Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy											Date: March 2019	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605217N *I (U)Common Avionics*							
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
Total Program Element	42.711	47.338	51.486	43.187	-	43.187	36.859	36.232	35.747	36.469	Continuing	Continuing
0572: *JT Service/NV Std Avionics CP/SB*	42.711	47.338	51.486	43.187	-	43.187	36.859	36.232	35.747	36.469	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project provides for the identification, study, design, development, demonstration, test, evaluation, and qualification of standard avionics capabilities for Navy use, and wherever practicable, use across all Services and Foreign Military Sales. Such air combat electronics developments include communications and airborne networking, navigation and sensors, flight avionics, safety systems, and flight mission information systems for both forward fit and retrofit aircraft. These efforts continue to maintain federated systems while encouraging transition of procurements to support a modular system for enhanced performance and affordability. Consideration is given up front to reduce acquisition costs through larger procurement quantities that satisfy multi-aircraft customer requirements and that reduce life cycle costs in the areas of reliability, maintainability, and training.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	58.163	51.486	46.841	-	46.841
Current President's Budget	47.338	51.486	43.187	-	43.187
Total Adjustments	-10.825	0.000	-3.654	-	-3.654
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.500	0.000			
• Program Adjustments	0.000	0.000	-3.000	-	-3.000
• Rate/Misc Adjustments	0.000	0.000	-0.654	-	-0.654
• Congressional General Reductions Adjustments	-0.023	-	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy					Date: March 2019
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0605217N *I (U)Common Avionics*			
• Congressional Directed Reductions	-9.302	-	-	-	-
Adjustments					

Change Summary Explanation

The FY 2020 funding request was reduced by $3.000 million to account for the availability of prior year execution balances. Additional reduction of $0.654 million for miscellaneous rate adjustments.

Technical: Not applicable.

Schedule:

Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM): Removed the Required Navigation Performance Area Navigation (RNP RNAV) developmental requirements and technologies/certifications from schedule due to completion in FY19. Extended Evaluate CNS/ATM technologies/develop solutions to support platform integrations to include 4Q/24.

Tactical Communications (TACCOM): Satellite Communication (SATCOM) S/W Development (with Mobile User Objective System (MUOS)) extended to end of FY19 due to delays in MUOS verification lab availability. The associated initial MUOS S/W release shifted to 3Q/19. Initial National Security Agency (NSA) and Joint Interoperability Test Command (JITC) certification for MUOS inclusive S/W build adjusted to match. NSA and JITC certifications adjusted in the following years based on predictions of required ARC-210 radio software updates and/or mode functionality verifications, as more platforms incorporate ARC-210 Gen 6 radios. NSA and/or JITC re-certification requirements contingent on whether future software revisions impact the radio's crypto sub-system or frequency spectrum utilization, respectively. MIL Standard Evolution for Variable Message Format (VMF) extension to end of FY22 and Transmission Security (TRANSEC)/ Crypto Modernization with Tactical Secure Voice (TSV) extension to end of FY24 reflect ongoing evolution of the associated MIL Standard 188-220 software defined radio data protocols. Ongoing TACCOM coordination with NSA regarding TRANSEC specification releases, and SPAWAR regarding ground controller interoperability testing ensure ARC-210 equipped air platforms can maintain connectivity with ground radios.
FY18: Shifted Initial JITC Cert from 4Q/18 to 2Q/19.

Ground Proximity Warning System/Terrain Awareness System (GPWS/TAWS II): TAWS II schedule change is a result of performance issues identified during H-60 Developmental Testing and the inability of the prime contractor to make any additional changes prior to Fleet Release of Software Configuration SC 18-03. Fleet Release of SC 18-03 has been delayed beyond existing TAWS II APBA thresholds and the earliest opportunity to readdress H-60 issues not until FY24. V-22 will replace H-60 as the initial T/M/S aircraft for full TAWS II integration. Funding reprioritized to support Open Architecture in Avionics Architecture Team (AAT) in FY18, FY19 and FY20.
FY18: Removed H-60 TAWS II MS C 3Q/18.
FY19: Adjusted TAWS II Software Re-Architecture to 3Q/18 extending through 4Q/20; Removed H-60 TAWS II IOC from 2Q/19.
FY20: Changed Integration contract from V-22 to H-60 remaining in 3Q/20.
FY21: Added H-60 TAWS II Software Development 4Q/20 through 4Q/21; Added V-22 TAWS II DT 2Q/21 through 1Q/23 due to fly, fix, fly.
FY22: Added H-60 Integrated Logistic Assessment (ILA) 4Q/22; added V-22 ILA 2Q/22.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605217N *I (U)Common Avionics*

FY23: Added H-60 TAWS II Software Development 1Q/23; added V22 MS C 2Q/23; added V-22 Fleet Release 4Q/23.
FY24: Added H-60 Fleet Release 4Q/24; added TAWS II Follow-on Developmental Platforms 1Q/24 to 4Q/24.

Collaborative Warfare (CW): Extended Naval Aviation Netted Sensors and Maritime Targeting Experimentation, Naval Aviation and Maritime Targeting Requirements and CONOPS, Standards and Architectures/Requirements Development to include 4Q/24.

Avionics Component Improvement Program (AvCIP): Extended Acquisition Milestones to include FY24.

Mid Air Collision Avoidance Capability (MCAC): Added Decision Analysis Support (DAS) 3Q/18 to 1Q/19; Added Program Smart Shutdown 2Q/19 to 4Q/19. MCAC Program Termination effective FY19 per N98, Ser N98/18U142416. Funding reprioritized to support Open Architecture in Avionics Architecture Team (AAT) in FY19 and FY20.

(U) Common Avionics schedule FY16 and prior is reflected in PE 0604215N, Project Unit 0572.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605217N / *(U)Common Avionics*	Project (Number/Name) 0572 / *JT Service/NV Std Avionics CP/SB*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
0572: *JT Service/NV Std Avionics CP/SB*	42.711	47.338	51.486	43.187	-	43.187	36.859	36.232	35.747	36.469	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

(U) Common Avionics schedule FY16 and prior is reflected in PE 0604215N, Project Unit 0572.

A. Mission Description and Budget Item Justification

Joint Services/Navy Standard Avionics Components and Subsystems: This project provides for the identification, study, design, development, demonstration, test, evaluation, and qualification of standard avionics capabilities for Navy use, and wherever practicable, use across all Services and Foreign Military Sales. Standard avionics capabilities under
development include the Joint Service Review Committee for Avionics Standardization (JSRC-AS), Communication Navigation Surveillance/Air Traffic Management (CNS/ATM), Tactical Communications (TACCOM), Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II), Collaborative Warfare (CW), Avionics Component Improvement Program (AvCIP), Mid Air Collision Avoidance Capability (MCAC), and Avionics Architectures Team (AAT). Participation in Human Factors Quality Management Board ensures Navy safety upgrades and mandatory safety improvements for naval aircraft.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Joint Service Review Committee for Avionics Standardization (JSRC-AS)	0.582	0.995	1.015	0.000	1.015
Articles:	-	-	-	-	-
Description: The JSRC-AS program supports Congressional and Assistant Secretary of the Navy for Research, Development and Acquisition direction to control the growing proliferation of unique avionics and improve coordination among the services through the identification, development, and promotion of investigative and development efforts across the services and U.S. Coast Guard. The JSRC-AS supports the development, analysis and review of new avionics requirements with potential for joint service application. The JSRC-AS consists of an O-6 Level principal from each service and U.S. Coast Guard, as well as the appropriate staff, to support joint service working group efforts. The JSRC-AS reports to the O-7 level tri-service Aviation Common Systems Board who reports to the O-9 level Joint Aeronautical Commanders Group.					
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Provide leadership in support of the Navy's interest to the JSRC-AS tri-service committee promoting commonality and joint programs with focus on interoperability, communications, navigation, Joint Services avionics obsolescence management, and update of the Core Avionics Master Plan. ***FY 2020 Base Plans:*** Provide leadership in support of the Navy's interest to the JSRC-AS tri-service committee promoting commonality and joint programs with focus on interoperability, communications, navigation, Joint Services avionics obsolescence management, and update of the Core Avionics Master Plan. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase from FY19 to FY20 is due to escalation factor.					
Title: Communication Navigation Surveillance/Air Traffic Management (CNS/ATM)	2.195	1.368	0.136	0.000	0.136
Articles:	-	-	-	-	-
Description: This program will conduct and support CNS/ATM research, studies, development, integration, demonstration, test and evaluation efforts for Naval aviation platforms in development. Platform integration of Mode Select (S), 8.33 kHz, Reduced Vertical Separation Minimum (RVSM), Required Navigation Performance Area Navigation (RNP RNAV) to include M Code, and Automatic Dependent Surveillance-Broadcast Out (ADS-BO) functional integration and certification efforts into Naval aircraft. Assist with insertion of communication, navigation, surveillance, and supporting technologies and conduct capability certification on developmental platforms such as F-35, CH-53K, and Unmanned Air Systems. Capabilities include Mode S, 8.33 kHz, RVSM, RNP RNAV, ADS-BO, and other civil and military capabilities. ***FY 2019 Plans:*** Assist with insertion and integration of Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) technologies and certification of developmental platforms. Evaluate technologies and develop solutions to support platform integrations. Develop CNS/ATM Common Components to support RNP/RNAV developmental platform requirements. Continue integration/certification of Mode Select, 8.33 kHz, Reduced Vertical Separation Minimum (RVSM), RNP/RNAV, and ADS-B (Out) into CH-53K. Research and develop GPS enhancements to support CNS/ATM RNP RNAV improvements. Research and develop ADS-B (Out) System Design Assurance requirements as well as compatibility with the emerging GPS M Code and its impact on RNP RNAV. ***FY 2020 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Continue to evaluate technologies and develop solutions to support platform integrations. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease between FY19 and FY20 is due to the completion of CH-53K CNS/ATM integration/certifications being completed in FY19.					
Title: Tactical Communications (TACCOM)	17.314	19.479	12.906	0.000	12.906
Articles:	-	-	-	-	-
Description: This program will conduct research, studies, development, integration, demonstration, test and evaluation efforts to ensure tactical communication systems and capabilities are developed and available to support naval aviation requirements. Perform tactical communication platform integration studies and activities to determine technical and cost effective solutions across naval aviation. Develop tactical communications (voice/data) requirements, concepts and systems which have application across naval aviation. Support all necessary tasks to ensure evolution of legacy communications systems incorporating programmable Communication Security/Information Assurance, Transmission Security (TRANSEC) mandated National Security Agency (NSA) Crypto Modernization initiatives, Tactical Secure Voice (TSV) Suite B, Combat Net Radio (CNR) Variable Message Format (VMF), Beyond Line-of-Sight, Satellite Communication (SATCOM) Modernization including Mobile User Objective System (MUOS), High Frequency, Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN), civil interoperability, and data link into the ARC-210 system. Support for networking requirements development and prototyping, Integrated Waveform (IW), Intelligence Broadcast System over modern Code Division Multiple Access based satellite channels, Tactical Networks, Data Links, and Link 16. ***FY 2019 Plans:*** Continue SATCOM S/W development with MUOS capabilities. Complete crypto engine integration for NSA and Information Assurance (IA) certification. Continue Combat Net radio interoperability with SATURN waveform. Continue TRANSEC SATCOM Crypto Modernization in accordance with NSA directives and TSV Suite B for interoperability. ***FY 2020 Base Plans:*** Continue SATCOM S/W development with MUOS capabilities. Continue crypto engine integration for NSA and Information Assurance (IA) certification. Continue Combat Net radio interoperability with SATURN waveform.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Continue TRANSEC SATCOM Crypto Modernization in accordance with NSA directives and TSV Suite B for interoperability. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease from FY19 to FY20 is due to completion of Gen5A radio efforts in FY19. Prior to FY20, the integration of the Transmission Security and Suite B changed from a two radio configurations to one configuration.					
Title: Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II)	5.932	6.168	6.267	0.000	6.267
Articles:	-	-	-	-	-
Description: This program will conduct research, studies, development, integration, demonstration, test and evaluation efforts to meet naval aviation GPWS/TAWS II requirements. These requirements span all operational modes and operational environments, to include Degraded Visual Environment. Perform GPWS/TAWS II platform integration studies and activities to determine technical and cost effective solutions across naval aviation. Develop GPWS/TAWS II solutions tailored to platform performance and range of military operations. Develop simulation models for use at Manned Flight Simulator (MFS) or other simulation environments as required for platform tailoring, including procurement of test article hardware. Evaluate aircraft simulation models for suitability in GPWS/TAWS II development effort. Develop GPWS/TAWS II algorithms utilizing simulation environments as real-time hardware and pilot in the loop tool. Develop and evaluate algorithm interfaces necessary for integration of the algorithm within platform host computer. Develop software code to execute GPWS/TAWS II algorithm in host platforms. ***FY 2019 Plans:*** Continue on the TAWS II software Re-Architecture to meet MILSTD 882E and begin requirements development on the V-22. ***FY 2020 Base Plans:*** Award the H-60 Integration Contract. Complete TAWS II Software Re-Architecture and begin H-60 Software Development. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Increase from FY19 to FY20 is due to escalation factor.					
Title: Collaborative Warfare (CW)	0.224	0.244	0.250	0.000	0.250
Articles:	-	-	-	-	-
Description: The CW component is a Research & Development effort to identify targeting gaps and determine the warfighting benefit of integrating networked capabilities into naval aircraft to fill those gaps. The CW component also addresses maritime targeting gaps for naval aircraft to operate more effectively with other military services. The following efforts are included: 1) Comprehensive naval aviation and maritime targeting requirements that map fleet gaps and requirements to cross-platform naval aviation solutions. 2) Netted sensors and maritime targeting capability proof of concept prototype demonstrations leveraging the Navy's Fleet Experimentation campaign. 3) Coordinating Naval Aviation requirements with the Office of Naval Research Future Naval Capability Enabling Capability for the Common Radio Enhancement (CoRE). 4) Coordination of Naval Aviation strategy with Intelligence Community (IC) efforts in the areas of High Side Data Fusion, Combat Systems Integration, and National to Tactical Integration.					
FY 2019 Plans: Continue executing to Naval Aviation and Maritime Targeting Experimentation and Requirements. Develop requirements, standards, and architectures in support of new and updated netted-sensors' Concept of Operations and capabilities.					
FY 2020 Base Plans: Continue executing to Naval Aviation and Maritime Targeting Experimentation and Requirements. Continue to develop requirements, standards, and architectures in support of new and updated netted-sensors' Concept of Operations and capabilities.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: Increase from FY19 to FY20 is due to escalation factors.					
Title: Avionics Component Improvement Program (AvCIP)	4.536	4.872	4.971	0.000	4.971
Articles:	-	-	-	-	-
Description: Investigate high value Return On Investment component improvement candidate projects. Design and develop solutions that correct avionics systems reliability, performance and sustainment deficiencies in support of NAVAIR Commander's Strategic Imperatives of 'Aligning existing resources to better support today's					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Readiness' and 'Increase Speed of Products to the Fleet.' Stop operating and sustainment cost growth by reducing costs for fielded systems and implementing life-cycle cost reduction initiatives as part of new systems development. This program positions resources for next year application to fast-track corrections to existing problematic aviation electronics systems. Projects address critical readiness issues (significant back-orders or impending sustainability failures that threaten to down aircraft), functional performance obsolescence issues (system failing to support mission requirement), and top sustainment cost drivers (out of proportion annual maintenance or repair costs). Resources enable design and development of technology insertion and product redesign or replacement to meet readiness goals, meet mission objectives, or reduce overall sustainment costs. Candidate projects are submitted via a rigorous template, reviewed by a panel of Avionics professionals, and selected based upon urgency, warfighting contributions, breadth of application and scope of Return On Investment. Resources cover non-recurring engineering elements (including design and development, prototypes, platform integration, test and evaluation), program management and associated logistics elements (including technical data preparation, support equipment, provisioning, and training). Analysis shows under this program between 2006 and 2017 has enabled sustainment and procurement cost avoidances in excess of $310M in cost for the $72M of funding invested through 2018. ***FY 2019 Plans:*** Address current fleet problem avionics systems (top readiness degraders, cost drivers, obsolescence-driven sustainability, capability loss, fleet head-hurters). ***FY 2020 Base Plans:*** Address current fleet problem avionics systems (top readiness degraders, cost drivers, obsolescence-driven sustainability, capability loss, fleet head-hurters). ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase from FY19 to FY20 is due to escalation factor.					
Title: Mid Air Collision Avoidance Capability (MCAC)	2.054	0.913	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: This program will conduct research, studies, and development, integration, demonstration, test and evaluation					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
efforts to meet Naval Aviation Mid Air Collision Avoidance Capability (MCAC) requirements. These requirements span all operational modes and operational environments, to include Degraded Visual Environment. Perform (MCAC) platform integration studies and activities to determine technical and cost effective solutions across Naval Aviation. Develop MCAC solutions tailored to platform performance and range of military operations. Develop simulation models for use at Manned Flight Simulator (MFS) or other simulation environments as required for platform tailoring, including procurement of test article hardware. Evaluate aircraft simulation models for suitability in MCAC development effort. Develop MCAC solutions utilizing simulation environments as real-time hardware and pilot in the loop tools. Develop and evaluate interfaces necessary for integration of MCAC within platform host environment. ***FY 2019 Plans:*** Completed Decision Analysis Support (DAS). MCAC program terminated effective FY19 per N98, Ser N98/18U142416. Working smart shutdown to shelve the algorithm/software. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease from FY19 to FY20 is due to program termination.					
Title: Avionics Architectures Team (AAT) ***Articles:*** ***Description:*** The Avionics Architectures Team (AAT) provides hardware and software (HW/SW) standards and product line development and management for common HW/SW operating environments to establish testable open architecture requirements in accordance with National Defense Authorization Act (NDAA) Section 801 Open Architecture language, DoD Directive 5000.1, N6/N7 Naval Open Architecture Requirements Letter 9010, Ser. N6N7/5U916276, and SECNAVINST 5000.2E. The Future Airborne Capability Environment (FACE) Technical Standard is developed through Navy, Army, Air Force, Industry and Academia collaboration in accordance with Public Law 104-113. The Hardware Open Systems Technologies (HOST) standard is being developed through government and academia collaboration and will be provided to industry for prototyping efforts. The Functional Architecture for Strategic Reuse (FASTR) initiative will define a standard process for mission level capability decomposition to support product line development and management. The AAT provides Subject Matter Experts to define and architect a set of Open Architecture Standards and product lines, design	14.501 -	17.447 -	17.642 -	0.000 -	17.642 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
principles and guidance, development and integration tools, acquisition strategy, contracting guidance and cost estimates. The results will enable Department of Defense (DoD) weapons systems to systematically procure open, modular and reconfigurable software architectures, reuse HW/SW and deliver scalable, portable and interoperable war fighting capabilities at a faster rate, reducing redundant development costs and increasing competition. Infrastructure components and frameworks built to these standards will support Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) capability upgrades on various platforms by enabling integration of common, non-proprietary applications. The AAT initiatives enable the government's role as Lead Systems Integrator, per the Weapons System Acquisition Reform Act (WSARA) 2009, and cost effectively manage data rights for reuse across the DoD.					
FY 2019 Plans: Provide development support, mission based engineering, systems engineering and program management for design and acquisition strategy implementation guidance. Generate revisions for future editions of the FACE Technical Standard based on issues identified by government and industry consortium and develop corresponding conformance tools. Research new hardware technologies and develop Tier 2 HOST specifications to support widely adopted commercial technologies and platform requirements. Provide input to platforms developing Tier 3 HOST specifications. Assist platforms with strategies for modular functional architectures and implementation of FACE and HOST standards. Participate in international collaboration efforts to define comprehensive open architecture strategy. Generate alignment strategies for a comprehensive open architecture approach between Navy, Army and Air Force. Support the implementation of Naval Aviation's data model strategy. Provide subject Matter Expert support for platform integration and competitive source selection. Academia prototyping and demonstration efforts for FACE, FASTR and HOST initiatives.					
FY 2020 Base Plans: Provide development support, mission based engineering, systems engineering and program management for design and acquisition strategy implementation guidance. Generate revisions for future editions of the FACE Technical Standard based on issues identified by government and industry consortium and develop corresponding conformance tools. Research new hardware technologies and develop Tier 2 HOST specifications to support widely adopted commercial technologies and platform requirements. Provide input to platforms developing Tier 3 HOST specifications. Assist platforms with strategies for modular functional architectures and implementation of FACE and HOST standards. Participate in international collaboration efforts to define comprehensive open architecture strategy. Generate alignment strategies for a comprehensive open architecture approach between Navy, Army and Air Force. Support the implementation of Naval Aviation's data model strategy. Provide subject Matter Expert support for platform integration and competitive source selection.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Academia prototyping and demonstration efforts for Future Airborne Capability Environment (FACE), Functional Architecture for Strategic Reuse (FASTR) and Hardware Open Systems Technologies (HOST) initiatives. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase from FY19 to FY20 is due to the increased demand for Subject Matter Expert support for platform integration.					
Accomplishments/Planned Programs Subtotals	47.338	51.486	43.187	0.000	43.187

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• APN/0577: *Common Avionics Changes*	107.249	117.551	102.107	-	102.107	108.559	106.738	129.090	132.152	430.757	3,836.139

Remarks

D. Acquisition Strategy

Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) program is a system of systems. The program will encompass the integration of various systems which will be procured utilizing existing contracts for integration on forward-fit and retrofit platforms to provide CNS/ATM functionality. Tactical Communications (TACCOM) is utilizing a firm fixed price contract to Collins Aerospace for research and development of the ARC-210 Gen 5/6 and other Navy contract vehicles for integration studies. The Navy will integrate systems and components to satisfy platform requirements to achieve tactical communication capability as determined by analyses. Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) Software Modules will be developed by a Government Software Product Team in collaboration with Industry where required. Avionics Component Improvement Program (AvCIP) will annually review, compete and select candidate component improvement proposals according to urgency, criticality of warfighting contributions, technical risk, breadth of application, and scope of Return On Investment (ROI). Projects are selected by a panel of Avionics management experts, including representatives from OPNAV N98, NAVAIR, NAVICP, and the Fleet. Projects are executed by managers in platform or commodity offices that own the component. The AvCIP program management team manages project selection, allocates funds, monitors multiple project executions against proposed spend plans, and tracks solution performance and achievement of projected ROIs over time using Fleet maintenance and component performance databases. Cost avoidances are coordinated with OPNAV N98 to balance Flying Hour Program costs. Component improvement solutions include modular hardware, software and material upgrades. Resources cover engineering elements (including design and development, prototypes, platform integration, test and evaluation), program management and associated logistics elements (including technical data preparation, support equipment, provisioning, and training). Mid Air Collision Avoidance Capability (MCAC) is the capability umbrella which encompasses all systems designed and developed which aid in air-to-air collision avoidance. Systems include but are not limited to Traffic Collision Avoidance Systems and Mid Air Collision Avoidance Systems. MCAC Software

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

Modules will be developed by a Government Software Product Team in collaboration with Industry where required. MCAC Program Termination effective FY19 per N98, Ser N98/18U142416. Avionics Architectures Team (AAT) will provide acquisition strategy guidance and support to platforms implementing open systems architectures to address open architecture requirements.

E. Performance Metrics

Joint Services Review Committee for Avionics (JSRC-AS) - Provide leadership in support of the Navy's interest to the JSRC tri-service committee promoting commonality and joint programs with focus on interoperability, communications, Communication Navigation Surveillance/Air Traffic Management (CNS/ATM), Joint Services avionics obsolescence
management and the update of the Core Avionics Master Plan. Support and participate in Naval Aviation Requirements Group panels, Operational Advisory Group, and Human Factors Quality Management Board.
Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) - Successfully complete platform integration, test, and certifications.
Tactical Communications (TACCOM) - Achieve Joint Interoperability Test Command and National Security Agency certifications on system developmental efforts to meet operational requirements.
Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) - Develop algorithm and software to meet platform specific requirements and integrations. Deliver TAWS II on schedule for incorporation with first available over-arching platform software builds.
Collaborative Warfare (CW) - Identify collaborative warfighting capability gaps and ensure the development of the most intelligent, cost effective, and timely solutions to fill those gaps.
Avionics Component Improvement Program (AvCIP) - Successful project competition and selection, execution of allocated funds, fielding of solutions, and documentation of component performance enhancement and benefits, to include operational readiness improvements, avoidance of grounding aircraft, preclusion of loss of mission capabilities and life cycle sustainment cost avoidances.
Mid Air Collision Avoidance Capability (MCAC) - MCAC Program Termination effective FY19 per N98, Ser N98/18U142416.
Avionics Architectures Team (AAT) - Provide leadership in support of the Navy's interest to the Future Airborne Capability Environment (FACE) Consortium. Participate in technical and business working groups within the FACE Consortium to foster solutions that promote interoperable and integrated warfighting capability for all services. Successfully decompose, prototype and demonstrate FACE conformant applications and FACE compatible operating environments. Develop technical specifications for Hardware Open System Technologies (HOST). Prototype and demonstrate HOST avionics components.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Dev CNS/ATM	SS/CPFF	Sikorsky : Stratford, CT	0.000	1.462	Dec 2017	0.000		0.000		-		0.000	0.000	1.462	1.462
Primary Hardware Dev	Various	Various : Various	1.897	5.511	Jan 2018	9.088	Jan 2019	8.959	Jan 2020	-		8.959	Continuing	Continuing	Continuing
Primary Hardware Dev	WR	NAWCAD : Patuxent River, MD	1.195	0.476	Nov 2017	1.633	Nov 2018	1.650	Nov 2019	-		1.650	Continuing	Continuing	Continuing
Aircraft Integration TACCOM	SS/FFP	Collins Aerospace : Cedar Rapids, IA	6.511	10.488	Jul 2018	11.724	Jan 2019	6.496	Jan 2020	-		6.496	0.000	35.219	35.219
Aircraft Integration GPWS/ TAWS II	SS/CPIF	Lockheed Martin : Owego, NY	0.000	1.068	Dec 2017	0.000		0.000		-		0.000	0.000	1.068	1.068
Aircraft IntegrationTACCOM	C/CPFF	Collins Aerospace : Cedar Rapids, IA	3.312	0.000		0.000		0.000		-		0.000	0.000	3.312	3.312
Aircraft Integration	Various	Various : Various	0.000	0.000		0.419	Nov 2018	0.428	Nov 2019	-		0.428	Continuing	Continuing	Continuing
Systems Engineering AAT	MIPR	DTIC : Fort Belvior, VA	8.545	8.771	Jan 2018	6.247	Jan 2019	6.487	Jan 2020	-		6.487	0.000	30.050	30.050
Systems Engineering TACCOM	WR	NAWCAD : Patuxent River, MD	2.505	1.881	Dec 2017	1.022	Nov 2018	1.110	Nov 2019	-		1.110	Continuing	Continuing	Continuing
Systems Engineering	Various	Various : Various	2.409	2.067	Jan 2018	0.720	Dec 2018	0.560	Dec 2019	-		0.560	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.569	0.716	Nov 2017	0.799	Nov 2018	0.812	Nov 2019	-		0.812	Continuing	Continuing	Continuing
Systems Engineering MCAC	WR	NAWCAD : Patuxent River, MD	1.530	1.227	Nov 2017	0.665	Nov 2018	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	28.473	33.667		32.317		26.502		-		26.502	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development TACCOM	SS/FFP	Collins Aerospace : Cedar Rapids, IA	0.687	0.060	Mar 2018	3.021	Mar 2019	1.700	Mar 2020	-		1.700	0.000	5.468	5.468
Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.640	0.496	Nov 2017	1.001	Nov 2018	1.020	Nov 2019	-		1.020	Continuing	Continuing	Continuing
Software Development	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605217N / *(U)Common Avionics*	Project (Number/Name) 0572 / *JT Service/NV Std Avionics CP/SB*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Development	Various	Various : Various	0.000	0.300	Aug 2018	0.000		0.000		-		0.000	0.000	0.300	-
		Subtotal	1.327	0.856		4.022		2.720		-		2.720	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Evaluation	Various	Various : Various	1.597	1.166	Nov 2017	0.221	Dec 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Test and Evaluation	WR	NAWCAD : Patuxent River, MD	1.296	1.623	Nov 2017	1.064	Nov 2018	0.731	Nov 2019	-		0.731	Continuing	Continuing	Continuing
		Subtotal	2.893	2.789		1.285		0.731		-		0.731	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	Various	Various : Various	2.910	2.227	Jan 2018	2.805	Jan 2019	2.554	Jan 2020	-		2.554	Continuing	Continuing	Continuing
Contactor Engineering Support TACCOM	C/CPFF	Precise : Lexington Park, MD	1.409	1.497	Dec 2017	1.812	Dec 2018	1.812	Dec 2019	-		1.812	0.000	6.530	6.530
Contractor Engineering Support AAT	C/CPFF	Precise : Lexington Park, MD	1.240	1.893	Dec 2017	2.518	Dec 2018	2.442	Dec 2019	-		2.442	0.000	8.093	8.093
Government Engineering Support	WR	NAWCAD : Patuxent River, MD	0.302	0.575	Nov 2017	0.969	Nov 2018	0.781	Nov 2019	-		0.781	Continuing	Continuing	Continuing
Government Engineering Support AAT	WR	NAWCAD : Patuxent River, MD	1.472	1.046	Dec 2017	2.296	Dec 2018	2.322	Nov 2019	-		2.322	Continuing	Continuing	Continuing
Program Management Support	WR	NAWCAD : Patuxent River, MD	2.559	2.694	Nov 2017	3.411	Nov 2018	3.271	Nov 2019	-		3.271	Continuing	Continuing	Continuing
Program Management Support	Various	Various : Various	0.044	0.040	Jan 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605217N / *(U)Common Avionics*	Project (Number/Name) 0572 / *JT Service/NV Std Avionics CP/SB*	

Management Services ($ in Millions)

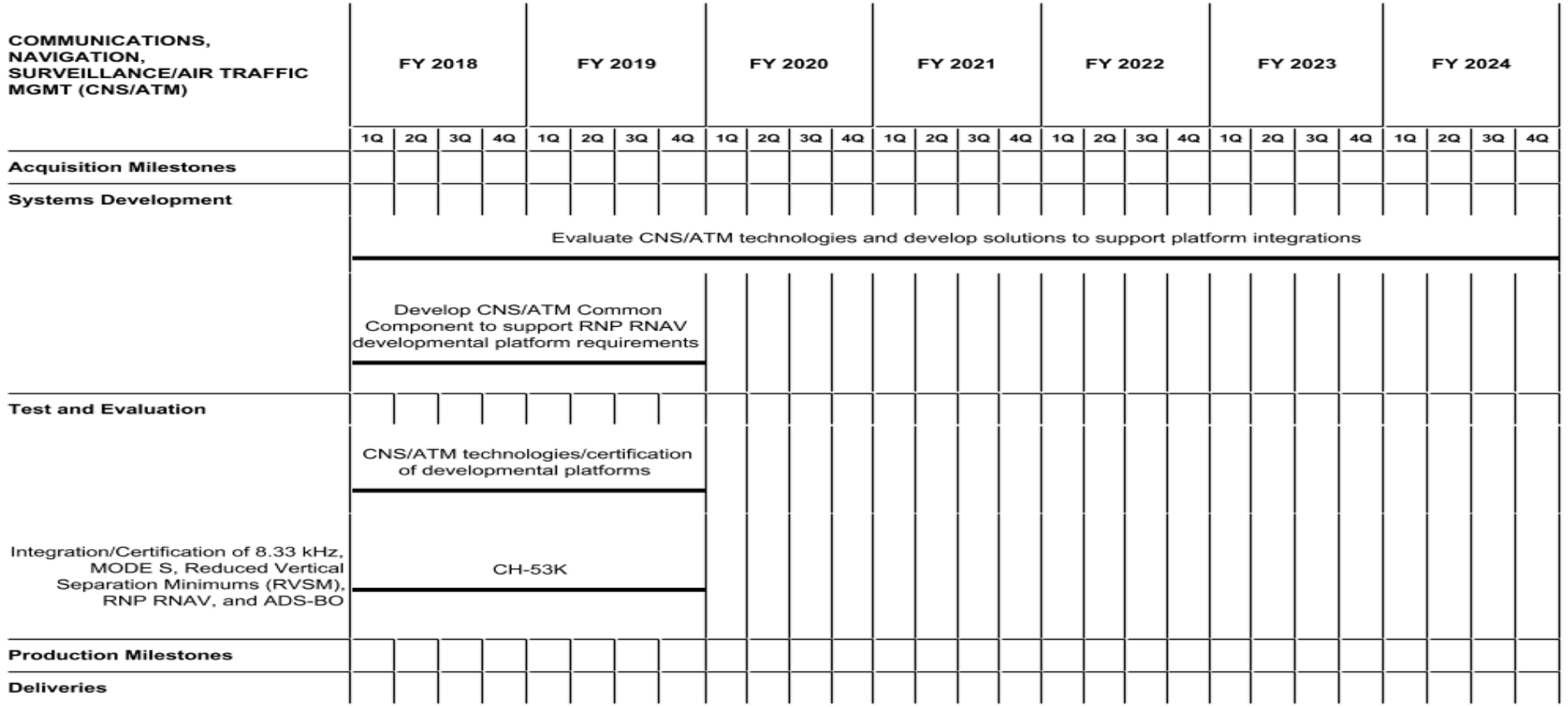
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	WR	NAVAIR : Patuxent River, MD	0.082	0.054	Feb 2018	0.051	Feb 2019	0.052	Feb 2020	-		0.052	Continuing	Continuing	Continuing
		Subtotal	10.018	10.026		13.862		13.234		-		13.234	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	42.711	47.338		51.486		43.187		-		43.187	Continuing	Continuing	N/A

Remarks

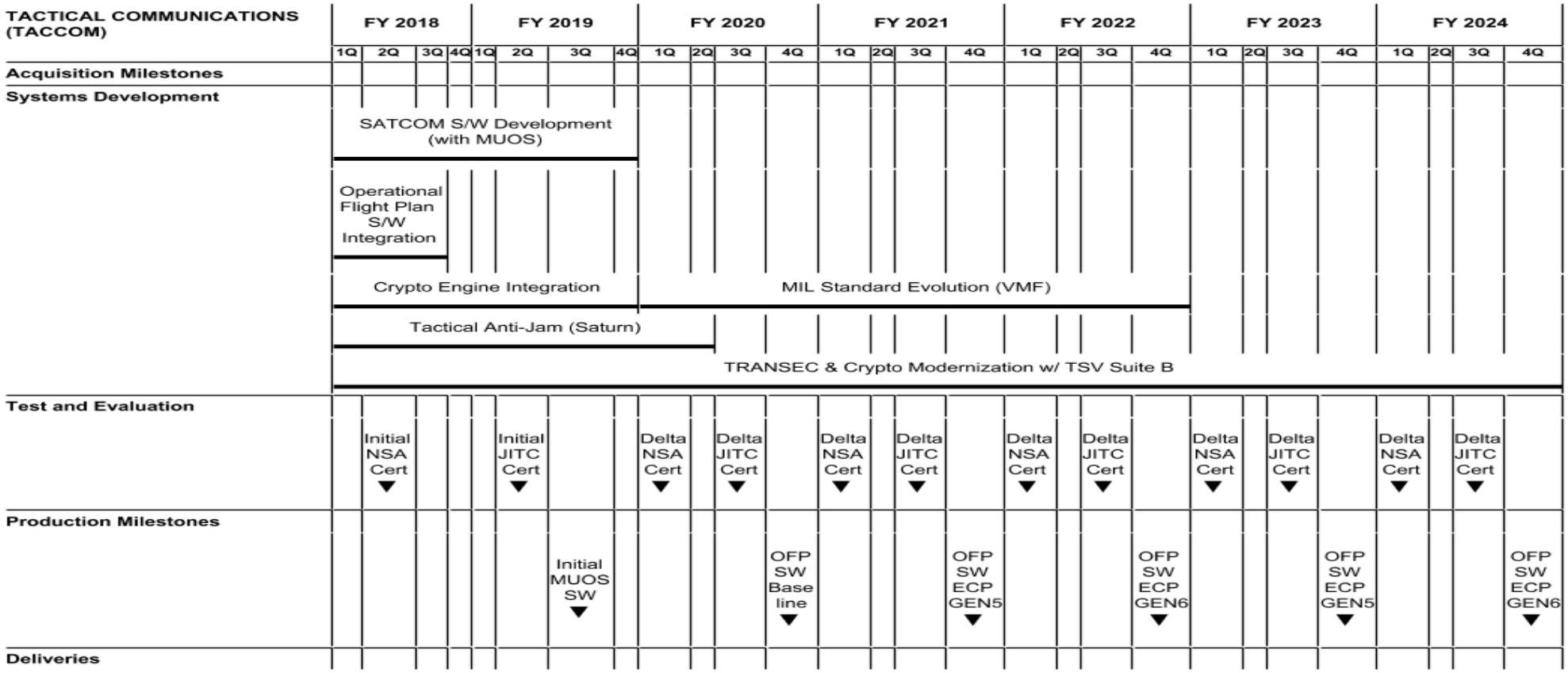
(U) Common Avionics schedule FY16 and prior is reflected in PE 0604215N, Project Unit 0572.

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



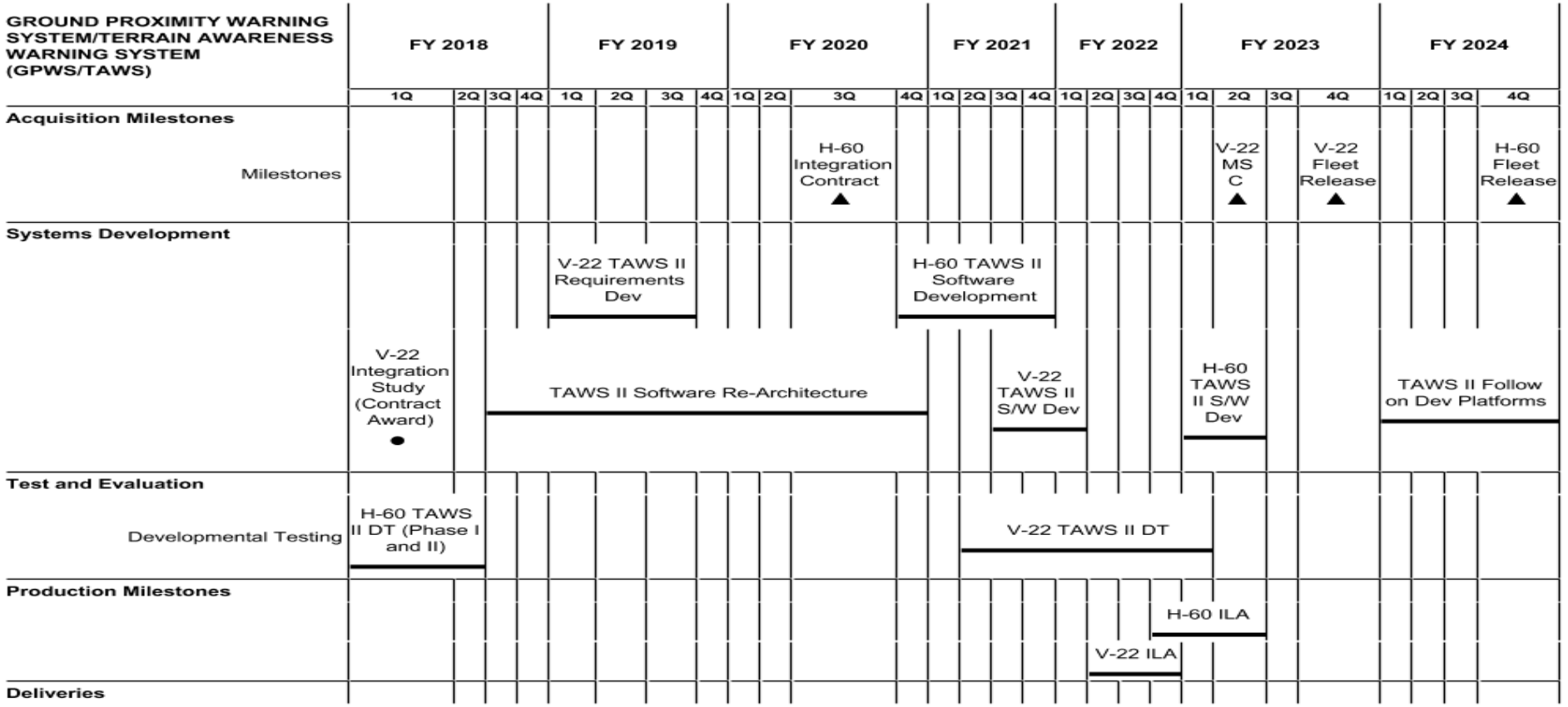
2020PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



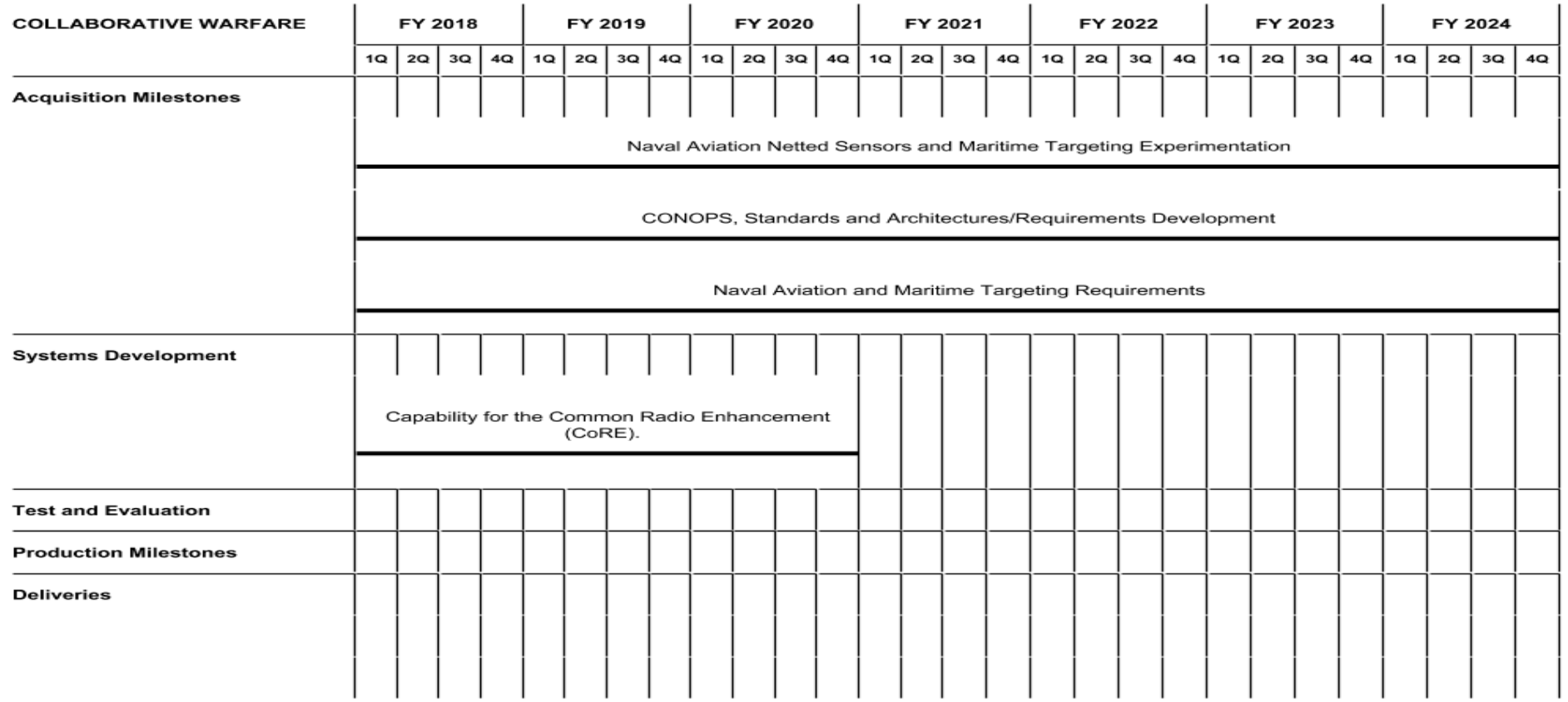
2020PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



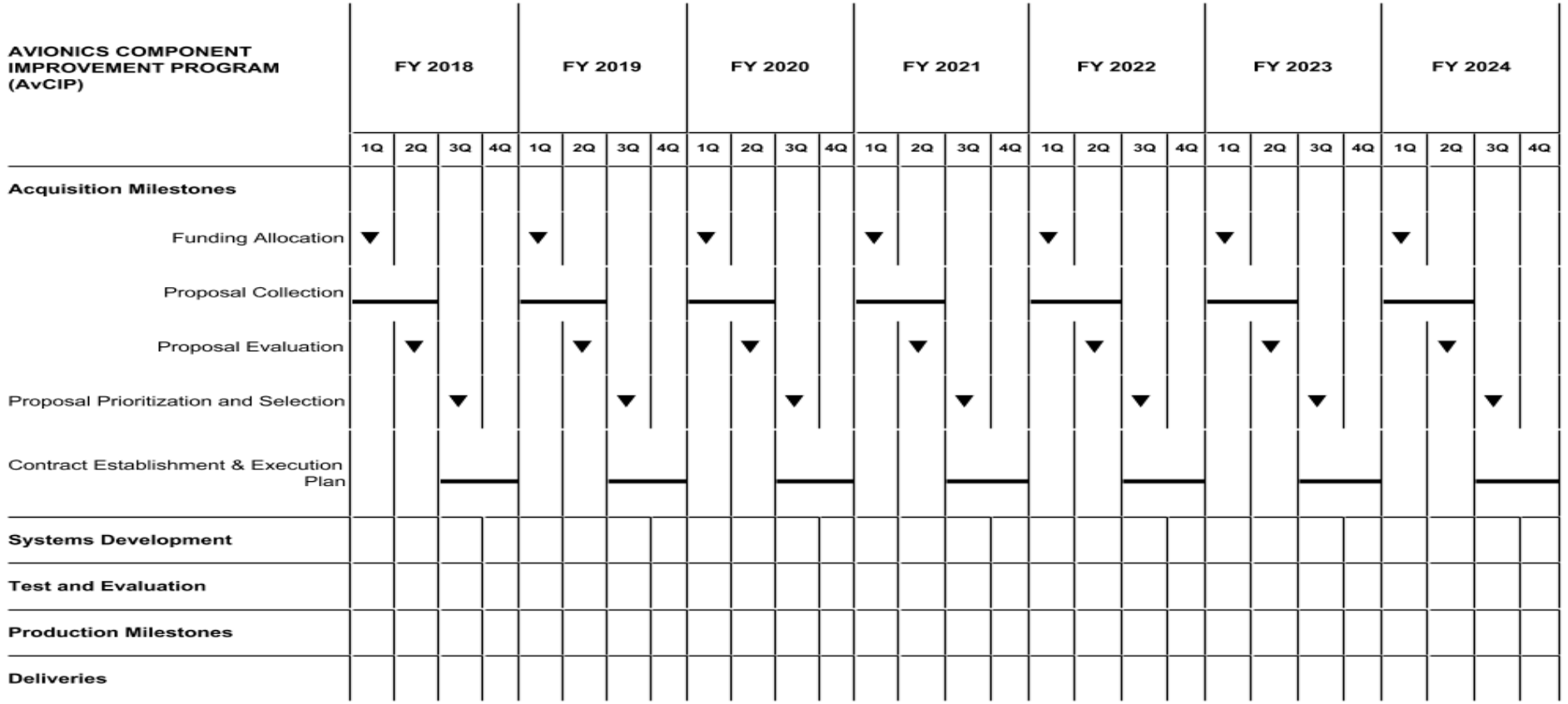
2020PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



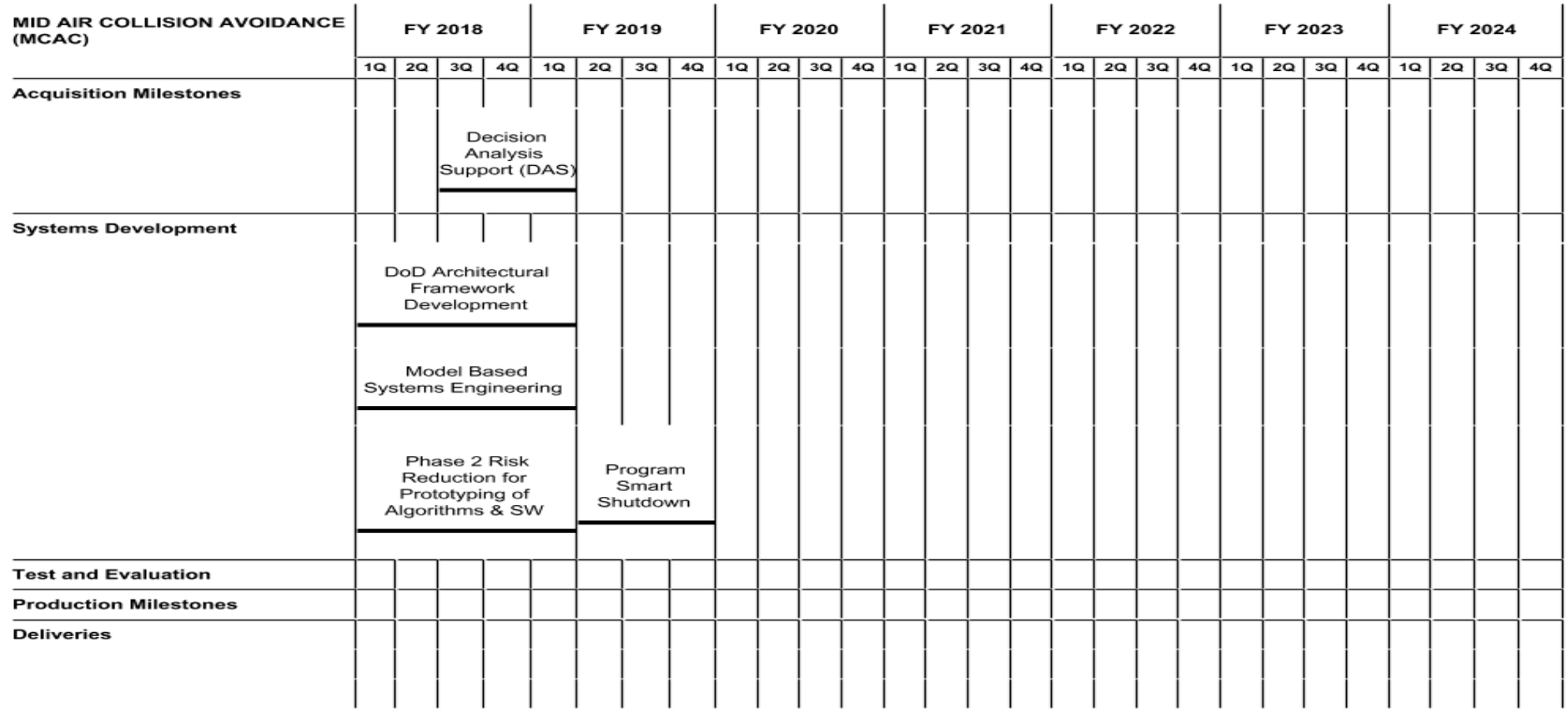
2020PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



2020PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



2020PB - 0605217N - 0572

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
COMMUNICATIONS, NAVIGATION, SURVEILLANCE/AIR TRAFFIC MGMT (CNS/ ATM)				
Systems Development: Evaluate CNS/ATM technologies and develop solutions to support platform integrations	1	2018	4	2024
Systems Development: Develop CNS/ATM Common Component to support RNP RNAV developmental platform requirements	1	2018	4	2019
Test and Evaluation: CNS/ATM technologies/certification of developmental platforms	1	2018	4	2019
Test and Evaluation: Integration/Certification of 8.33 kHz, MODE S, Reduced Vertical Separation Minimums (RVSM), RNP RNAV, and ADS-BO: for CH-53K	1	2018	4	2019
TACTICAL COMMUNICATIONS (TACCOM)				
Systems Development: GEN5 Integrated Waveform Satellite Communications (SATCOM) S/W Development	1	2018	4	2019
Systems Development: Operational Flight Plan	1	2018	3	2018
Systems Development: Crypto Engine Integration	1	2018	4	2019
Systems Development: MIL Standard Evolution (VMF)	1	2020	4	2022
Systems Development: Tactical Anti-Jam (Saturn)	1	2018	2	2020
Systems Development: Transmission Security (TRANSEC) & Crypto Modernization w/ Tactical Secure Voice (TSV) Suite B	1	2018	4	2024
Test and Evaluation: Initial NSA Cert 2	2	2018	2	2018
Test and Evaluation: Initial JITC Cert 2	2	2019	2	2019
Test and Evaluation: Delta NSA Cert 3	1	2020	1	2020
Test and Evaluation: Delta JITC Cert 3	3	2020	3	2020
Test and Evaluation: Delta NSA Cert 1	1	2021	1	2021
Test and Evaluation: Delta JITC Cert 4	3	2021	3	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test and Evaluation: Delta NSA Cert 4	1	2022	1	2022
Test and Evaluation: Delta JITC Cert 5	3	2022	3	2022
Test and Evaluation: Delta NSA Cert 5	1	2023	1	2023
Test and Evaluation: Delta JITC Cert 6	3	2023	3	2023
Test and Evaluation: Delta NSA Cert 6	1	2024	1	2024
Test and Evaluation: Delta JITC Cert 7	3	2024	3	2024
Production Milestones: Initial MUOS S/W	3	2019	3	2019
Production Milestones: OFP S/W Baseline	4	2020	4	2020
Production Milestones: OFP S/W ECP GEN5 3	4	2023	4	2023
Production Milestones: OFP S/W ECP GEN6 4	4	2024	4	2024
Production Milestones: OFP S/W ECP GEN5 5	4	2021	4	2021
Production Milestones: OFP S/W ECP GEN6 6	4	2022	4	2022
GROUND PROXIMITY WARNING SYSTEM/TERRAIN AWARENESS WARNING SYSTEM (GPWS/TAWS)				
Acquisition Milestones: Milestones: H-60 Integration Contract	3	2020	3	2020
Acquisition Milestones: Milestones: V-22 MS C	2	2023	2	2023
Acquisition Milestones: Milestones: V-22 Fleet Release	4	2023	4	2023
Acquisition Milestones: Milestones: H-60 Fleet Release	4	2024	4	2024
Systems Development: H-60 TAWS II Software Development	4	2020	4	2021
Systems Development: V-22 TAWS II Requirements Development	1	2019	3	2019
Systems Development: TAWS II Software Re-Architecture	3	2018	4	2020
Systems Development: V-22 TAWS II Software Development	3	2021	1	2022
Systems Development: V-22 CFIT Integration Study	1	2018	1	2018
Systems Development: H-60 TAWS II Software Development 1	1	2023	2	2023
Systems Development: TAWS II Follow on Developmental Platforms	1	2024	4	2024
Test and Evaluation: Developmental Testing: H-60 TAWS II DT (Phase I and II)	1	2018	2	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test and Evaluation: Developmental Testing: V-22 TAWS II DT	2	2021	1	2023
Production Milestones: H-60 Integrated Logistics Assessment	4	2022	2	2023
Production Milestones: V-22 Integrated Logistics Assessment	2	2022	4	2022
COLLABORATIVE WARFARE				
Acquisition Milestones: Naval Aviation Netted Sensors and Maritime Targeting Experimentation	1	2018	4	2024
Acquisition Milestones: Netted Sensors CONOPS, Standards and Architectures/ Requirements Development	1	2018	4	2024
Acquisition Milestones: Naval Aviation and Maritime Targeting Requirements	1	2018	4	2024
Systems Development: Capability for the Common Radio Enhancement (CoRE)	1	2018	4	2020
AVIONICS COMPONENT IMPROVEMENT PROGRAM (AvCIP)				
Acquisition Milestones: Funding Allocation: Funding Allocation2	1	2018	1	2018
Acquisition Milestones: Funding Allocation: Funding Allocation3	1	2019	1	2019
Acquisition Milestones: Funding Allocation: Funding Allocation4	1	2020	1	2020
Acquisition Milestones: Funding Allocation: Funding Allocation5	1	2021	1	2021
Acquisition Milestones: Funding Allocation: Funding Allocation6	1	2022	1	2022
Acquisition Milestones: Funding Allocation: Funding Allocation7	1	2023	1	2023
Acquisition Milestones: Funding Allocation: Funding Allocation1	1	2024	1	2024
Acquisition Milestones: Proposal Collection: Proposal Collection1	1	2024	2	2024
Acquisition Milestones: Proposal Collection: Proposal Collection2	1	2018	2	2018
Acquisition Milestones: Proposal Collection: Proposal Collection3	1	2019	2	2019
Acquisition Milestones: Proposal Collection: Proposal Collection4	1	2020	2	2020
Acquisition Milestones: Proposal Collection: Proposal Collection5	1	2021	2	2021
Acquisition Milestones: Proposal Collection: Proposal Collection6	1	2022	2	2022
Acquisition Milestones: Proposal Collection: Proposal Collection7	1	2023	2	2023
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation2	2	2018	2	2018
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation3	2	2019	2	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation4	2	2020	2	2020
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation5	2	2021	2	2021
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation6	2	2022	2	2022
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation7	2	2023	2	2023
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation8	2	2024	2	2024
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection2	3	2018	3	2018
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection3	3	2019	3	2019
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection4	3	2020	3	2020
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection5	3	2021	3	2021
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection6	3	2022	3	2022
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection7	3	2023	3	2023
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection8	3	2024	3	2024
Acquisition Milestones: Contract Establishment & Execution Plan: Contract Establishment & Execution Plan2	3	2018	4	2018
Acquisition Milestones: Contract Establishment & Execution Plan: Contract Establishment & Execution Plan3	3	2019	4	2019
Acquisition Milestones: Contract Establishment & Execution Plan: Contract Establishment & Execution Plan4	3	2020	4	2020
Acquisition Milestones: Contract Establishment & Execution Plan: Conract Establishment & Execution Plan5	3	2021	4	2021
Acquisition Milestones: Contract Establishment & Execution Plan: Conract Establishment & Execution Plan6	3	2022	4	2022

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acquisition Milestones: Contract Establishment & Execution Plan: Conract Establishment & Execution Plan7	3	2023	4	2023
Acquisition Milestones: Contract Establishment & Execution Plan: Conract Establishment & Execution Plan8	3	2024	4	2024
MID AIR COLLISION AVOIDANCE (MCAC)				
Acquisition Milestones: Decision Analysis Support (DAS)	3	2018	1	2019
Systems Development: DoD Architectural Framework Development	1	2018	1	2019
Systems Development: Model Based Systems Engineering	1	2018	1	2019
Systems Development: Phase 2 Risk Reduction for Prototyping of Algorithms & SW	1	2018	1	2019
Systems Development: Program Smart Shutdown	2	2019	4	2019