Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy											Date: February 2016	
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 2015**	**FY 2016**	**FY 2017 Base**	**FY 2017 OCO**	**FY 2017 Total**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	0.000	0.000	51.599	-	51.599	63.898	56.027	57.190	56.981	Continuing	Continuing
0572: *JT Service/NV Std Avionics CP/SB*	0.000	0.000	0.000	51.599	-	51.599	63.898	56.027	57.190	56.981	Continuing	Continuing

Note

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

A. Mission Description and Budget Item Justification

Decrease in (U)COMMON AVIONICS by $2.252M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	51.599	-	51.599
Total Adjustments	0.000	0.000	51.599	-	51.599
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	58.287	-	58.287

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

• Rate/Misc Adjustments	0.000	0.000	-6.688	-	-6.688

Change Summary Explanation

Technical: Not applicable.

Schedule:

Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM): Extended Evaluate Automatic Dependent Surveillance-Broadcast Out from 4Q/18 to 4Q/21 and continue to Develop CNS/ATM Common Components to support Required Navigation Performance Area Navigation development of platform requirements from 4Q/18 to 4Q/21 to include Unmanned Systems.

Tactical Communications: Title corrected from Joint Precision And Landing System (JPALS) Software (S/W) Integration to Operational Flight Plan (OFP) Software Integration. Extended Crypto Engine Design from 2Q/19 to 4Q/19. Added Tactical Anti-Jam Second-Generation Anti-Jam Tactical Ultra High Frequency Radio for NATO 1Q/17 to 4Q/19. Name change from JPALS S/W to OFP S/W 1Q/17. Name change from IW2 S/W to Mobile User Objective System S/W in 1Q/19. Added Joint Interoperability Test Command/National Security Agency Certification in 3Q/17.

Ground Proximity Warning System/Terrain Awareness System (GPWS/TAWS II): Align the start of V-22 TAWS II Requirements Development from 1Q/17 to 1Q/18 based on platform schedule requirements to provide capability to the fleet. Align the start of V-22 TAWS II S/W Development from 1Q/18 to 1Q/19 due to platform integration schedule. V-22 Controlled Flight Into Terrain Study moved from 1Q/17 to 1Q/18. V-22 Test and Evaluation moved from 1Q/20 to 1Q/21. Due to MH-60R/S platform integration schedule slip, moved the MS C decision for H-60 from 1Q/18 to 3Q/18. H-60 TAWS II DT Phase I and II DT extended from 3Q/FY17 to 1Q/18.

Mid Air Collision Avoidance Capability: Re-planned FY16-FY21 program due to a Business Case Analysis to properly align program. Material Development Decision/Acquisition Strategy Review (MDD/ASR) moved from 2Q/16 to 1Q/17. Capability Development Document (CDD) moved from 2Q/17 to 4Q/17. Specifications Review Board/Systems Readiness Review (SRB/SRR) moved from 1Q/17 to 2Q/17. Systems Functional Review (SFR) from 2Q/17 to 3Q/17. Software Design and Development (SDD) 3Q/18 to 2Q/18, Platform Integration shifted from 1Q/19 to 3Q/19. Test and Evaluation of MH-60R/S from 3Q/19 to 3Q/21, Test and Evaluation for UH-1Y/AH-1Z removed, new schedule is outside the FYDP.

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

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605217N / *(U)Common Avionics*	Project (Number/Name) 0572 / *JT Service/NV Std Avionics CP/SB*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0572: *JT Service/NV Std Avionics CP/SB*	0.000	0.000	0.000	51.599	-	51.599	63.898	56.027	57.190	56.981	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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Joint Service Review Committe for Avionics Standardization (JSRC-AS)	0.000	0.000	0.998	0.000	0.998
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 2015 Accomplishments: N/A					
FY 2016 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A ***FY 2017 Base Plans:*** Provide leadership in support of the Navy's interest to the Joint Services Review Committee for Avionics Standardization (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 2017 OCO Plans:*** N/A					
Title: Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) ***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 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** N/A ***FY 2017 Base Plans:*** Assist with insertion and integration of 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, RVSM, RNP/RNAV, and ADS-BO into CH-53K. Research and develop Global Positioning System (GPS) enhancements to support CNS/ATM RNP RNAV improvements. Research and	0.000 -	0.000 -	2.812 -	0.000 -	2.812 -

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
develop ADS-BO System Design Assurance requirements as well as compatibility with the emerging GPS M Code and its impact on RNP RNAV. ***FY 2017 OCO Plans:*** N/A					
Title: Tactical Communications (TACCOM) ***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, mandated National Security Agency (NSA) Crypto Modernization initiatives, 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 Joint Precision Approach Landing System (JPALS) 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 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** N/A ***FY 2017 Base Plans:*** Continue development of SATCOM S/W Development with MUOS capabilities. Submit Apollo crypto engine for Legacy NSA and Information Assurance (IA) certification. Develop Combat Net radio interoperability with Second-Generation Anti-Jam Tactical Ultra High Frequency (UHF) Radio for NATO (SATURN) waveform. ***FY 2017 OCO Plans:***	0.000 -	0.000 -	17.311 -	0.000 -	17.311 -

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) ***Articles:***	0.000 -	0.000 -	7.834 -	0.000 -	7.834 -
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 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** N/A ***FY 2017 Base Plans:*** Develop and deliver the second formal software build of TAWS II system to H-60. Continue Phase II Developmental Testing (DT) in MH-60R/S. ***FY 2017 OCO Plans:*** N/A					
Title: Collaborative Warfare (CW) ***Articles:***	0.000 -	0.000 -	0.219 -	0.000 -	0.219 -
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 targeting gaps for naval aircraft to operate more effectively with other military services. The following efforts are included: 1) A comprehensive naval aviation Tactical Networking Requirements Strategy that maps fleet gaps and requirements to cross-platform naval aviation solutions. The					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Naval Effects Cross Domain Targeting Capabilities Based Assessment concept refinement Joint Capability Integration Development System activity will be integrated into this effort. 2) Netted sensors proof of concept prototype demonstrations leveraging the Navy's Fleet Experimentation campaign. 3)Support of integration of Netted Sensors/Sensor Fusion into naval aviation Integrated Capabilities Packages supporting multi-mission capability enhancements to include input to the N81 Offensive Anti-Surface Warfare Targeting and Weapons Control study that ensures naval aviation Intelligence, Surveillance and Reconnaissance delivers a complete kill chain. 4)Provide resource sponsor oversight on an Office of Naval Research Future Naval Capability Enabling Capability for an Advanced Tactical Data Link (ATDL) for naval aviation. 5) Continue work on the Joint Tactical Networking Concept of Employment (JTN CONEMP) that aligns Navy ATDL and Joint Aerial Layer Network - Maritime with USAF future strategies. ***FY 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** N/A ***FY 2017 Base Plans:*** Continue executing tactical networking strategy activities to define future Program Objective Memorandums and analytic agendas. Develop requirements, standards, and architectures in support of new and updated netted-sensors' Concept of Operations and capabilities. ***FY 2017 OCO Plans:*** N/A					
Title: Avionics Component Improvement Program (AvCIP)	0.000	0.000	4.668	0.000	4.668
Articles:	-	-	-	-	-
Description: Investigate high value Return On Investment component improvement candidate projects in support of NAVAIR Commander's third focus area - Improve "capital A" Affordability. 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 systems. Projects address critical readiness issues (significant back-orders or impending sustainability failures that threaten					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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 that funding applied under this program between 2006 and 2016 will enable sustainment and procurement cost avoidances exceeding a five to one margin by 2025. ***FY 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** N/A ***FY 2017 Base Plans:*** Address current fleet problem avionics systems (top readiness degraders, cost drivers, obsolescence-driven sustainability, capability loss, fleet head-hurters). ***FY 2017 OCO Plans:*** N/A					
Title: Mid Air Collision Avoidance Capability (MCAC) ***Articles:*** ***Description:*** This program will conduct research, studies, and development, integration, demonstration, test and evaluation	0.000 -	0.000 -	3.550 -	0.000 -	3.550 -

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
efforts to meet Naval Aviation 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 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** N/A ***FY 2017 Base Plans:*** Conduct Material Development Decision/Acquisition Strategy Review (MDD/ASR). Finalize and approve Capability Development Document (CDD). Conduct Specification Review Boards (SRB/System Readiness Review (SRR) and System Functional Review (SFR). ***FY 2017 OCO Plans:*** N/A					
Title: Avionics Architectures Team (AAT)	0.000	0.000	14.207	0.000	14.207
Articles:	-	-	-	-	-
Description: The Avionics Architecture Team (AAT) provides hardware and software (HW/SW) standards and product line development and management for a common HW/SW operating environments to establish testable open architecture requirements in accordance with 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					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
academia collaboration and will be provided to industry for prototyping efforts. It will include a Functional Architecture for Strategic Reuse (FASTR). The AAT provides Subject Matter Experts to define and architect a set of Open Architecture Standards and product lines, design guidance, development and integration tools, acquisition strategy, contracting guidance and cost estimates. The results will enable Department of Defense (DoD) weapons systems to systematically 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 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 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** N/A ***FY 2017 Base Plans:*** Provide development support, mission based engineering, systems engineering and program management for design and acquisition strategy implementation guidance. Develop conformance tools for Edition 3.0 of the FACE Technical Standard and incorporate revisions to the standard based on issues identified by government and industry consortium. Research new hardware technologies and develop Tier 2 HOST specifications to support widely adopted commercial technologies and platform requirements. Assist platforms with strategies for modular functional architectures and implementation of FACE and HOST standards. Subject Matter Expert support for platform integration and competitive source selection. Academia prototyping and demonstration efforts for FACE, FASTR and HOST initiatives. ***FY 2017 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	51.599	0.000	51.599

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APN/0577: *Common Avionics Changes*	146.084	169.590	164.839	-	164.839	148.275	156.777	113.777	137.956	302.860	3,506.643

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 Rockwell Collins 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 Modules will be developed by a Government Software Product Team in collaboration with Industry where required. 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 Service 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.

Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) - Develop algorithm and software to meet platform specific requirements, successfully complete flight test, and deliver product on schedule. Successfully complete Milestone B.
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.
Mid Air Collision Avoidance Capability (MCAC) - Achieve program acquisition milestones on cost and schedule meeting platform requirements.
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 functionally 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 2017 Navy			Date: February 2016
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Dev CNS/ATM	SS/CPFF	Sikorsky : Stratford, CT	0.000	0.000		0.000		1.792	Mar 2017	-		1.792	0.000	1.792	1.792
Primary Hardware Dev	Various	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		1.421	Mar 2017	-		1.421	0.000	1.421	1.421
Primary Hardware Dev	Various	Various : Various	0.000	0.000		0.000		4.907	Mar 2017	-		4.907	Continuing	Continuing	Continuing
Aircraft Integration TACCOM	SS/FFP	Rockwell Collins : Cedar Rapids, IA	0.000	0.000		0.000		4.875	Mar 2017	-		4.875	0.000	4.875	4.875
Aircraft Integration GPWS/ TAWS	SS/CPIF	Lockheed Martin : Owego, NY	0.000	0.000		0.000		4.937	Nov 2016	-		4.937	0.000	4.937	4.937
Systems Engineering AAT	MIPR	DTIC : Fort Belvior, VA	0.000	0.000		0.000		8.811	Jan 2017	-		8.811	Continuing	Continuing	Continuing
Systems Engineering	Various	Various : Various	0.000	0.000		0.000		1.578	Mar 2017	-		1.578	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		28.321		-		28.321	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development TACCOM	SS/FFP	Rockwell : Cedar Rapids, IA	0.000	0.000		0.000		6.742	Mar 2017	-		6.742	0.000	6.742	6.742
Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		1.094	Mar 2017	-		1.094	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		7.836		-		7.836	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Evaluation	Various	Various : Various	0.000	0.000		0.000		2.152	Mar 2017	-		2.152	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		2.152		-		2.152	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy			Date: February 2016
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605217N / *(U)Common Avionics*	Project (Number/Name) 0572 / *JT Service/NV Std Avionics CP/SB*	

Management Services ($ in Millions)

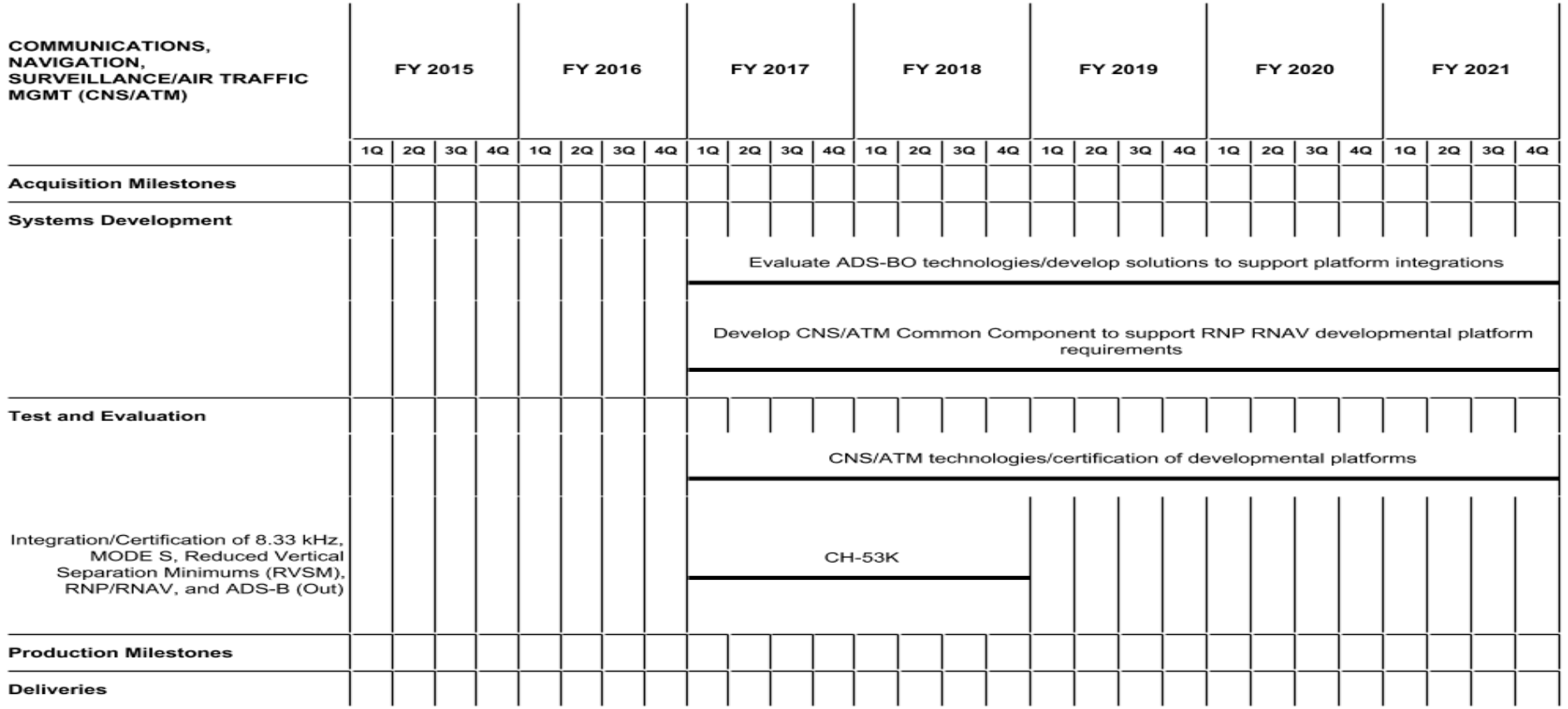
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	Various	Various : Various	0.000	0.000		0.000		6.468	Jan 2017	-		6.468	Continuing	Continuing	Continuing
Government Engineering Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		3.760	Mar 2017	-		3.760	Continuing	Continuing	Continuing
Program Management Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		3.011	Mar 2017	-		3.011	Continuing	Continuing	Continuing
Travel	WR	NAVAIR : Patuxent River, MD	0.000	0.000		0.000		0.051	Dec 2016	-		0.051	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		13.290		-		13.290	-	-	-

	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		51.599		-		51.599	-	-	-

Remarks

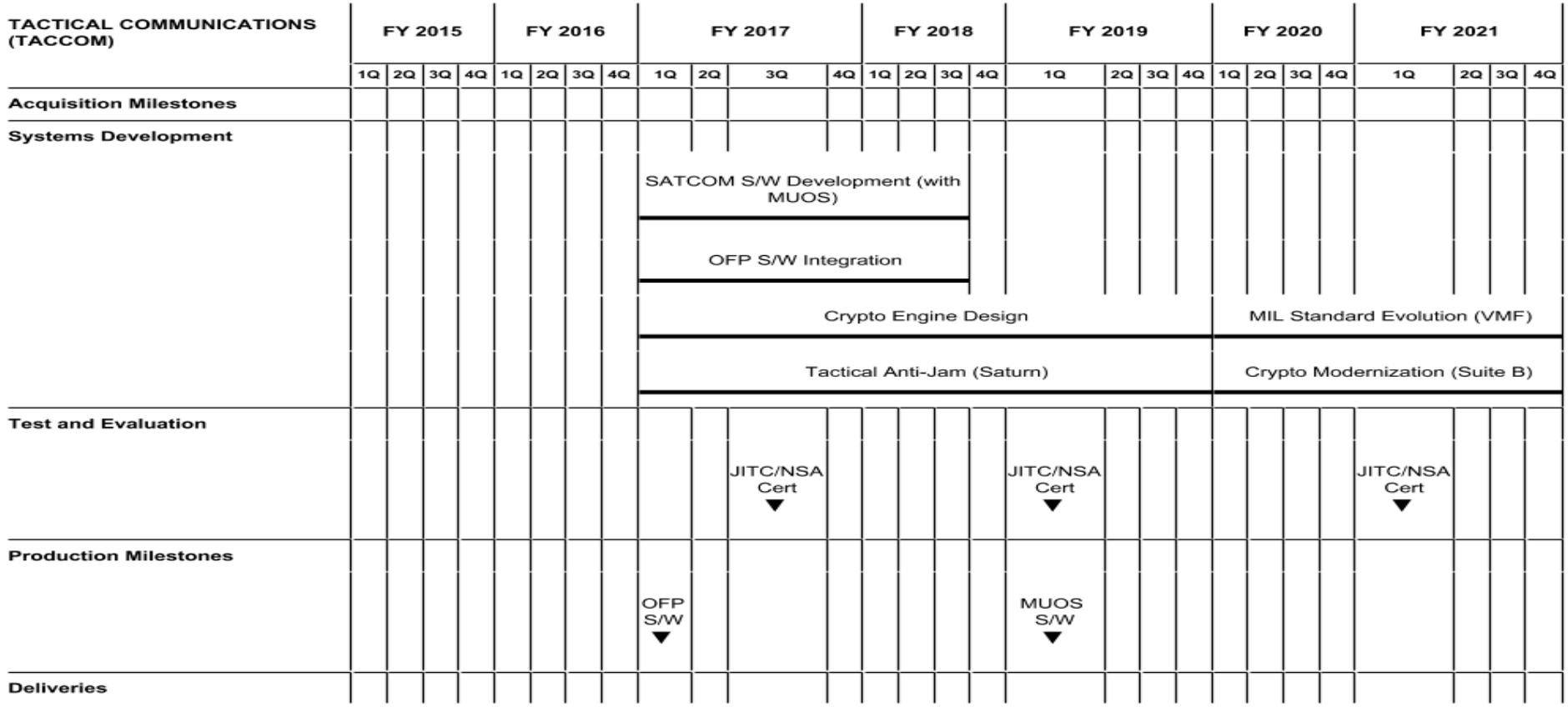
(U) Common Avionics schedule FY16 and prior is reflected in PE 0604215N, Project Unit 0572.

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



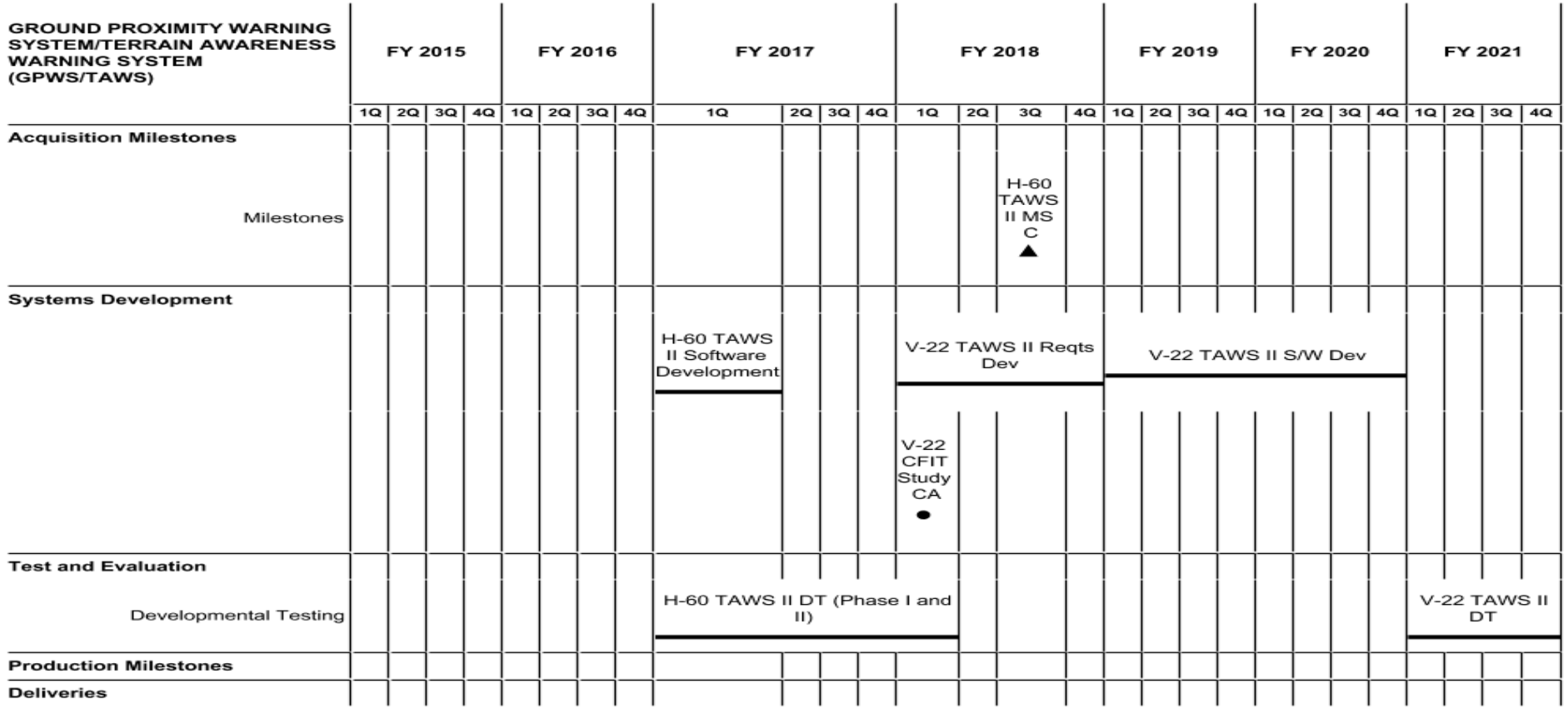
2017PB - 0605217N - 0572

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



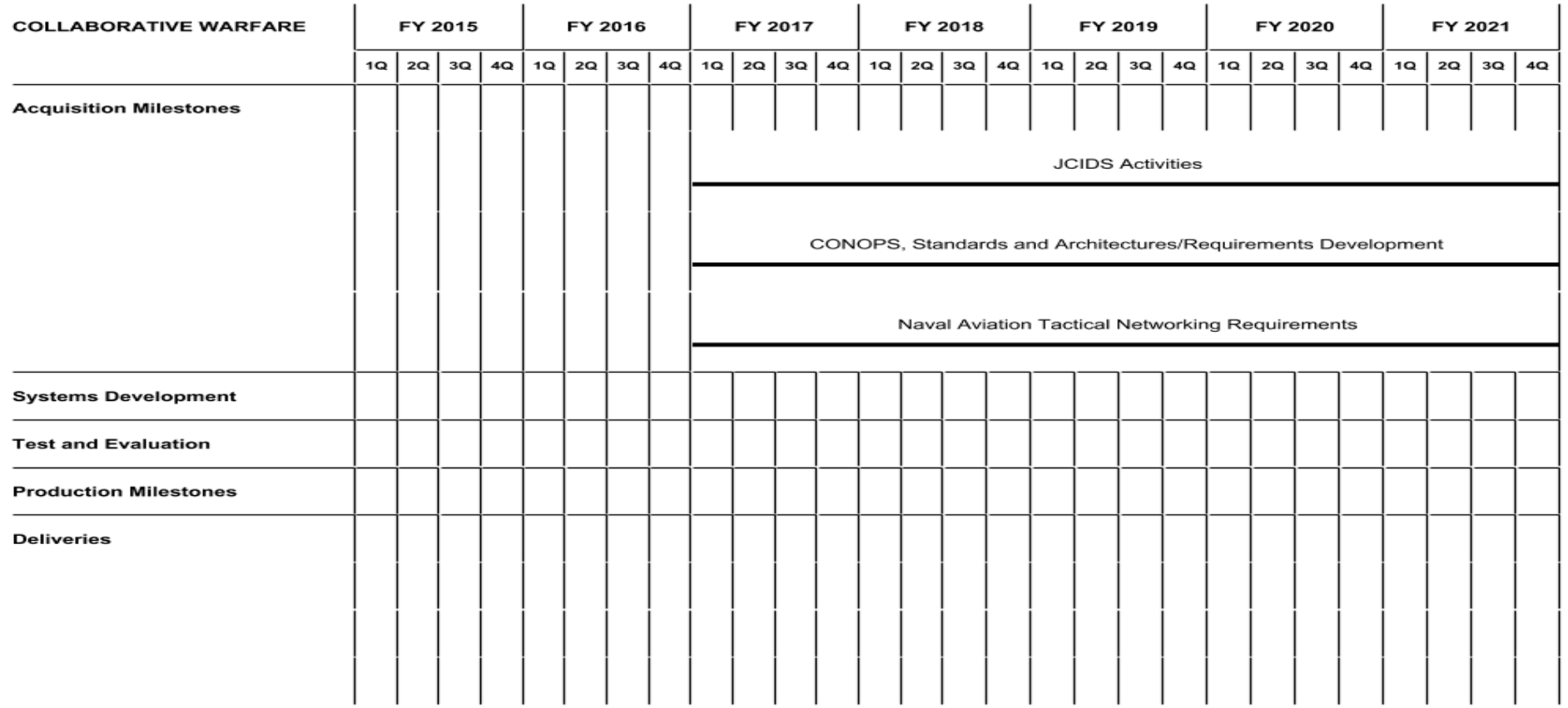
2017PB - 0605217N - 0572

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



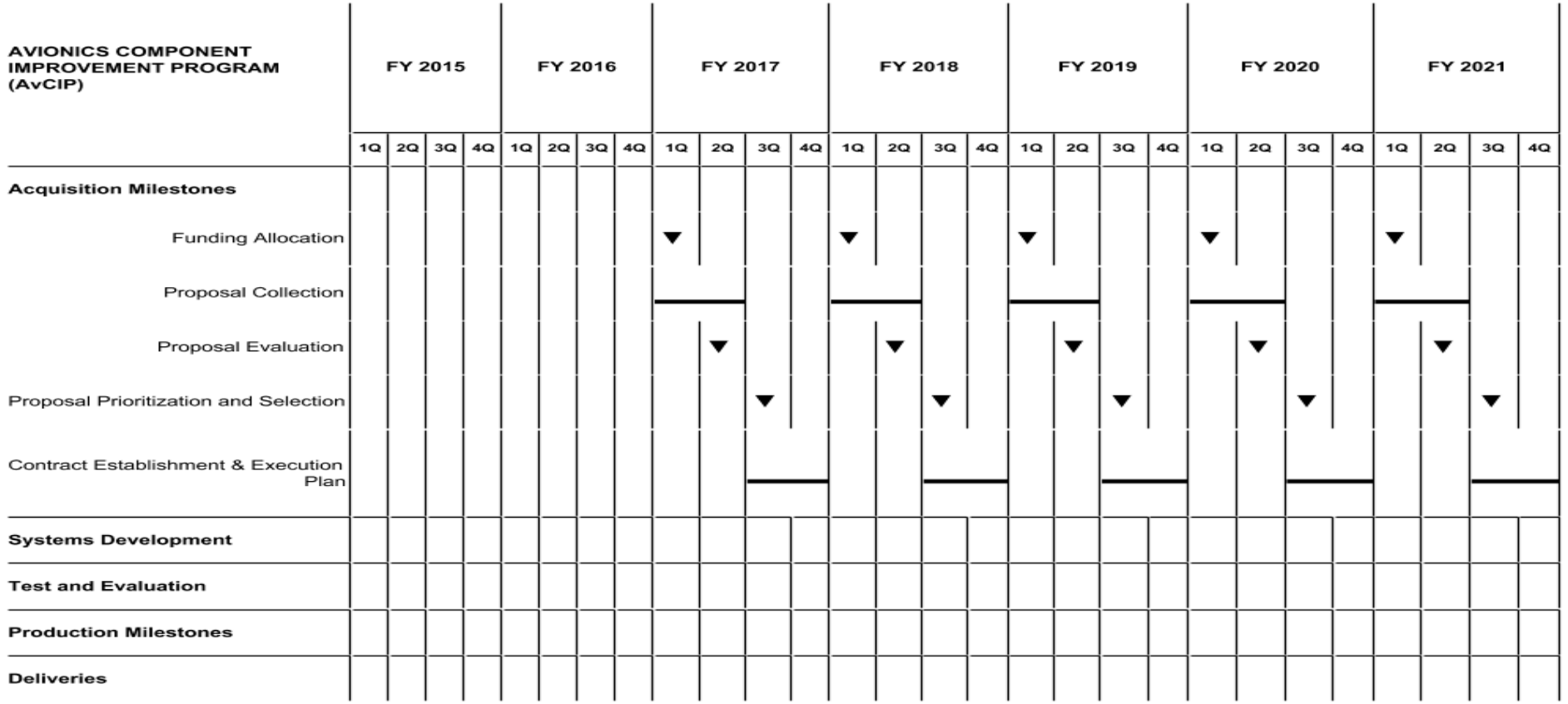
2017PB - 0605217N - 0572

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



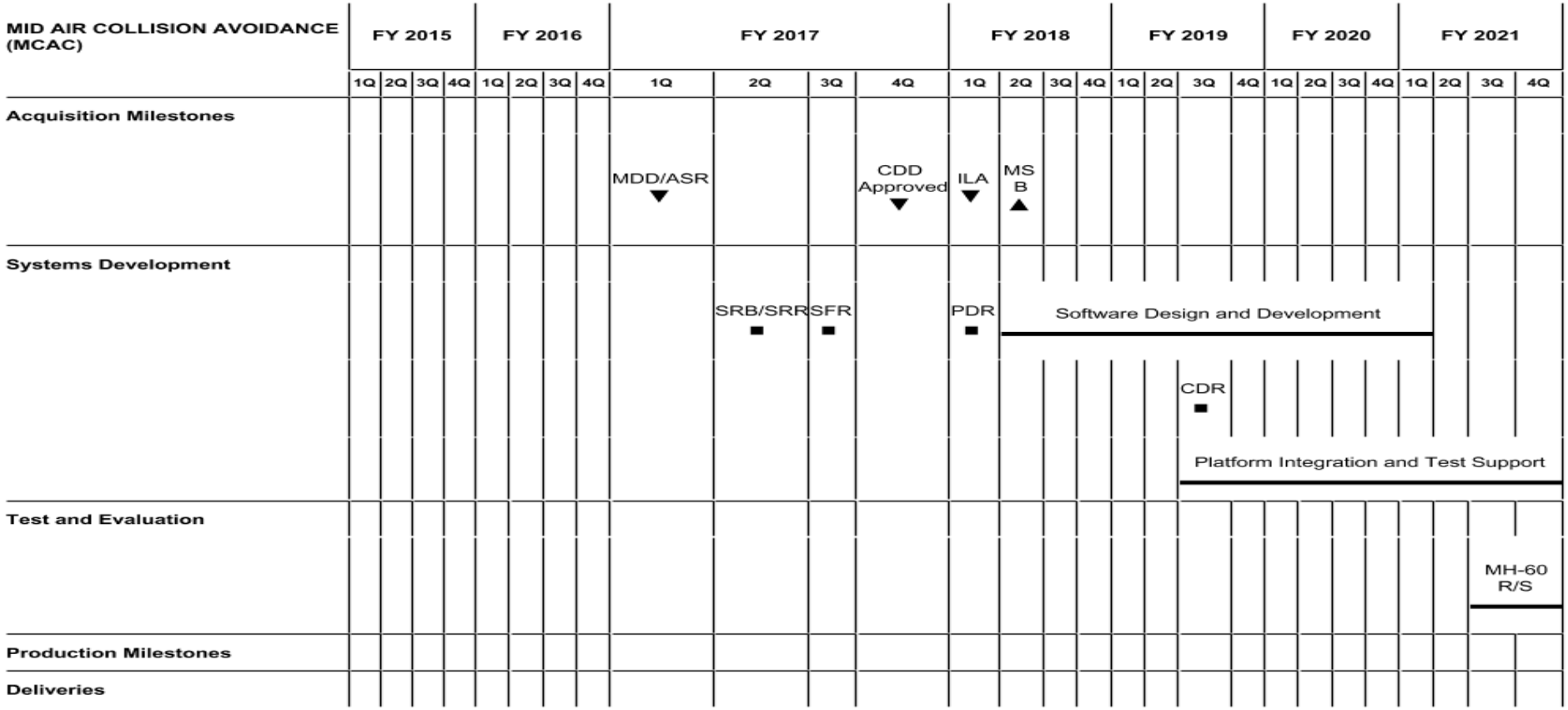
2017PB - 0605217N - 0572

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



2017PB - 0605217N - 0572

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



2017PB - 0605217N - 0572

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 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 ADS-BO technologies/develop solutions to support platform integrations	1	2017	4	2021
Systems Development: Develop CNS/ATM Common Component to support RNP RNAV developmental platform requirements	1	2017	4	2021
Test and Evaluation: CNS/ATM technologies/certification of developmental platforms	1	2017	4	2021
Test and Evaluation: Integration/Certification of 8.33 kHz, MODE S, Reduced Vertical Separation Minimums (RVSM), RNP/RNAV, and ADS-B (Out): Integration/Cert 8.33 kHz, MODE S, RVSM, RNP/RNAV, ADS-B Out	1	2017	4	2018
TACTICAL COMMUNICATIONS (TACCOM)				
Systems Development: GEN5 Integrated Waveform Satellite Communications (SATCOM) S/W Development	1	2017	3	2018
Systems Development: Operational Flight Plan	1	2017	3	2018
Systems Development: Crypto Engine Design	1	2017	4	2019
Systems Development: MIL Standard Evolution (VMF)	1	2020	4	2021
Systems Development: Tactical Anti-Jam (Saturn)	1	2017	4	2019
Systems Development: Crypto Modernization (Suite B)	1	2020	4	2021
Test and Evaluation: JITC/NSA Cert	1	2019	1	2019
Test and Evaluation: JITC/NSA Cert 1	1	2021	1	2021
Test and Evaluation: JITC/NSA Cert 2	3	2017	3	2017
Production Milestones: OFP S/W	1	2017	1	2017
Production Milestones: MUOS S/W	1	2019	1	2019
GROUND PROXIMITY WARNING SYSTEM/TERRAIN AWARENESS WARNING SYSTEM (GPWS/TAWS)				

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 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: Milestones: H-60 TAWS II MS C	3	2018	3	2018
Systems Development: H-60 TAWS II Software Development	1	2017	1	2017
Systems Development: V-22 TAWS II Requirements Development	1	2018	4	2018
Systems Development: V-22 TAWS II Software Development	1	2019	4	2020
Systems Development: V-22 CFIT Integration Study	1	2018	1	2018
Test and Evaluation: Developmental Testing: H-60 TAWS II DT (Phase I and II)	1	2017	1	2018
Test and Evaluation: Developmental Testing: V-22 TAWS II DT	1	2021	4	2021
COLLABORATIVE WARFARE				
Acquisition Milestones: JCIDS Activities	1	2017	4	2021
Acquisition Milestones: Netted Sensors CONOPS, Standards and Architectures/ Requirements Development	1	2017	4	2021
Acquisition Milestones: Naval Aviation Tactical Networking Requirements	1	2017	4	2021
AVIONICS COMPONENT IMPROVEMENT PROGRAM (AvCIP)				
Acquisition Milestones: Funding Allocation: Funding Allocation1	1	2017	1	2017
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: Proposal Collection: Proposal Collection1	1	2017	2	2017
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 Evaluation: Proposal Evaluation1	2	2017	2	2017
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 2017 Navy		Date: February 2016
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 Prioritization and Selection: Proposal Prioritization and Selection1	3	2017	3	2017
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: Contract Establishment & Execution Plan: Contract Establishment & Execution Plan1	3	2017	4	2017
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
MID AIR COLLISION AVOIDANCE (MCAC)				
Acquisition Milestones: MDD/ASR	1	2017	1	2017
Acquisition Milestones: CDD Approved	4	2017	4	2017
Acquisition Milestones: ILA	1	2018	1	2018
Acquisition Milestones: MS B	2	2018	2	2018
Systems Development: SRB/SRR	2	2017	2	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 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**
Systems Development: SFR	3	2017	3	2017
Systems Development: PDR	1	2018	1	2018
Systems Development: Software Design and Development	2	2018	1	2021
Systems Development: CDR	3	2019	3	2019
Systems Development: Platform Integration	3	2019	4	2021
Test and Evaluation: MH-60 R/S	3	2021	4	2021