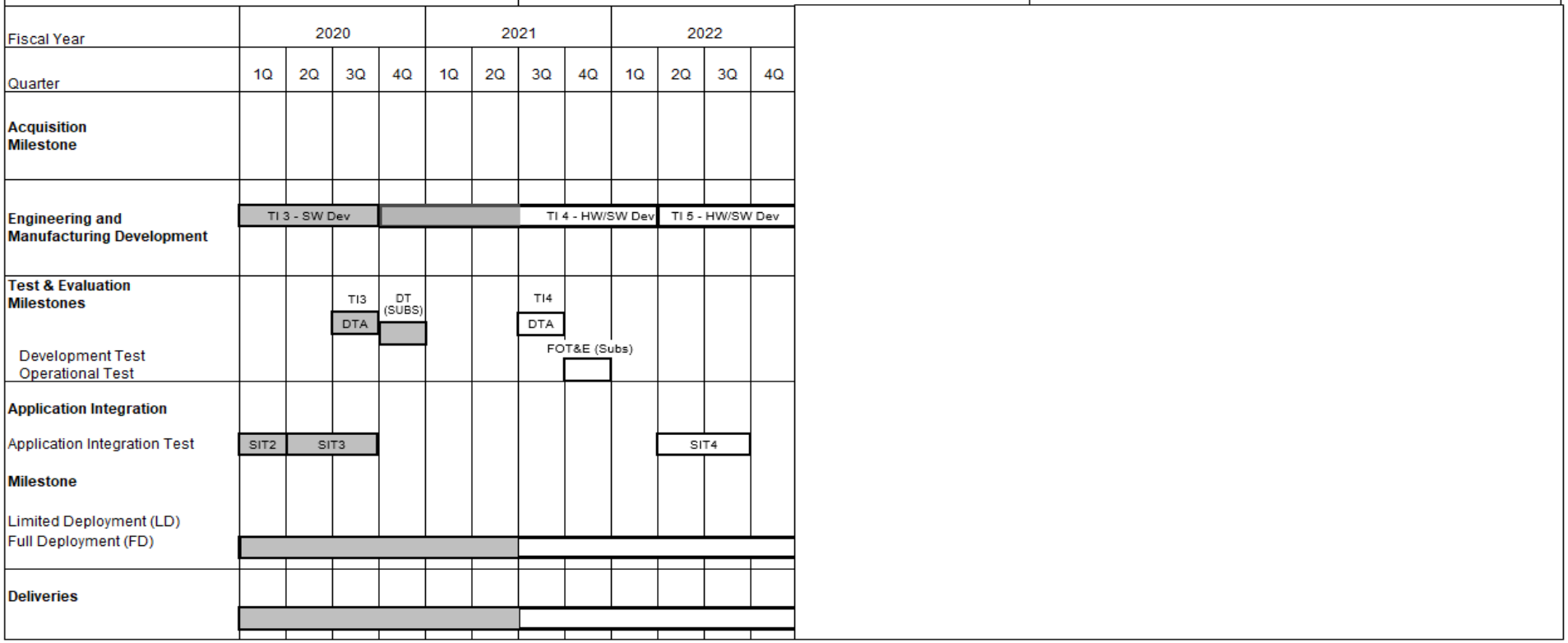
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Management Services	Various	Various : Various	12.239	0.000		0.000		0.000		-		0.000	-	-	-
Program Management	C/CPFF	STF : San Diego, CA	0.115	0.058	Dec 2019	0.058	Dec 2020	0.060	Dec 2021	-		0.060	-	-	-
		Subtotal	12.354	0.058		0.058		0.060		-		0.060	-	-	N/A

	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	250.382	21.189		22.630		22.100		-		22.100	-	-	N/A

Remarks

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 9C87 / *CANES Integration*

		DATE: April 2021
Appropriation/Budget Activity 1319 / 07	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent SVS (CANES)	PROJECT NUMBER AND NAME **9C87 / CANES Integration**



TI: Technical Insertion; DT: Development Testing; DTA: Development Testing Assist; FOT&E: Force Level Follow-On Test and Evaluation; SIT: Software Integration Test; FD: Full Deployment

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 0303138N / *AFLOAT NETWORKS*	**Project (Number/Name)** 9C87 / *CANES Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Fiscal Year				
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 3 SW Development	1	2020	3	2020
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 4 HW/SW Development	4	2020	1	2022
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 5 SW Development	2	2022	4	2022
Test & Evaluation Milestone: Development Test: Development Test Assist- TI 3	3	2020	3	2020
Test & Evaluation Milestone: Development Test: Development Test Assist- TI 4	3	2021	3	2021
Test & Evaluation Milestone: Development Test: Developmental Test - Sub	4	2020	4	2020
Test & Evaluation Milestone: Operational Test: Operational Test - FOT&E Sub	4	2021	4	2021
Application Integration: Application Integration SIT 2	1	2020	1	2020
Application Integration: Application Integration SIT 3	2	2020	3	2020
Application Integration: Application Integration SIT 4	2	2022	3	2022
Production Milestone: Production Milestone - Full Deployment (FD)	1	2020	4	2022
Deliveries: Deliveries - Full Deployment (FD)	1	2020	4	2022