Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0607658N *I (U)Cooperative Engagement Capability*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	601.250	75.099	92.571	130.515	-	130.515	141.373	147.710	125.458	121.220	Continuing	Continuing
2039: *COOP Engagement*	601.250	75.099	92.571	130.515	-	130.515	141.373	147.710	125.458	121.220	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 582												

A. Mission Description and Budget Item Justification

Cooperative Engagement Capability (CEC) significantly improves Battle Force Anti-Air Warfare (AAW) capability by coordinating all Battle Force AAW sensors into a single, real-time, composite track picture to support integrated fire control.

CEC distributes sensor data from each USMC Command Control Unit, US Navy Ship, and US Navy Aircraft, or Cooperating Unit (CU), to all other CUs in the battle force through a real-time, line of sight, high data-rate sensor and engagement data distribution network. CEC is highly resistant to jamming and provides accurate gridlocking between CUs. Each CU independently employs high capacity, parallel processing and advanced algorithms to combine all distributed sensor data into a fire control quality track picture which is the same for all CUs. CEC data is presented as a superset of the best AAW sensor capabilities from each CU, all of which are integrated into a single input to each CU's combat weapons system.

CEC significantly improves our Battle Force defense in depth, including both local area and ship defense capabilities against current and future AAW threats. Moreover, CEC provides critical connectivity and integration of over-land air defense systems capable of countering emerging air threats, including land attack cruise missiles, in a complex littoral environment.

The CEC Program Office oversees CEC development for all services with funding provided for their respective combat systems. CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP), and interface with Combat Systems and sensors. The DDS encodes and distributes own-ship sensor and engagement data and is a high capacity, jam resistant, directional system providing high data throughput as well common time and common positional frame of reference. The CEP is a high capacity distributed processor that processes data from all integrated radars. The data is passed to the ship's combat system as a high quality, common, continuous, engageable track.

The Navy implemented a Signal Data Processor (SDP) approach to modify the current equipment to meet reduced size, weight, cost, power and cooling objectives. This SDP approach also supports continuity for interoperability improvements and program protection, as well as supporting open architecture initiatives, and comms independence. The SDP hardware complies with Category 3 Open Architecture Computing Environment (OACE) standards. The SDP-S is being fielded fleet-wide to all US Navy, USMC, US Army, and FMS CEC units.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy	Date: February 2018
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607658N *I (U)Cooperative Engagement Capability*

A family of antennas approach will be used to satisfy CEC requirements for obsolete components with lower life cycle costs (procurement, installation, and maintenance). These antennas enable future capability as well as providing a solution extensible to additional platforms. This effort for development and production of Common Array Block (CAB) antennas was competitively awarded in late FY2013.

Network Enabled Electronic Defense System (NEEDS) modifies CEC software to add significant Electronic Warfare capability.

CEC operates in increasingly contentious cyber-space. Measures are being taken to robustly mitigate, and where possible completely remediate cyber vulnerabilities.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	84.501	92.571	103.279	-	103.279
Current President's Budget	75.099	92.571	130.515	-	130.515
Total Adjustments	-9.402	0.000	27.236	-	27.236
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.902	0.000			
• Program Adjustments	0.000	0.000	28.887	-	28.887
• Rate/Misc Adjustments	0.000	0.000	-1.651	-	-1.651
• Congressional Directed Reductions Adjustments	-7.500	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0607658N / *(U)Cooperative Engagement Capability*				Project (Number/Name) 2039 / *COOP Engagement*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
2039: *COOP Engagement*	601.250	75.099	92.571	130.515	-	130.515	141.373	147.710	125.458	121.220	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 582

A. Mission Description and Budget Item Justification

Cooperative Engagement Capability (CEC) significantly improves Battle Force Anti-Air Warfare (AAW) capability by coordinating all Battle Force AAW sensors into a single, real-time, composite track picture to support integrated fire control.

CEC distributes sensor data from each USMC Command Control Unit, US Navy Ship, and US Navy Aircraft, or Cooperating Unit (CU), to all other CUs in the battle force through a real-time, line of sight, high data-rate sensor and engagement data distribution network. CEC is highly resistant to jamming and provides accurate gridlocking between CUs. Each CU independently employs high capacity, parallel processing and advanced algorithms to combine all distributed sensor data into a fire control quality track picture which is the same for all CUs. CEC data is presented as a superset of the best AAW sensor capabilities from each CU, all of which are integrated into a single input to each CU's combat weapons system.

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The CEC Program Office oversees CEC development for all services with funding provided for their respective combat systems. CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP), and interface with Combat Systems and sensors. The DDS encodes and distributes own-ship sensor and engagement data and is a high capacity, jam resistant, directional system providing high data throughput as well common time and common positional frame of reference. The CEP is a high capacity distributed processor that processes data from all integrated radars. The data is passed to the ship's combat system as a high quality, common, continuous, engageable track.

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A family of antennas approach will be used to satisfy CEC requirements for obsolete components with lower life cycle costs (procurement, installation, and maintenance). These antennas enable future capability as well as providing a solution extensible to additional platforms. This effort for development and production of Common Array Block (CAB) antennas was competitively awarded in late FY2013.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0607658N / *(U)Cooperative Engagement Capability*	**Project (Number/Name)** 2039 / *COOP Engagement*

Network Enabled Electronic Defense System (NEEDS) modifies CEC software to add significant Electronic Warfare capability.

CEC operates in increasingly contentious cyber-space. Measures are being taken to robustly mitigate, and where possible completely remediate cyber vulnerabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: E-2D	2.822	3.900	4.017	0.000	4.017
Articles:	-	-	-	-	-
FY 2018 Plans: Continue E-2D CEC Delta System Software Configuration version 3 (DSSC 3) systems engineering and development. DSSC 3 capability improvements include Accelerated Midterm Interoperability Improvement Project (AMIIP), Mode 5, Identification Friend or Foe (IFF) Modernization, Dynamic CEC Engagement Processor (CEP) Identification (ID), Naval Integrated Fire Control Counter Air (NIFC-CA) Increment 2, and Integrated Fire Control Improvement initiatives. Support related laboratory testing conducted in conjunction with the broader E-2D platform DSSC 3 software development. Analyze lab and flight test data and develop and implement fixes to high priority discrepancy reports. Complete E-2D DSSC 3 CEC Formal Qualification Testing. Begin E-2D DSSC 4/5 CEC requirements development and program execution planning.					
FY 2019 Base Plans: Complete E-2D DSSC 3 CEC Independent Verification and Validation Testing and the Product Certification Panel. Continue lab test data analysis and development and implementation of fixes to high priority discrepancy reports. Conduct software fleet release preparations. Begin E-2D DSSC 4 CEC development and integration to incorporate Dynamic CEP ID with Platform Registration and support interface and software changes related to select DSSC 4 capabilities driven by E-2D program requirements. Support E-2D DSSC 5 CEC development and integration efforts.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Increase is due to integration of DSSC-3 and follow-on initial development and integration for DSSC-4 and DSSC 5.					
Title: B/L 2.1 INTEGRATION AND FOT&E TESTING	8.100	11.000	11.330	0.000	11.330
Articles:	-	-	-	-	-
FY 2018 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0607658N / *(U)Cooperative Engagement Capability*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Continue CEC Developmental Test (DT-D2) of AN/USG-2B onboard USS GERALD R FORD (CVN 78). Conduct six underway test events onboard CVN 78 plus three live fire test events on Self Defense Test Ship (SDTS). Conduct three test events in preparation for Navy Integrated Fire Control - Counter Air (NIFC-CA) Live Fire Test #7 (the first NIFC-CA Increment 2 Live Fire Test). One test event planned at Wallops Island Land Based Test Site (LBTS) and two events planned at White Sands Missile Range (WSMR) Desert Ship. Conduct Combat System Shipboard Qualification Trials (CSSQT) onboard USS LEYTE GULF (CG 55) and USS SAN JACINTO (CG 56). Commence CEC Developmental Test (DT-D4) of CEC with ACB 16 (six tracking events at multiple LBTS of CEC with Aegis ACB 16). Continue support of NIFC-CA testing, including execution of At Sea test #4. Commence CEC Developmental Test (DT-D3) of AN/USG-2B with DDG 1000 combat system onboard SDTS (7 Live Fire and 9 Tracking) and onboard DDG 1000 (3 underway test events). Commence testing of Common Array Block (CAB) antenna systems for the USN and USMC antenna designs at the Raytheon Development Facility in preparation for testing at the Wallops Island Land Based test sites in 2019. Continue testing of Network Enabled Electronic Defense System (NEEDS) at LBTS in preparation for at-sea testing in FY2019. Commence testing of CEC Enhanced Training (CET) and CEC Tactical Training (CTT) at the Wallops Island Land Based Test Sites.					
FY 2019 Base Plans: Continue Developmental Testing (DT-D2) of AN/USG-2B with CVN 78. Complete remaining Live Fire and Trackex events on SDTS and six additional underway tests aboard CVN 78. Support E-2D Delta System Software Configuration Version 3 (DSSC-3) Developmental Testting (DT) completion. Support E-2D DSSC-3 Operational Testing (OT) preparation and execution. Conduct NIFC-CA Live Fire Test #7 at WSMR and two at-sea test events. Continue CEC Developmental Test (DT-D3) of AN/USG-2B with DDG 1000 combat system. Complete remaining live fire and tracking events onboard SDTS. Conduct first ever live fire test onboard DDG 1000. Continue CEC Developmental Test (DT-D4) of AN/USG-2B with Aegis ACB 16 at the Wallops Island Land Based Test Sites and at sea onboard USN Ships. Conduct CSSQT aboard USS OSCAR AUSTIN (DDG 79), USS HOWARD (DDG 83), USS COWPENS (CG 63), and USS GETTYSBURG (CG 64).					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0607658N / *(U)Cooperative Engagement Capability*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Conduct testing of Common Array Block (CAB) antenna systems for the USN and USMC antenna designs at the Wallops Island Land Based Test Sites. Continue testing of NEEDS at LBTS and conduct testing onboard USN Ships. Continue testing of CET and CTT and commence CET and CTT testing onboard USN Ships. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase is due to increase in scope of testing at LBTS and onboard ships/aircraft.					
Title: SYSTEM IMPROVEMENTS	13.899	25.971	18.786	0.000	18.786
Articles:	-	-	-	-	-
FY 2018 Plans: Develop integration and software updates to support AEGIS ACB 16 and conduct Product Release Panel (PRP) to support DDG and CG ACB 16 Modernization AEGIS Light Offs (ALO). Develop software to support AN/SPY-6(V)1 and AEGIS ACB 20 integration. Install CEC Adaptive Layer test equipment and conduct integration with AN/SPY-6(V)1 and AEGIS ACB 20 at the Aegis Combat System Engineering Development Site (CSEDS). Conduct Delta System Requirements Review (SRR) to address cyber requirements and System Functional Review (SFR) for AEGIS ACB 20. Develop and test SW Build Release #1 for AEGIS ACB 20. Develop and test SW Build Release #4 for further CEC system integration with Common Array Block (CAB) Family of Antenna (FoA). Continue development of software to support Dual Band Radar (DBR) and SSDS MK2 Mod 6C combat system integration for CVN 78 and conduct Product Certification Panel (PCP) for software delivery. Complete Software Development work for NIFC CA Increment 2 and complete Final Qualification Test (FQT) and transition to follow-on integration and testing phase in close coordination with other NIFC CA Platforms and Sensor, Weapons, and Combat Systems Program of Record (PoR). Complete Product Release Panel (PRP) of software to support testing at Land Based Test Sites, support Aegis light-off and participate in initial at-sea testing of NIFC CA Increment 2. The CEC Program will commence a cryptographic modernization effort for the Signal Data Processor (SDP) that is being developed to support the significant- increase-in cryptographic processor capability that is required to protect the CEC network. This modernization effort is required to support continued CEC system production as the current cryptographic equipment is no longer available for procurement due to obsolescence. This effort will					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0607658N / *(U)Cooperative Engagement Capability*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
support cryptographic requirements definition, chip selection, purchase, and preliminary integration of the latest generation, NSA-certified cryptographic chip for use in the CEC system. ***FY 2019 Base Plans:*** Continue integration and software updates to support AEGIS ACB 16. Conduct PRP to support DDG and CG ACB 16 Modernization Combat System Ship Qualification and Trials (CSSQT) and PCP for software delivery to support ACB 16 Combat System Certification Panel (CSCP) in FY20. Continue software development for AN/SPY-6(V)1 and AEGIS ACB 20 integration. Develop and test SW Build Releases #2, #3, and #4 and conduct two SBRs for AEGIS ACB 20. Develop and test SW Build Release #5 for final CEC system integration with CAB FoA. Develop critical Product Trouble Report (PTR) fixes that are discovered from CVN 78 at-sea testing to support CEC integration with DBR and SSDS MK2 Mod 6C combat system. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase is due to the increase in complexity and software development and integration.					
Title: NETWORK ENABLED ELECTRONIC DEFENSE SYSTEM (NEEDS)	6.600	4.500	4.610	0.000	4.610
Articles:	-	-	-	-	-
FY 2018 Plans: Conduct Test/Analyze/Fix cycles in support of NEEDS software integration. Commence certification testing of NEEDS software product at Land Based Test Sites (LBTS) and complete Product Release Panel (PRP) for initial fielding of NEEDS software in support of DDG and CG ACB 16 Modernization Aegis Light Off (ALO). ***FY 2019 Base Plans:*** Conduct Integration Verification and Validation at Raytheon Development Facility. Conduct government Independent Verification and Validation (IV&V) and Final Qualification Testing (FQT). Develop critical Product Trouble Report (PTR) fixes that are discovered during testing conducted at LBTS, onboard USN Ships, or during IV&V and FQT testing. Conduct Product Certification Panel (PCP) for software delivery to support ACB 16 Combat System Certification. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Increase is due to final qualification and certification.					
Title: FIELD ACTIVITIES	8.500	8.600	9.373	0.000	9.373
Articles:	-	-	-	-	-
FY 2018 Plans: Continue field activity support of CEC development and fielding efforts (including Software Engineering / Integration Agent (SE/IA), Technical Direction Agent, In-Service Engineering Agent, Integrated Logistics Support planning) and program management support. Facilitate fielding or systems improvements and maintenance efforts.					
FY 2019 Base Plans: Continue field activity support of CEC development and fielding efforts (including Software Engineering / Integration Agent (SE/IA), Technical Direction Agent, In-Service Engineering Agent, Integrated Logistics Support planning) and program management support. Facilitate fielding or systems improvements and maintenance efforts.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Increase is due to expected increase in level of field activity support.					
Title: COMMON ARRAY BLOCK (CAB) ANTENNA	10.200	16.300	9.649	0.000	9.649
Articles:	-	-	-	-	-
FY 2018 Plans: Continue CAB Family of Antenna (FoA) Engineering Development Model (EDM) fabrication and deliver EDM hardware. Perform EDM component level Design Verification Testing (DVT), Integration and Test (I&T) for the CAB-S Array Functional Verification Testing (FVT). Perform EDM system level DVT, I&T, and FVT. Prepare for and conduct Pre-Production Readiness Review (PPRR), and commence material procurement and perform fabrication of CAB-S and CAB-E Pre-Production Units (PPU). Develop, code, and unit test CAB software Build 4. Complete below-deck Antenna Power Supply Unit (APSU) build and test. Complete CAB-S and CAB-E Installation Design Packages, and address platform customer CAB installation design issues/questions.					
FY 2019 Base Plans:					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Build and test CAB FoA Pre-production Units (PPU). Develop, code, and unit test CAB software Build 5. Perform qualification testing on PPUs. Develop and deliver CAB Interactive Electronic Technical Manuals, Corrective Maintenance Exercises, and Product Structure Engineering Change Proposals. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease is due to CAB development and integration finalizing in FY19.					
Title: AIR AND MISSILE DEFENSE RADAR (AMDR) ***Articles:*** ***FY 2018 Plans:*** Note: AMDR moved to the System Improvements line ***FY 2019 Base Plans:*** N/A ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** N/A	5.296 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: NAVAL INTEGRATED FIRE CONTROL-COUNTER AIR (NIFC-CA) ***Articles:*** ***FY 2018 Plans:*** N/A ***FY 2019 Base Plans:*** Complete Software Integration of NIFC-CA Increment 2. Conduct Product Certification Panel (PCP) in support of final delivery of NIFC-CA Increment 2. Support Land Based Test Site and At Sea Developmental Testing (DT) of NIFC-CA Increment 2. Conduct analysis of Land Based Test Site and at-sea test data in support of future NIFC capabilities. Continue requirements development for NIFC-CA Increment 3. ***FY 2019 OCO Plans:***	5.700 -	0.000 -	6.871 -	0.000 -	6.871 -

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Note: The work for NIFC-CA in FY 2018 was under system improvements and now in FY 2019 on it's own line.					
Title: FIRE CONTROL LOOP IMPROVEMENT INITIATIVE (FCLIP) PHASE 2 ***Articles:*** ***FY 2018 Plans:*** Continue Agile software design, coding, and integration with the Ship Self Defense System (SSDS) Combat System, Close In Weapon System (CIWS) sensor (single and dual mounts), and Mk-9 Multi-Target Tracking (MTT) sensors. Develop and provide software releases supporting field testing at land based test sites (LBTS) and ship's combat system activation. Conduct tracking test events with live aircraft and accompanying CEC units to validate sensor integration, composite tracking and interoperability. ***FY 2019 Base Plans:*** Develop Software Build Release (SBR) and complete CIWS FY18 dual mount, MK-9 MTT testing and data analysis. Conduct Engineering Verification Tests (EVT) and Product Release Panels (PRP) to support Combat System Lite Off (CSLO) and testing on SSDS ships. Conduct CEC Final Qualification Test (FQT) prior to software delivery to the government. Conduct government Independent Verification and Validation testing and Product Certification Panel (PCP) for software delivery to support Combat System Certification Panel. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase is due to final software integration, qualification and product certification.	9.400 -	8.400 -	8.700 -	0.000 -	8.700 -
Title: PROGRAM PROTECTION ***Articles:*** ***FY 2018 Plans:*** Provide CEC Program Protection support to manage risks from foreign intelligence collection threats to CEC hardware, software, or supply chain exploitation. The CEC DoD unique or critical technologies are required to be protected using threat resist ant anti-tamper technologies. The effort will further the use of the threat resistant	4.345 -	8.400 -	8.527 -	0.000 -	8.527 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
anti-tamper technologies within the program. CEC will work closely with the Cyber Assessment Agency and Defense Assessment Management Office to access impacts to the program from exploitation. ***FY 2019 Base Plans:*** Provide CEC Program Protection support to manage risks from foreign intelligence collection threats to CEC hardware, software, or supply chain exploitation. The CEC DoD unique or critical technologies are required to be protected using threat resistant anti-tamper technologies. The effort will further the use of the threat resistant anti-tamper technologies within the program. CEC will work closely with the Cyber Assessment Agency and Defense Assessment Management Office to access impacts to the program from exploitation. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease is due to reduction in funding availability.					
Title: CEC INCREMENT 2	0.237	2.100	3.300	0.000	3.300
Articles:	-	-	-	-	-
FY 2018 Plans: Conduct surface sensor integration to support Fire Control Loop Improvement Project (FCLIP) Ph. 2 software development. Begin development of advanced CEC kernel functions to provide surface tracking specific environmental filters. Conduct an at-sea demonstration of Automated Battle Management Aid (ABMA) prototype tactical software with the ONR and NRL teams. ***FY 2019 Base Plans:*** Continue development of advanced CEC kernel functions to provide surface tracking specific environmental filters. Continue development of prototype tactical software for a 2020 demonstration of ABMA (electronic warfare coordination, and sensors and weapons coordination).					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Continue to evolve the system of systems architecture concepts while partnering with ONR and NRL and testing software in a land-based test site environment. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase is due to increase in complexity of software development and integration.					
Title: ENTERPRISE AIR SURVEILLANCE RADAR (EASR) ***Articles:*** ***FY 2018 Plans:*** Develop EASR Interface Requirements Specification (IRS), Interface Description Document (IDD) and Interface Description Language (IDL) with IWS 2 and 10. Support EASR program System Engineering Technical Review (SETR) Software Build Reviews (SBR) and Agile Sprint reviews. Begin initial development for CEC adaptive layers for the Rotator and Fixed Array variants of EASR for CVN and L-Class ships. Commence integration test with the EASR Simulator. Conduct requirements identification for the integration of the Enterprise Radar Suite (ERS), including Next Generation Surface Search Radar (NGSSR) Systems Requirements Review (SRR), System Functional Review (SFR) and Initial Design Review (IDR) and Ship Self Defense System (SSDS) ACB-20 SRR and SFR. ***FY 2019 Base Plans:*** Continue technical documentation analysis of EASR, NGSSR and SSDS ACB-20 combat system in support of SETR milestones and Agile software development Sprint reviews. Continue CEC requirements capture, architecture design and software development for the CEC adaptive layers for Rotator and Fixed variants of EASR, NGSSR and SSDS ACB-20 combat system for CVN and L-Class ships. Continue integration testing with the EASR Simulator and commence integration testing with the EASR Emulator. Conduct two CEC-EASR-SSDS Software Build Reviews (SBRs).	0.000 -	3.400 -	6.900 -	0.000 -	6.900 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Commence Combat System Integration testing with the SSDS ACB-20 baseline and EASR variant 1 at the Wallops Island Land Based Test Site (LBTS). ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase is due to the increase in complexity and software development.					
Title: CEC FAR-TERM INTEROPERABILITY IMPROVEMENT PROJECT (FTIIP) ***Articles:*** ***FY 2018 Plans:*** N/A ***FY 2019 Base Plans:*** Commence development of CEC integration with Identification Friend of Foe (IFF) Mode S and Automatic Dependent Surveillance - Broadcast (ADS-B) systems. Coordinate system and subsystem requirements and integration with Aegis, Ship Self Defense System (SSDS), and E-2D Advanced Hawkeye Programs. Conduct System Requirements Review (SRR) and System Functional Review (SFR). ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Commence development and integration for FTIIP.	0.000 -	0.000 -	6.500 -	0.000 -	6.500 -
Title: DIGITAL WARFARE TACTICAL NETWORKING INITIATIVE IMPLEMENTATION ***Articles:*** ***FY 2018 Plans:*** N/A ***FY 2019 Base Plans:*** Lead a cross functional team (CFT) with participation from key naval tactical network organizations and fleet representation to conduct initial systems engineering and experimentation for improving tactical data dissemination to support further development of Integrated Fire Control concepts. This includes investigation of Communications-As-A-Service (CAAS) implementation across multiple radios, waveforms, and network	0.000 -	0.000 -	17.900 -	0.000 -	17.900 -

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0607658N / *(U)Cooperative Engagement Capability*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
architectures; and early Software-in-the-Loop (SIL) and Land Base Test Site (LBTS) experimentation to formulate the solution toward the development of Fleet Tactical Grid and Distributed Maritime Operations. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Commence early software development and integration.					
Title: CEC CYBER RESILIENCY ***Articles:*** ***FY 2018 Plans:*** N/A ***FY 2019 Base Plans:*** Design and implement mitigation and remediation of known HIGH risk vulnerabilities. Incorporate specific CEC system hardware and software changes identified via the cyber accreditation process as well as required Information Assurance Vulnerability Management (IAVM) updates into incremental CEC system software builds. Address and retire interface issues between CEC and the host Combat System for AEGIS ACB16, AEGIS ACB 20, and Ship Self Defense System (SSDS) ACB 20 surface ships as well as Land Based and Airborne platforms. Conduct Final Qualification and Verification and Validation testing events of the CEC system baselines with hardware and software changes addressing cyber High-risk issues. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Commence design and implementation to enhance CEC cyber security posture.	0.000 -	0.000 -	9.500 -	0.000 -	9.500 -
Title: CRYPTO MODERNIZATION ***Articles:*** ***FY 2018 Plans:*** N/A ***FY 2019 Base Plans:*** The CEC Program will continue a cryptographic modernization effort for the SDP that is being developed to support the significant- increase-in cryptographic processor capability that is required to protect the CEC	0.000 -	0.000 -	4.552 -	0.000 -	4.552 -

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0607658N / *(U)Cooperative Engagement Capability*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
network. This effort will continue cryptographic requirements definition, complete integration, performance and environmental testing, security verification testing, and NSA certification of the latest generation, NSA-certified cryptographic chip for use in the CEC system. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Note: Crypto Mod. was under system improvements in FY 2018 and in FY 2019 it moved to it's own line.					
Accomplishments/Planned Programs Subtotals	75.099	92.571	130.515	0.000	130.515

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• SCN: *Navy, SCN*	25.500	19.200	28.400	-	28.400	12.500	12.700	12.800	12.800	38.400	510.431
• APN/0204152N: *Navy, APN*	19.886	16.897	13.788	-	13.788	14.064	14.345	14.632	14.925	15.223	373.992
• OPN/2606: *CEC*	17.965	23.892	44.173	-	44.173	32.132	31.827	32.419	33.127	31.641	1,062.952
• RDT&E/0206313M: *USMC*	141.171	123.825	174.779	16.130	190.909	148.367	104.147	99.277	110.231	Continuing	Continuing
• O&M,N/0206626M: *USMC*	2.291	3.157	3.062	-	3.062	2.970	2.881	2.881	0.000	0.000	28.022
• PMC/0206313M: *USMC*	1.164	8.390	8.070	-	8.070	3.550	0.000	0.000	0.000	0.000	24.558
• OPN/0960: *CG MOD*	319.920	306.050	276.446	-	276.446	302.185	221.839	139.942	26.378	2.529	4,164.807

Remarks

D. Acquisition Strategy

CEC Acquisition Strategy (AS) approved by OSD (AT&L) on 19 January 2010. CEC Acquisition Plan (AP) approved September 2013. Full Rate Production for CEC AN/USG-3B variant approved April 2014.

Contracts:
Common Array Block (CAB) antenna - contract competitively awarded 4Qtr FY2013.
CEC Design Agent/Engineering Services (DA/ES) follow-on sole source contract awarded 4Qtr FY2013.
CEC Production - Contract competitively awarded in 2Qtr FY2015.
CEC DA/ES contract will be competitively awarded 1Qtr FY2019. For DA, The contractor will maintain the CEC hardware and software development environment and testing infrastructure including; Systems and Software Laboratories, the external RF Range, the Compact Antenna Range, and the CEC Classified Development LAN.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
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For ES, the contractor will provide analysis, design, implementation, integration, testing and evaluation, reliability and maintainability, quality assurance, safety, security, Integrated Logistics Support (ILS), and Configuration Management (CM).

E. Performance Metrics

- Complete the adaptive layer development for the E-2D aircraft. Provide technical support for installation and integration in the Northrop Grumman Systems Integration Laboratory, on board the test aircraft and support the Developmental testing. Continue E-2D Advanced Hawkeye aircraft CEC integration efforts.
- Continue AEGIS Advance Capability Builds CEC integration and demonstration efforts.
- Continue Naval Integrated Fire Control - Counter Air (NIFC-CA) CEC integration and demonstration efforts.
- Continue Crypto Modernization Tech Refresh efforts.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / *(U)Cooperative Engagement Capability*	Project (Number/Name) 2039 / *COOP Engagement*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/USG-2/3 Design Agent/Engineering Services	C/CPFF	Raytheon : St. Petersburg, FL	127.395	9.066	Jan 2017	13.328	Oct 2017	10.579	Oct 2018	-		10.579	Continuing	Continuing	Continuing
TDA	C/CPFF	JHU/APL : Laurel, MD	78.150	8.735	Feb 2017	13.176	Oct 2017	10.157	Oct 2018	-		10.157	Continuing	Continuing	Continuing
SI/DA	C/CPAF	General Dynamics : Fairfax, VA	23.979	0.000		0.000		0.000		-		0.000	0.000	23.979	-
SI/DA	C/CPAF	Award Fees : Not Specified	2.903	0.000		0.000		0.000		-		0.000	0.000	2.903	-
DDG 1000	C/CPAF	Raytheon : Massachusetts	10.983	0.000		0.000		0.000		-		0.000	0.000	10.983	-
DDG 1000	C/CPAF	Award Fees : Not Specified	0.447	0.000		0.000		0.000		-		0.000	0.000	0.447	-
NIFC-CA Integration	Various	Various : Various	41.799	5.700	Jan 2017	0.000	Oct 2017	6.871	Oct 2018	-		6.871	Continuing	Continuing	Continuing
In-Service Engineering Activity	WR	NSWC : Port Hueneme, CA	6.463	1.625	Dec 2016	3.305	Oct 2017	2.922	Oct 2018	-		2.922	Continuing	Continuing	Continuing
Software Support Activity/ SEIA	WR	NSWC : Dahlgren, VA	19.718	1.715	Dec 2016	3.367	Oct 2017	2.978	Oct 2018	-		2.978	Continuing	Continuing	Continuing
Production Engineering Activity	WR	NSWC : Crane, IN	5.694	0.258	Dec 2016	0.395	Oct 2017	0.523	Oct 2018	-		0.523	0.000	6.870	-
JTRS	Various	Various : Various	8.500	0.000		0.000		0.000		-		0.000	0.000	8.500	-
Various	WR	Various : Various	31.873	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
NAVSSI	WR	SPAWAR : San Diego, CA	0.368	0.000		0.000		0.000		-		0.000	0.000	0.368	-
Certification	MIPR	NSA : Fort Meade, MD	1.200	0.000		0.000		0.000		-		0.000	0.000	1.200	-
Certification	WR	SPAWAR : Charleston, SC	0.930	0.000		0.000		0.000		-		0.000	0.000	0.930	-
Joint Exercises	WR	Various : Various	3.744	0.000		0.000		0.000		-		0.000	0.000	3.744	-
LBTS Testing	WR	CDSA Dam Neck : Virginia Beach, VA	7.495	0.500	Dec 2016	0.500	Oct 2017	0.500	Oct 2018	-		0.500	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
LBTS Testing	WR	SCSC : Wallops Island, VA	7.083	0.500	Jan 2017	0.500	Oct 2017	0.500	Oct 2018	-		0.500	Continuing	Continuing	Continuing
E-2D Integration	Various	Various : Various	47.758	2.822	Feb 2017	3.900	Oct 2017	4.017	Oct 2018	-		4.017	Continuing	Continuing	Continuing
MSI/NCCT	MIPR	Wright Patterson AFB : Dayton, OH	1.228	0.000		0.000		0.000		-		0.000	0.000	1.228	-
Common Array Block Development	C/CPFF	Raytheon : St. Petersburg, FL	40.561	10.200	Jan 2017	16.300	Oct 2017	9.649	Oct 2018	-		9.649	Continuing	Continuing	Continuing
NEEDS	Various	Various : Various	31.930	6.600	Feb 2017	4.500	Oct 2017	4.610	Oct 2018	-		4.610	Continuing	Continuing	Continuing
AMDR	Various	Various : Various	12.012	5.296	Feb 2017	0.000	Oct 2017	0.000	Oct 2018	-		0.000	Continuing	Continuing	Continuing
JTMC	C/CPFF	Raytheon : St. Petersburg, FL	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	-
FCLIP	Various	Various : Various	7.100	9.400	Feb 2017	8.400	Oct 2017	8.700	Oct 2018	-		8.700	Continuing	Continuing	Continuing
CEC Increment 2	Various	Various : Various	0.000	0.237	Feb 2017	2.100	Oct 2017	3.300	Oct 2018	-		3.300	Continuing	Continuing	Continuing
Program Protection	C/BA	NSMA : Washington, DC	0.000	4.345	Feb 2017	8.400	Oct 2017	8.527	Oct 2018	-		8.527	Continuing	Continuing	Continuing
EASR	Various	Various : Various	0.000	0.000		3.400	Oct 2017	6.900	Oct 2018	-		6.900	0.000	10.300	-
Crypto Modernization	Various	Various : Various	0.000	0.000		0.000	Oct 2017	4.552	Oct 2018	-		4.552	0.000	4.552	-
Digital Warfare Office (DWO)	Various	Various : Various	0.000	0.000		0.000		17.900	Oct 2018	-		17.900	0.000	17.900	-
FTIIP	Various	Various : Various	0.000	0.000		0.000		6.500	Oct 2018	-		6.500	0.000	6.500	-
Cyber Resiliency	Various	Various : Various	0.000	0.000		0.000		9.500	Oct 2018	-		9.500	0.000	9.500	-
		Subtotal	520.313	66.999		81.571		119.185		-		119.185	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test/ACB Support	C/CPFF	Raytheon : St. Petersburg, FL	5.114	1.013	Feb 2017	1.308	Oct 2017	1.379	Oct 2018	-		1.379	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test/ACB Support	C/CPFF	JHU/APL : Laurel, MD	2.676	1.058	Feb 2017	1.816	Oct 2017	1.835	Oct 2018	-		1.835	Continuing	Continuing	Continuing
Test Support	WR	NRL : Washington, DC	0.313	0.000		0.000		0.000		-		0.000	0.000	0.313	-
Test/ACB Support	WR	NSWC : Port Hueneme, CA	24.386	1.395	Feb 2017	2.147	Oct 2017	2.163	Oct 2018	-		2.163	Continuing	Continuing	Continuing
Air Operations Test Support	WR	NAVAIR (PMA207) : Patuxent River, MD	10.187	1.047	Feb 2017	1.231	Oct 2017	1.247	Oct 2018	-		1.247	Continuing	Continuing	Continuing
Test Data Reduction Analysis	WR	NSWC : Corona, CA	17.934	1.234	Feb 2017	1.541	Oct 2017	1.641	Oct 2018	-		1.641	Continuing	Continuing	Continuing
Test Support	WR	COMOPTEVFOR : Norfolk, VA	12.607	1.075	Feb 2017	1.369	Oct 2017	1.452	Oct 2018	-		1.452	Continuing	Continuing	Continuing
Test/ACB Support	WR	NSWC : Dahlgren, VA	2.290	1.278	Feb 2017	1.588	Oct 2017	1.613	Oct 2018	-		1.613	Continuing	Continuing	Continuing
		Subtotal	75.507	8.100		11.000		11.330		-		11.330	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/FFP	Booz Allen & Hamilton : Washington, DC	5.070	0.000		0.000		0.000		-		0.000	0.000	5.070	-
Program Management Support	C/FFP	Tech Marine : Washington, DC	0.360	0.000		0.000		0.000		-		0.000	0.000	0.360	-
		Subtotal	5.430	0.000		0.000		0.000		-		0.000	0.000	5.430	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	601.250	75.099		92.571		130.515		-		130.515	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
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	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0607658N / *(U)Cooperative Engagement Capability*	**Project (Number/Name)** 2039 / *COOP Engagement*

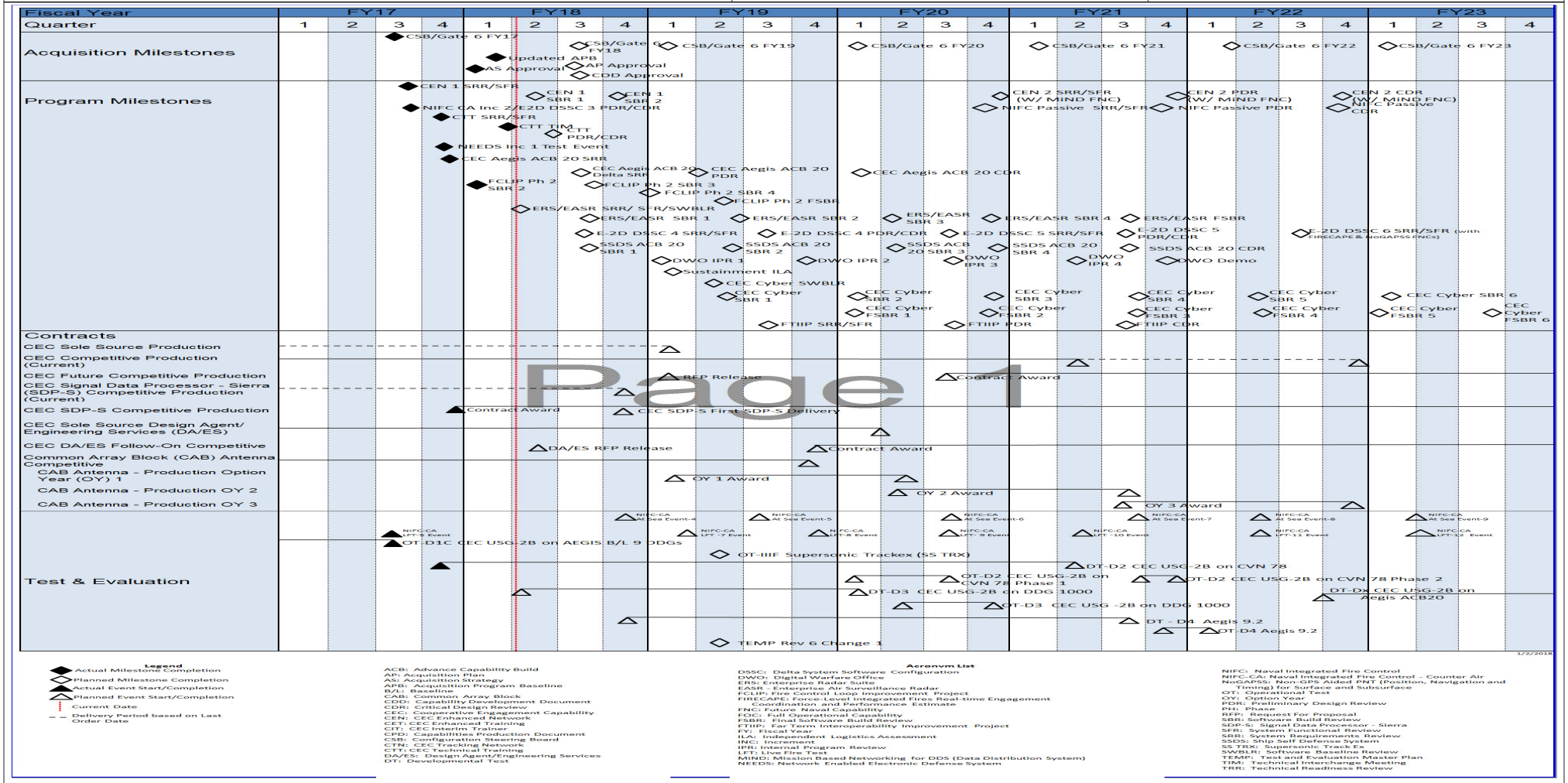

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2039				
CSB/Gate 6 FY17	3	2017	3	2017
CSB/Gate 6 FY18	1	2018	1	2018
CSB/Gate 6 FY19	1	2019	1	2019
CSB/Gate 6 FY20	1	2020	1	2020
CSB/Gate 6 FY21	1	2021	1	2021
CSB/Gate 6 FY22	1	2022	1	2022
CSB/Gate 6 FY23	1	2023	1	2023
Updated APB	4	2017	4	2017
CEN 1 SRR/SFR	3	2017	3	2017
CEN 1 SBR 1	1	2018	1	2018
CEN 1 SBR 2	4	2018	4	2018
CEN 2 SRR/SFR (w/MIND FNC)	4	2020	4	2020
CEN 2 PDR (w/MIND FNC)	4	2021	1	2022
CEN 2 CDR (w/MIND FNC)	4	2022	4	2022
NIFC-CA INC 2/E2D DSSC 3 PDR/CDR	3	2017	3	2017
NIFC Passive SRR/SFR	4	2020	4	2020
NIFC Passive PDR	4	2021	4	2021
NIFC Passive CDR	4	2022	4	2022
NEEDS Inc 1 Test Event	4	2017	4	2017
CEC Aegis ACB 20 SRR	4	2017	4	2017
CEC Aegis ACB 20 SFR/Delta SRR	3	2018	3	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CEC Aegis ACB 20 PDR	2	2019	2	2019
CEC Aegis ACB 20 CDR	1	2020	1	2020
ERS/EASR SRR/SFR/SWBLR	2	2018	2	2018
ERS/EASR SBR 1	3	2018	3	2018
ERS/EASR SBR 2	2	2019	2	2019
ERS/EASR SBR 3	2	2020	2	2020
ERS/EASR SBR 4	4	2020	4	2020
ERS/EASR FSBR	3	2021	3	2021
FCLIP PH2 SBR 2	1	2018	1	2018
FCLIP PH2 SBR 3	3	2018	3	2018
FCLIP PH2 SBR 4	4	2018	4	2018
FLIP PH2 FSBR	2	2019	2	2019
CTT SRR/SFR	4	2017	4	2017
E-2D DSSC 4 SRR/SFR	3	2018	3	2018
E-2D DSSC 4 PDR/CDR	3	2019	3	2019
E-2D DSSC 5 SRR/SFR	3	2020	3	2020
E-2D DSSC 5 PDR/CDR	3	2021	3	2021
E-2D DSSC 6 SRR/SFR (w/FIRECAPE & NoGAPSS FNCs)	3	2022	3	2022
SSDS ACB 20 SBR 1	3	2018	3	2018
SSDS ACB 20 SBR 2	2	2019	2	2019
SSDS ACB 20 SBR 3	2	2020	2	2020
SSDS ACB 20 SBR 4	4	2020	4	2020
SSDS ACB 20 CDR	3	2021	3	2021
SUSTAINMENT ILA	1	2019	1	2019
CEC CYBER SWBLR	2	2019	2	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0607658N / *(U)Cooperative Engagement Capability*	**Project (Number/Name)** 2039 / *COOP Engagement*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CEC CYBER SBR 1	2	2019	2	2019
CEC CYBER SBR 2	1	2020	1	2020
CEC CYBER SBR 3	4	2020	4	2020
CEC CYBER SBR 4	3	2021	3	2021
CEC CYBER SBR 5	2	2022	2	2022
CEC CYBER SBR 6	1	2023	1	2023
CEC CYBER FSBR 1	1	2020	1	2020
CEC CYBER FSBR 2	4	2020	4	2020
CEC CYBER FSBR 3	3	2021	3	2021
CEC CYBER FSBR 4	2	2022	2	2022
CEC CYBER FSBR 5	1	2023	1	2023
CEC CYBER FSBR 6	3	2023	3	2023
FTIIP SRR/SFR	3	2019	3	2019
FTIIP PDR	3	2020	3	2020
FTIIP CDR	3	2021	3	2021
CEC SOLE SOURCE PRODUCTION	1	2017	1	2019
CEC COMPETITIVE PRODUCTION (CURRENT)	1	2017	4	2022
RFP RELEASE CEC FUTURE COMPETITIVE PRODUCTION	1	2019	1	2019
CEC FUTURE COMPETITIVE PRODUCTION	3	2020	4	2023
CEC SDP-S COMPETITIVE PRODUCTION (CURRENT)	1	2017	4	2018
CEC SDP-S COMPETITIVE PRODUCTION	4	2017	1	2023
CEC SDP-S FIRST SDP-S DELIVERY	4	2018	4	2018
CEC SOLE SOURCE DA/ES	1	2017	1	2020
DA/ES RFP RELEASE	1	2018	1	2018
CEC DA/ES FOLLOW-ON COMPETITIVE	4	2019	4	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CAB ANTENNA COMPETITIVE	1	2017	4	2022
NIFC-CA AT SEA EVENT 4	4	2018	4	2018
NIFC-CA AT SEA EVENT 5	3	2019	3	2019
NIFC-CA AT SEA EVENT 6	3	2020	3	2020
NIFC-CA AT SEA EVENT 7	3	2021	3	2021
NIFC-CA AT SEA EVENT 8	2	2022	2	2022
NIFC-CA AT SEA EVENT 9	1	2023	1	2023
NIFC-CA LFT 5 EVENT	3	2017	3	2017
NIFC-CA LFT 7 EVENT	1	2019	1	2019
NIFC-CA LFT 8 EVENT	4	2019	4	2019
NIFC-CA LFT 9 EVENT	3	2020	3	2020
NIFC-CA LFT 10 EVENT	2	2021	2	2021
NIFC-CA LFT 11 EVENT	2	2022	2	2022
NIFC-CA LFT 12 EVENT	2	2023	2	2023
OT-D1C CEC USG-2B ON AEGIS B/L 9 DDGs	1	2017	3	2017
OT-IIIF SUPERSONIC TRACKEX (SS TRX)	2	2019	2	2019
DT-D2 CEC USG-2B ON CVN 78	4	2017	2	2021
OT-D2 CEC USG-2B ON CVN 78 PHASE 1	1	2020	3	2020
OT-D2 CEC USG-2B ON CVN 78 PHASE 2	3	2021	4	2021
TEMP REV 6 CHG 1	2	2019	2	2019
DT-D3 CEC USG-2B ON DDG 1000	2	2018	1	2020
OT-D3 USG-2B ON DDG 1000	2	2020	4	2020
DT-D4 AEGIS 9.2	4	2018	3	2021
OT-D4 AEGIS 9.2	4	2021	1	2022
AS Approved	1	2018	1	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0607658N / *(U)Cooperative Engagement Capability*	**Project (Number/Name)** 2039 / *COOP Engagement*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
AP Approved	3	2018	3	2018
CDD Approval	3	2018	3	2018
CTT TIM	1	2018	1	2018
CTT PDR/CDR	2	2018	2	2018
DWO IPR 1	1	2019	1	2019
DWO IPR 2	4	2019	4	2019
DWO IPR 3	3	2020	3	2020
DWO IPR 4	2	2021	2	2021
DWO Demo	4	2021	4	2021
DT-Dx CEC USG-2B on Aegis ACB 20	4	2022	4	2023