

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	753.821	124.413	127.924	143.667	-	143.667	175.605	167.200	166.177	165.607	Continuing	Continuing
2039: <i>COOP Engagement</i>	753.821	124.413	109.496	102.402	-	102.402	124.986	125.012	127.154	129.654	Continuing	Continuing
3240: <i>CEC Increment II</i>	0.000	0.000	18.428	41.265	-	41.265	50.619	42.188	39.023	35.953	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 582

Note

FY 2020 funding of \$18.428 million for CEC Increment II efforts was realigned from Project 2039 to a new project code 3240. This is not a new start.

A. Mission Description and Budget Item Justification

The FY 2021 funding request was reduced by \$12.900 million to account for the availability of prior year execution balances.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy	Date: February 2020
---	----------------------------

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>
---	--

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.

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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	128.815	127.924	161.162	-	161.162
Current President's Budget	124.413	127.924	143.667	-	143.667
Total Adjustments	-4.402	0.000	-17.495	-	-17.495
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.819	0.000			
• SBIR/STTR Transfer	-3.433	0.000			
• Program Adjustments	0.000	0.000	-18.200	-	-18.200
• Rate/Misc Adjustments	-0.150	0.000	0.705	-	0.705

Change Summary Explanation

FY 2021 decrease of -\$18.161M is due to -\$13.200M to account for the availability of prior year execution balances, -\$5.0M for programmatic risk reduction, and +\$0.039M for NWCF rate adjustment.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>				Project (Number/Name) 2039 / <i>COOP Engagement</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
2039: <i>COOP Engagement</i>	753.821	124.413	109.496	102.402	-	102.402	124.986	125.012	127.154	129.654	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.

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.

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.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>
--	--	---

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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>Title: E-2D</p> <p align="right">Articles:</p> <p>FY 2020 Plans: Continue CEC software development and test in support of the E-2D DSSC 4 software upgrade programs. Support test event planning and conduct, analyze test data and identify, prioritize, and implement trouble report corrective actions in CEC software. Conduct E-2D DSSC 4 CEC software FQT. Perform detailed design efforts for E-2D DSSC 5 CEC software, including interface development and integration of CEC capabilities, and of E-2D CEC networking, sensor, and tracker capability and performance improvements included in DSSC 5 software and associated hardware.</p> <p>FY 2021 Base Plans: Complete CEC software development and test in support of the E-2D DSSC 4 software upgrade program. Complete E-2D DSSC 4 Independent Verification and Validation (IV&V) Testing, Final Qualification and Test, and the Product Certification Panel (PCP). Conduct lab test data analysis, and develop and implement fixes to high priority discrepancy reports. Conduct DSSC 4 software fleet release preparations. Prepare for conduct of E-2D DSSC 4 DT and OT. Continue detailed design efforts for E-2D DSSC 5 CEC software, including interface development and integration of CEC capabilities, and of E-2D CEC networking, sensor, and tracker capability and performance improvements included in DSSC 5 software and associated hardware. Support development of E-2D DSSC 6 CEC requirements, and interface and design documentation.</p> <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to concurrent DSSC 4, DSSC 5, and DSSC 6 development and test efforts in FY21.</p>	4.017	3.874	4.262	0.000	4.262
	-	-	-	-	-
<p>Title: B/L 2.1 INTEGRATION AND FOT&E TESTING</p> <p align="right">Articles:</p> <p>FY 2020 Plans:</p>	11.330	10.925	12.020	0.000	12.020
	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020		
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
Complete Developmental Testing (DT-D2) of AN/USG-2B with CVN 78. Conduct six Underway tracking events onboard USS GERALD R FORD. Complete live fire testing for CVN 78 combat system configuration onboard Self Defense Test Ship (SDTS). Commence Land Based Test Site testing of CEC AN/USG-3B with E-2D DSSC-4. Conduct underway NIFC-CA At Sea Live Fire Test 6 (AS 6). Conduct Live Fire Test 7 (LFT 7) at White Sands Missile Range (WSMR). Conduct tracking events prior to each NIFC-CA live fire. Continue CEC Developmental Test (DT-D3) of AN/USG-2B with DDG 1000 combat system. Commence CEC Operational Test (OT-D3) of AN/USG-2B with DDG 1000 combat system. 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), and USS BULKELEY (DDG 84). Continue testing of NEEDS on multiple USN Ships. Continue testing of CET and CTT on multiple USN Ships. Commence testing of Common Array Block antenna - Shipboard (CAB-S) at the Wallops Island Land Based Test Site. Continue planning for FFG(X) Developmental Test (DT) events.					
FY 2021 Base Plans:					
Commence Operational Testing (OT-D2) of AN/USG-2B with CVN 78 onboard USS GERALD R FORD (CVN 78) with support from multiple Land Based Test Sites. Conduct testing of CEC AN/USG-3B with E-2D DSSC-4 onboard E-2D Test Aircraft from Test Squadron VX-20, supported by multiple Land Based Test Sites. Conduct underway NIFC-CA At Sea 7 (AS 7) Live Fire Test and Live Fire Test 8 (LFT 8) at White Sands Missile Range (WSMR). Conduct tracking events prior to each live fire event. Continue CEC Operational Test (OT-D3) of AN/USG-2B with DDG 1000 combat system onboard USS ZUMWALT (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 COWPENS (CG 63), USS GETTYSBURG (CG 64), USS SHOUP (DDG 86), and FRANK E. PETERSEN (DDG 121). Continue testing of NEEDS on multiple USN Ships. Continue testing of CET and CTT on multiple USN Ships. Continue testing of Common Array Block antenna - Shipboard (CAB-S) at the Wallops Island Land Based Test Site. Continue planning for FFG(X) Developmental Test (DT) events.					
FY 2021 OCO Plans:					
N/A					
FY 2020 to FY 2021 Increase/Decrease Statement:					
Increase is due to commencement of OT on CVN 78 and NIFC-CA Live Fire Tests underway and at WSMR.					
Title: SYSTEM IMPROVEMENTS					
	19.450	20.508	21.289	0.000	21.289
Articles:	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p><i>FY 2020 Plans:</i> Continue integration and software updates to support AEGIS ACB 16 (9.2.1 and 9.2.2) development and testing including CSSQT. Conduct Product Release Panel (PRP) and Product Certification Panel (PCP) to support DDG and CG ACB 16 (9.2.1 and 9.2.2) Combat System Certification Panels (CSCPs) in FY20. Commence development of CEC S/W to support AEGIS ACB 16 9.2.3 development, conduct a PRP for initial S/W delivery to support AEGIS ACB 16 9.2.3, conduct a Software Build Review (SBR) for AEGIS ACB 16 9.2.3. Continue software development for AN/SPY-6(V)1 and AEGIS B/L 10 integration. Complete development and test of Engineering Release #2. Develop and test SW Engineering Releases (ERs) #3 and #4, and conduct the CEC AEGIS B/L 10 Software Functional Review (SFR). Develop critical Product Trouble Report (PTR) fixes that are discovered from CVN 78 at-sea testing to support CEC integration with Dual Band Radar (DBR) and the SSDS MK2 Mod 6C combat system. Develop and test SW Build Release #5 for final CEC system integration with CAB Family of Antennas (FoA). For CEC Enhanced Networks (CEN), complete development of features in the Data Distribution System (DDS) software, including delivery of software engineering builds to support the Mission Based Networking for DDS (MiND) / Enhanced DDS Networks Technology Readiness Level (TRL) 6 demonstration. Begin robust systems engineering to integrate MiND technology in CEC. Continue development of software features in DDS and CEP to support MiND technology integration and CEC Enhanced Networks (CEN) capability implementation. Begin development and modifications to CEC Special Test Equipment (STE) in support of testing MiND/CEN capability. Begin robust systems engineering to integrate Non-GPS Aided Positioning, Navigation, and Timing [PNT] for Surface Ships (NoGAPSS) technology in CEC in support of Assured PNT capability deployment in FY24.</p> <p><i>FY 2021 Base Plans:</i> Continue development of CEC S/W in support of AEGIS ACB 16 9.2.3. Conduct a Software baseline Review (SBR) and a Product Release Panel (PRP) in support of AEGIS ACB 16 9.2.3 CSSQT and Combat System Certification Panel (CSCP) planned in FY22. Continue software development for AN/SPY-6(V)1 and AEGIS B/L 10 integration. Complete development and test of Engineering Releases #3 and #4. Complete development and test SW Engineering Release (ER) #5, and conduct two Software Baseline Reviews (SBRs) for AEGIS B/L 10. Complete development and test of SW Build Release #5 for final CEC system integration with CAB Family of Antennas (FoA). Continue robust systems engineering in conjunction with navigation systems and shipboard, airborne, and land-based combat systems to integrate Non-GPS Aided Positioning, Navigation, and Timing</p>					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy				Date: February 2020	
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
[PNT] for Surface Ships (NoGAPSS) technology in CEC in support of Assured PNT capability deployment in FY24.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to increased systems engineering efforts associated with transitioning multiple FNCs.					
Title: NETWORK ENABLED ELECTRONIC DEFENSE SYSTEM (NEEDS)					
Articles:	4.610	2.080	1.121	0.000	1.121
	-	-	-	-	-
FY 2020 Plans: Develop critical Product Trouble Report (PTR) fixes that are discovered during testing conducted at LBTS, onboard USN Ships, or during Independent Verification and Validation (IV&V) testing in support of Combat System Certification Panel (CSCP) for AWS 9.2.1, and CSSQT and CSCP for LHD-6. Support early Developmental Test (DT) and Operational Test (OT) preparations for DSSC 4 on Advanced Hawkeye (AHE).					
FY 2021 Base Plans: Support Combat System Certification Panel (CSCP) for AWS 9.2.2 and Aegis Lightoff (ALO) on DDG 122 and Combat System Lightoff (CSLO) on CVN 73. Continue preparations for DSSC 4 Developmental Test (DT) and early Operational Test (OT) on Advanced Hawkeye (AHE).					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Decrease is due to transitioning from development and certification to fielding.					
Title: FIELD ACTIVITIES					
Articles:	9.373	8.774	9.944	0.000	9.944
	-	-	-	-	-
FY 2020 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 2021 Base Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy				Date: February 2020	
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>		Project (Number/Name) 2039 / <i>COOP Engagement</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
of final delivery of NIFC-CA Increment 2 Improvements. Begin robust systems engineering for NIFC Increment 3 in close coordination with other NIFC pillars. Conduct Modeling and Simulation (M&S) to inform requirements and support and conduct CEC NIFC Increment 3 requirements reviews.					
FY 2021 Base Plans: Address issues discovered during NIFC Increment 2 Improvements testing. Continue robust systems engineering for NIFC Increment 3 in close coordination with other NIFC pillars. Continue Modeling and Simulation (M&S) to inform operational and design analysis, and provide limited support to NIFC Increment 3 interface and integration design document development and test support and testing.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Decrease is due to revised ship and aircraft development and test schedules.					
Title: FIRE CONTROL LOOP IMPROVEMENT INITIATIVE (FCLIP) PHASE 2					
Articles:					
FY 2020 Plans: Perform baseline certification efforts for the FCLIP product baseline in support of Combat System Test (CST) events for each ship (CVN 70, LHD 6 and LPD 23). Deliver element certified software to each ship and support Combat System Light Off (CSLO) on CVN 70 and LHD 6. Execute the Combat System Shipboard Qualification Test (CSSQT) for LHD 6. Conduct data analysis and resolve deficiencies when discovered.					
FY 2021 Base Plans: Deliver element certified software to four ships and support Combat System Light Off (CSLO) on LPD 28.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Decrease is due to transition from development and certification to fielding and sustainment.					
Title: PROGRAM PROTECTION					
	8.700	4.453	3.367	0.000	3.367
	-	-	-	-	-
	8.527	9.205	11.371	0.000	11.371

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p align="right">Articles:</p> <p>FY 2020 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.</p> <p>FY 2021 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.</p> <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to continued integration phase and completion of qualification phase of development.</p>	-	-	-	-	-
<p>Title: CEC INCREMENT 2</p> <p align="right">Articles:</p> <p>Description: CEC Increment 2 refers to initial efforts to expand CEC tracking capabilities to include surface tracking and other experimental / proof of concept efforts. CEC Increment 2 does not cover efforts associated with CEC Increment II. CEC Increment II is covered under PE 0607658N / (U)Cooperative Engagement Capability Project 3240 / CEC Increment II starting in FY20.</p> <p>FY 2020 Plans: In close alignment with Fire Control Loop Improvement Project (FCLIP) Phase 2, complete Product Certification Panel (PCP) and begin fielding CEC software baseline incorporating surface sensors. Continue experimentation for ABMA and participate in both Land Based Testing, and conduct an at-sea demonstration of advanced warfare coordination for Electronic Warfare (EW) features in conjunction with the CRFEW project.</p> <p>FY 2021 Base Plans:</p>	3.300	1.818	1.200	0.000	1.200
	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy				Date: February 2020	
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>		Project (Number/Name) 2039 / <i>COOP Engagement</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
Continue ABMA experimentation and risk reduction efforts for ABMA. Continue efforts with advanced warfare coordination for Electronic Warfare (EW) features in conjunction with the CRFEW project. Support maturation and transition of technology initiatives.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Decrease is due to transition from development and certification to fielding and sustainment.					
Title: ENTERPRISE AIR SURVEILLANCE RADAR (EASR)					
Articles:					
	5.200	7.452	6.600	0.000	6.600
	-	-	-	-	-
FY 2020 Plans: Continue CEC Agile software development, coding and integration of the CEC adaptive layers for each of the EASR variants (Rotator & Fixed Array), NGSSR and SSDS ACB 20 combat system for CVN and L-Class ships. Commence Combat System Integration testing with the SSDS ACB 20 baseline and EASR variant 1 Engineering Development Model (EDM) at the Wallops Island Land Based Test Site (LBTS). Commence CEC Software Baseline Development (2.1.11) for SSDS ACB 20 and EASR. Support SSDS ACB 20 Preliminary Design Review (PDR) and Critical Design Review (CDR) and NGSSR Test Readiness Review (TRR). Support NGSSR testing at LBTSs. Continue support for Technical Interchange Meetings (TIM), CEC SSDS In Process Reviews (IPRs) and EASR, NGSSR and ACB 20 Working Groups.					
FY 2021 Base Plans: Commence NGSSR integration testing and continue EASR integration testing at Wallops Island with SSDS. Prepare to deliver first CEC with NGSSR capability to LHD 7 in the 1st quarter of FY 22.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Decrease is due to transition from requirements analysis and design efforts to software implementation and test efforts.					
Title: CEC FAR-TERM INTEROPERABILITY IMPROVEMENT PROJECT (FTIIP)					
Articles:					
	6.500	0.000	0.000	0.000	0.000
	-	-	-	-	-
FY 2020 Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy				Date: February 2020	
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>		Project (Number/Name) 2039 / <i>COOP Engagement</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
CEC FTIPP efforts transition to PE 0607658N / (U)Cooperative Engagement Capability Project 3240 / CEC CDD Increment II in FY20.					
FY 2021 Base Plans: N/A					
FY 2021 OCO Plans: N/A					
Title: DIGITAL WARFARE TACTICAL NETWORKING INITIATIVE IMPLEMENTATION					
Articles:					
	17.900	23.100	9.955	0.000	9.955
	-	-	-	-	-
FY 2020 Plans: Continue leading a Cross Functional Team (CFT) with participation from key naval tactical network organizations and fleet representation to conduct systems engineering and experimentation for improving tactical data dissemination to support further development of Integrated Fire Control concepts. Continue Communication-as-a-Service (CaaS) technology maturation and experimentation. This includes further investigation of CaaS implementation across multiple radios, waveforms, and network architectures; development of Model Based System Engineering (MBSE) SysML models; and preparation for hardware-in-the-loop/field experimentation to formulate the solution toward the development of Naval Tactical Grid and Distributed Maritime Operations. Develop hardware and software requirements and conduct preparation for element level System Requirements Review (SRR) to incorporate CaaS across multiple radios waveforms, and network architectures. Prepare for demonstration in FY22.					
FY 2021 Base Plans: Continue leading a Cross Functional Team (CFT) with participation from key naval tactical network organizations and fleet representation to conduct systems engineering and experimentation for improving tactical data dissemination to support further development of Integrated Fire Control concepts. Support Communication-as-a-Service (CaaS) development. This includes CaaS implementation across multiple radios, waveforms, and network architectures; and development of Model Based System Engineering (MBSE) SysML models; to formulate the solution toward the development of Naval Tactical Grid and Distributed Maritime Operations. Support preparation for element level System Requirements Review (SRR) to incorporate CaaS across multiple radios waveforms, and network architectures. Continue preparing for FY22 Demonstration.					
FY 2021 OCO Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy				Date: February 2020		
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>		Project (Number/Name) 2039 / <i>COOP Engagement</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
N/A						
FY 2020 to FY 2021 Increase/Decrease Statement: Decrease is due to transition from requirements analysis and design efforts to software implementation and test efforts.						
Title: CEC CYBER RESILIENCY		4.434	1.416	8.427	0.000	8.427
		Articles:	-	-	-	-
FY 2020 Plans: Support Final Qualification Tests (FQTs), Independent Verification and Validation (IV&V), and Product Certification Panels (PCPs) for cyber functionality developed and implemented in FY 19 for Aegis Weapons System (AWS) baselines. Prepare and submit a High Risk Escalation (HRE) reauthorization package to enable a CEC Authorization-To-Operate (ATO) extension. Continue re-planning of future CEC and platform cybersecurity improvement initiatives.						
FY 2021 Base Plans: Execute revised plans for cybersecurity improvement initiatives to CEC and interfacing combat system/sensor elements and enclaves. Develop and support implementation of cybersecurity improvement initiatives in upgraded CEC hardware and software suites, and perform robust cybersecurity system engineering in coordination with interfacing platforms to address cybersecurity issues and reduce the CEC cybersecurity risk posture to medium or low. Conduct Information Assurance Vulnerability Management (IAVM) testing, implement improvements suggested as a result of testing, and support CEC cybersecurity compliance requirements. Prepare and submitted a High Risk Escalation (HRE) reauthorization package to enable a CEC Authorization-To-Operate (ATO) extension.						
FY 2021 OCO Plans: N/A						
FY 2020 to FY 2021 Increase/Decrease Statement: FY19 & 20 incurred marks against CEC Cybersecurity to provide offsets for other Risk Management Framework (RMF) issues. FY21 funding level maintained at previously approved POM amount.						
Title: CRYPTO MODERNIZATION		4.552	0.000	0.000	0.000	0.000
		Articles:	-	-	-	-
FY 2020 Plans:						

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
CEC Crypto Modernization efforts transition to PE 0607658N / (U)Cooperative Engagement Capability Project 3240 / CEC CDD Increment II in FY20. FY 2021 Base Plans: N/A FY 2021 OCO Plans: N/A					
Title: ELEKTRA Articles:	0.000 -	1.520 -	0.000 -	0.000 -	0.000 -
FY 2020 Plans: In close coordination with IWS 2, PMA 231, IWS 1, ONR, and NRL, begin experimentation with prototype systems in Modeling and Simulation (M&S) environment to inform Program of Record (PoR) features providing Artificial Intelligence for coordination phase of combat. FY 2021 Base Plans: Continue experimentation between multiple programs of record to develop and allocate functional and interface requirements for the initial Elektra algorithm transition currently scheduled for FY22. FY 2021 OCO Plans: N/A FY 2020 to FY 2021 Increase/Decrease Statement: Decrease in FY21 is due to Elektra efforts postponed to FY22.					
Accomplishments/Planned Programs Subtotals	124.413	109.496	102.402	0.000	102.402

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021 Base</u>	<u>FY 2021 OCO</u>	<u>FY 2021 Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• SCN: Navy, SCN	16.947	47.671	28.204	-	28.204	33.297	37.295	55.372	47.025	232.834	909.572
• APN/0204152N: Navy, APN	13.810	14.086	14.368	-	14.368	14.600	14.900	15.200	0.000	15.223	389.229
• OPN/2606: CEC	39.076	30.452	26.006	-	26.006	29.077	28.099	27.472	27.969	27.390	1,087.951
• RDT&E/0206313M: USMC	1.279	1.317	1.357	-	1.357	1.398	1.440	1.483	0.000	Continuing	Continuing
• O&M,N/0206626M: USMC	2.378	2.970	3.059	-	3.059	3.162	3.257	3.290	0.000	0.000	20.074
• PMC/0206313M: USMC	8.100	3.600	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.426

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2021</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• OPN/0960: <i>CG MOD</i>	268.509	193.990	87.978	-	87.978	86.524	18.860	4.950	5.023	0.000	3,854.360

Remarks

D. Acquisition Strategy

Full Rate Production for CEC AN/USG-3B variant approved April 2014. Latest revision of CEC Acquisition Strategy (AS) approved by ASN (RDA) on 2 November 2017. Latest revision of CEC Acquisition Plan (AP) was approved in July 2018.

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. A sole source 15 month CEC DA/ES contract extension awarded 4Qtr FY2018.

CEC DA/ES contract competitively awarded 3Qtr 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. For ES, the contractor

CEC Production - Contract competitively awarded in 2Qtr FY2015.

CEC SDP-S Production - Contract competitively awarded in 4Qtr FY2017.

CEC PAAA Competitive - RFP was issued in 4Qtr FY2018. Contract award is scheduled for 1Qtr FY2020.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0607658N / Cooperative Engagement Capability						Project (Number/Name) 2039 / COOP Engagement					
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/USG-2/3 Design Agent/Engineering Services	C/CPFF	Raytheon : St. Petersburg, FL	147.699	11.063	Oct 2018	12.294	Oct 2019	13.484	Oct 2020	-		13.484	Continuing	Continuing	Continuing
TDA	C/CPFF	JHU/APL : Laurel, MD	98.520	10.641	Oct 2018	12.217	Oct 2019	13.034	Oct 2020	-		13.034	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	47.499	6.871	Oct 2018	6.625	Oct 2019	5.824	Oct 2020	-		5.824	Continuing	Continuing	Continuing
In-Service Engineering Activity	WR	NSWC : Port Hueneme, CA	10.393	2.831	Oct 2018	1.763	Oct 2019	1.449	Oct 2020	-		1.449	Continuing	Continuing	Continuing
Software Support Activity/ SEIA	WR	NSWC : Dahlgren, VA	23.800	2.915	Oct 2018	1.496	Oct 2019	1.410	Oct 2020	-		1.410	Continuing	Continuing	Continuing
Production Engineering Activity	WR	NSWC : Crane, IN	6.347	0.523	Oct 2018	0.512	Oct 2019	0.656	Oct 2020	-		0.656	0.000	8.038	-
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	NIWC : 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	NIWC : 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	8.495	0.500	Oct 2018	0.500	Oct 2019	0.600	Oct 2020	-		0.600	Continuing	Continuing	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0607658N / Cooperative Engagement Capability				Project (Number/Name) 2039 / COOP Engagement							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
LBTS Testing	WR	SCSC : Wallops Island, VA	8.083	0.500	Oct 2018	0.500	Oct 2019	0.600	Oct 2020	-		0.600	Continuing	Continuing	Continuing
E-2D Integration	Various	Various : Various	53.623	4.017	Oct 2018	3.874	Oct 2019	4.262	Oct 2020	-		4.262	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	65.461	9.649	Oct 2018	7.746	Oct 2019	7.022	Oct 2020	-		7.022	Continuing	Continuing	Continuing
NEEDS	Various	Various : Various	41.842	4.610	Oct 2018	2.080	Oct 2019	1.121	Oct 2020	-		1.121	Continuing	Continuing	Continuing
AMDR	Various	Various : Various	17.308	0.000	Oct 2018	0.000		0.000		-		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	23.123	8.700	Oct 2018	4.453	Oct 2019	3.367	Oct 2020	-		3.367	Continuing	Continuing	Continuing
CEC Increment 2	Various	Various : Various	1.490	3.300	Oct 2018	1.818	Oct 2019	1.200	Oct 2020	-		1.200	Continuing	Continuing	Continuing
Program Protection	C/BA	NSMA : Washington, DC	11.863	8.527	Oct 2018	9.205	Oct 2019	11.371	Oct 2020	-		11.371	Continuing	Continuing	Continuing
EASR	Various	Various : Various	2.238	5.200	Oct 2018	7.452	Oct 2019	6.600	Oct 2020	-		6.600	Continuing	Continuing	Continuing
Crypto Modernization	Various	Various : Various	0.000	4.552	Oct 2018	0.000		0.000		-		0.000	0.000	4.552	-
Digital Warfare Tactical Networking Initiative Implementation	Various	Various : Various	0.000	17.750	Oct 2018	23.100	Oct 2019	9.955	Oct 2020	-		9.955	0.000	50.805	-
FTIIP	Various	Various : Various	0.000	6.500	Oct 2018	0.000		0.000		-		0.000	0.000	6.500	-
Cyber Resiliency	Various	Various : Various	0.000	4.434	Oct 2018	1.416	Oct 2019	8.427	Oct 2020	-		8.427	Continuing	Continuing	Continuing
ELEKTRA	Various	Various : Various	0.000	0.000		1.520	Oct 2019	0.000	Oct 2020	-		0.000	Continuing	Continuing	Continuing
Subtotal			654.939	113.083		98.571		90.382		-		90.382	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0607658N / Cooperative Engagement Capability				Project (Number/Name) 2039 / COOP Engagement							
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test/ACB Support	C/CPFF	Raytheon : St. Petersburg, FL	7.270	1.379	Oct 2018	1.321	Oct 2019	1.480	Oct 2020	-		1.480	Continuing	Continuing	Continuing
Test/ACB Support	C/CPFF	JHU/APL : Laurel, MD	5.385	1.835	Oct 2018	1.777	Oct 2019	1.933	Oct 2020	-		1.933	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	27.763	2.163	Oct 2018	2.105	Oct 2019	2.261	Oct 2020	-		2.261	Continuing	Continuing	Continuing
Air Operations Test Support	WR	NAVAIR (PMA207) : Patuxent River, MD	12.300	1.247	Oct 2018	1.190	Oct 2019	1.346	Oct 2020	-		1.346	Continuing	Continuing	Continuing
Test Data Reduction Analysis	WR	NSWC : Corona, CA	20.544	1.641	Oct 2018	1.583	Oct 2019	1.739	Oct 2020	-		1.739	Continuing	Continuing	Continuing
Test Support	WR	COMOPTEVFOR : Norfolk, VA	14.886	1.452	Oct 2018	1.394	Oct 2019	1.550	Oct 2020	-		1.550	Continuing	Continuing	Continuing
Test/ACB Support	WR	NSWC : Dahlgren, VA	4.991	1.613	Oct 2018	1.555	Oct 2019	1.711	Oct 2020	-		1.711	Continuing	Continuing	Continuing
Subtotal			93.452	11.330		10.925		12.020		-		12.020	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	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

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy								Date: February 2020					
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>				Project (Number/Name) 2039 / <i>COOP Engagement</i>					
	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	753.821	124.413		109.496		102.402		-		102.402	Continuing	Continuing	N/A

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>
--	--	---

Fiscal Year	FY19				FY20				FY21				FY22				FY23				FY24				FY25				
	Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones	◆ CSB/Gate 6 FY19				◇ CSB/Gate 6 FY20 ◇ CEC AS ◇ CEC AP Production Extensions ◇ CEC AP CAB Production				◇ CSB/Gate 6 FY21				◇ CSB/Gate 6 FY22				◇ CSB/Gate 6 FY23				◇ CSB/Gate 6 FY24				◇ CSB/Gate 6 FY25				
Program Milestones																													
CEC Enhanced Network (CEN)	◆ SBR 18.3					◆ SBR 20.1		◆ SBR 20.2	◆ SBR 20.3	◆ SBR 21.1	◆ SBR 21.2		◆ SBR 21.3	◆ SBR 22.1	◆ SBR 22.2	◆ SBR 22.3	◆ FSBR												
CEC Technical Training (CTT)	◆ SBR 18.3																												
CEC Aegis Weapon System (AWS) ACB 20	◆ TIM 18.3 ◆ Delta SRR	◆ TIM 19.1				◆ SFR	◆ Delta SFR		◆ SBR 20.2	◆ SBR 20.3	◆ SBR 21.1	◆ SBR 21.2	◆ FSBR																
CEC ELEKTRA														◆ SRR		◆ SFR		◆ SBR 23.2	◆ SBR 23.3	◆ SBR 24.1		◆ SBR 24.2	◆ SBR 24.3	◆ SBR 25.1		◆ SBR 25.2			
Enterprise Radar Suite		◆ SBT 19.1																											
CEC SSSDs ACB 20			◆ SBT			◆ Delta SFR		◆ SBR 20.2	◆ SBR 20.3	◆ SBR 21.1	◆ SBR 21.2	◆ SBR 21.3	◆ FSBR																
Digital Warfare Tactical Networking Initiative Implementation	◆ IPR 1			◆ IPR 2			◆ IPR 3		◆ IPR 4					◆ Demo															
CEC Sustainment	◆ SSWG FY19		◆ PSWG FY19	◆ SSWG FY20	◆ PSWG FY20	◆ SSWG FY21	◆ PSWG FY21	◆ SSWG FY22	◆ PSWG FY22	◆ SSWG FY23	◆ PSWG FY23	◆ SSWG FY24	◆ PSWG FY24	◆ SSWG FY25	◆ PSWG FY25														
CEC Cyber		◆ SBR 19.1		◆ SBR 19.2				◆ SBR 20.2	◆ SBR 20.3	◆ SBR 21.1	◆ SBR 21.2	◆ SBR 21.3	◆ SBR 22.1	◆ SBR 22.2	◆ SBR 22.3	◆ SBR 23.1	◆ SBR 23.2	◆ SBR 23.3	◆ SBR 24.1		◆ SBR 24.2	◆ SBR 24.3	◆ SBR 25.1		◆ SBR 25.2				

UNCLASSIFIED

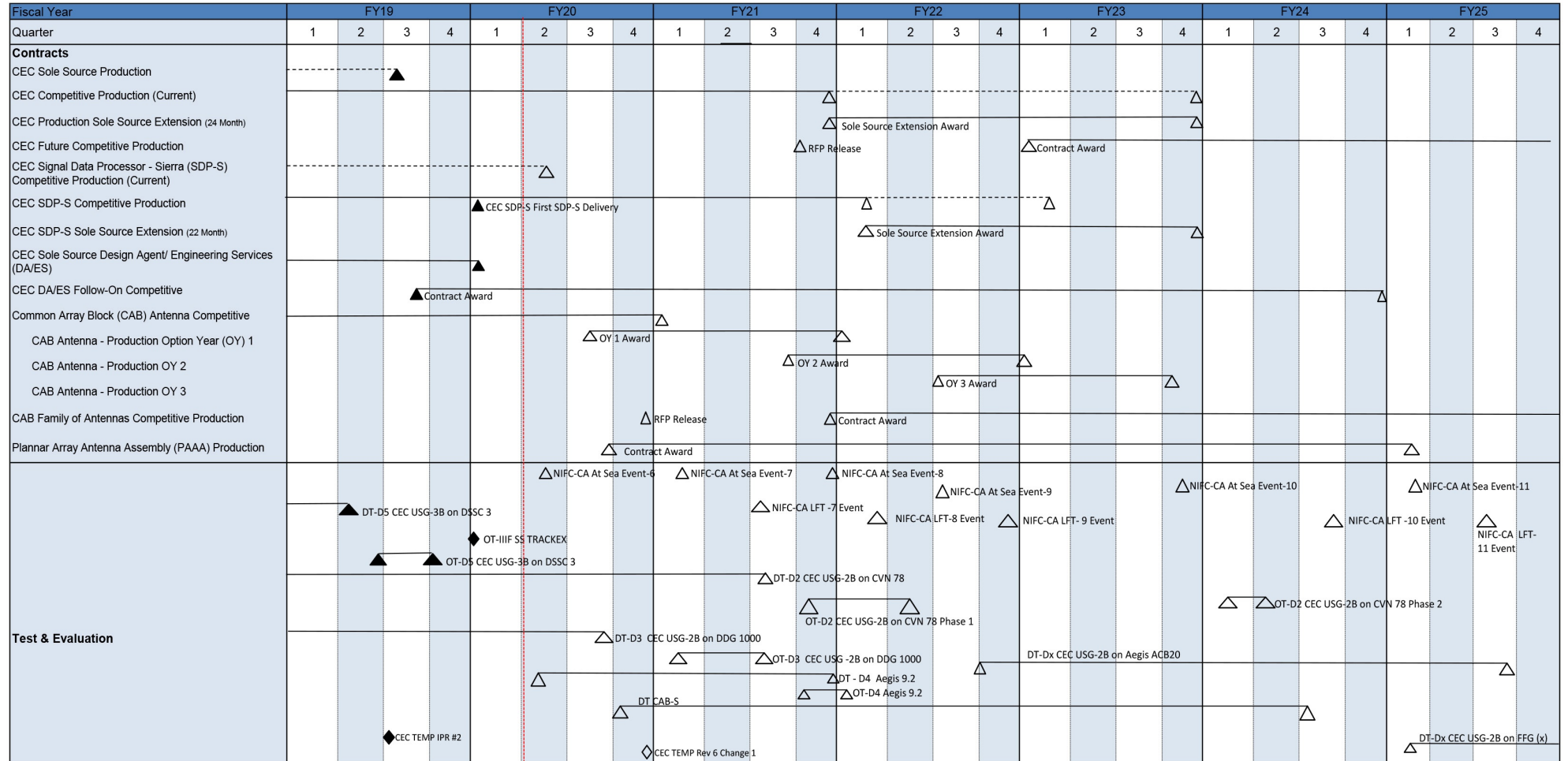
Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy

Date: February 2020

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0607658N / *Cooperative Engagement Capability*

Project (Number/Name)
2039 / *COOP Engagement*



01/07/2020

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>
--	--	---

<p align="center">Legend</p> <p>◆ Actual Milestone Completion</p> <p>◇ Planned Milestone Completion</p> <p>▲ Actual Event Start/Completion</p> <p>△ Planned Event Start/Completion</p> <p>--- Current Date</p> <p>--- Delivery Period based on Last Order Date</p>	<p>ACB: Advance Capability Build</p> <p>AC/FD: Advance Capabilities/Future Developments</p> <p>AWS: Aegis Weapon System</p> <p>AP: Acquisition Plan</p> <p>AS: Acquisition Strategy</p> <p>APB: Acquisition Program Baseline</p> <p>CAB: Common Array Block</p> <p>Common Array Block - Shipboard</p> <p>CDD: Capability Development Document</p> <p>CEC: Cooperative Engagement Capability</p> <p>CEN: CEC Enhanced Network</p> <p>CSSQT: Combat System Shipboard Qualification Trials</p> <p>CTT: CEC Technical Training</p> <p>DA/ES: Design Agent/Engineering Services</p> <p>DT: Developmental Test</p> <p>DWO: Digital Warfare Office</p>	<p>FCLIP: Fire Control Loop Improvement Project</p> <p>FNC: Future Naval Capability</p> <p>FOC: Full Operational Capability</p> <p>FSBR: Final Software Build Review</p> <p>FTIIP: Far Term Interoperability Improvement Project</p> <p>FY: Fiscal Year</p> <p>HS: Hypersonic</p> <p>ILA: Independent Logistics Assessment</p> <p>IPR: Internal Program Review</p> <p>LFT: Live Fire Test</p> <p>NIFC: Naval Integrated Fire Control</p> <p>NIFC P: Naval Integrated Fire Control Passive</p> <p>NIFC-CA: Naval Integrated Fire Control - Counter Air</p> <p>NoGAPSS: Non-GPS Aided PNT (Position, Navigation and Timing) for Surface and Subsurface</p>	<p align="center">Acronym List</p> <p>OT: Operational Test</p> <p>OY: Option Year</p> <p>PAAA: Planar Array Antenna Assembly</p> <p>PDR: Preliminary Design Review</p> <p>PH: Phase</p> <p>PSWG: Product Support Working Group</p> <p>RFP: Request For Proposal</p> <p>SBR: Software Build Review</p> <p>SBT: Sea Based Terminal</p> <p>SDP-S: Signal Data Processor - Sierra</p> <p>SFR: System Functional Review</p> <p>SRR: System Requirements Review</p> <p>SSDS: Ship Self Defense System</p> <p>SS TRACKEX: Supersonic Tracking Exercise</p> <p>SSWG: Supply Support Working Group</p> <p>SWBLR: Software Baseline Review</p>	<p>TEMP: Test and Evaluation Master Plan</p> <p>TIM: Technical Interchange Meeting</p> <p>TRR: Technical Readiness Review</p>
--	---	--	--	---

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2039				
CSB/Gate 6 FY19	1	2019	1	2019
CSB/Gate 6 FY20	2	2020	2	2020
CEC AS	3	2020	3	2020
CEC AP Production Extensions	3	2020	3	2020
CEC AP CAB Production	3	2020	3	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
CSB/Gate 6 FY24	1	2024	1	2024
CSB/Gate 6 FY25	1	2025	1	2025
CEN SBR 18.3	1	2019	1	2019
CEN SBR 19.1	2	2019	2	2019
CEN SBR 20.1	2	2020	2	2020
CEN SBR 20.2	4	2020	4	2020
CEN SBR 20.3	1	2021	1	2021
CEN SBR 21.1	2	2021	2	2021
CEN SBR 21.2	4	2021	4	2021
CEN SBR 21.3	1	2022	1	2022
CEN SBR 22.1	2	2022	2	2022
CEN SBR 22.2	4	2022	4	2022
CEN SBR 22.3	1	2023	1	2023

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>
--	--	---

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CEN FSBR	2	2023	2	2023
CEC Technical Training SBR 18.3	1	2019	1	2019
CEC Aegis ACB 20 Delta SRR	1	2019	1	2019
CEC Aegis ACB 20 TIM 18.3	1	2019	1	2019
CEC Aegis ACB 20 TIM 19.1	2	2019	2	2019
CEC Aegis ACB 20 SFR	1	2020	1	2020
CEC Aegis ACB 20 TIM 19.3	1	2020	1	2020
CEC Aegis ACB 20 Delta SFR	2	2020	2	2020
CEC Aegis ACB 20 SBR 20.2	4	2020	4	2020
CEC Aegis ACB 20 SBR 20.3	1	2021	1	2021
CEC Aegis ACB 20 SBR 21.1	2	2021	2	2021
CEC Aegis ACB 20 SBR 21.2	4	2021	4	2021
CEC Aegis ACB 20 FSBR	1	2022	1	2022
CEC ELEKTRA SRR	3	2022	3	2022
CEC ELEKTRA SFR	2	2023	2	2023
CEC ELEKTRA SBR 23.2	4	2023	4	2023
CEC ELEKTRA SBR 23.3	1	2024	1	2024
CEC ELEKTRA SBR 24.1	2	2024	2	2024
CEC ELEKTRA SBR 24.2	4	2024	4	2024
CEC ELEKTRA SBR 24.3	1	2025	1	2025
CEC ELEKTRA SBR 25.1	2	2025	2	2025
CEC ELEKTRA SBR 25.2	4	2025	4	2025
CEC EASR SBT 19.1	2	2019	2	2019
CEC SSDS ACB 20 SBT	3	2019	3	2019
CEC SSDS ACB 20 Delta SFR	2	2020	2	2020

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>
--	--	---

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CEC SSDS ACB 20 SBR 20.2	4	2020	4	2020
CEC SSDS ACB 20 SBR 20.3	1	2021	1	2021
CEC SSDS ACB 20 SBR 21.1	2	2021	2	2021
CEC SSDS ACB 20 SBR 21.2	4	2021	4	2021
CEC SSDS ACB 20 SBR 21.3	1	2022	1	2022
CEC SSDS ACB 20 FSBP	2	2022	2	2022
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
SSWG FY 19	1	2019	1	2019
PSWG FY 19	3	2019	3	2019
SSWG FY 20	1	2020	1	2020
PSWG FY 20	3	2020	3	2020
SSWG FY 21	1	2021	1	2021
PSWG FY 21	3	2021	3	2021
SSWG FY 22	1	2022	1	2022
PSWG F Y22	3	2022	3	2022
SSWG FY 23	1	2023	1	2023
PSWG FY 23	3	2023	3	2023
SSWG FY 24	1	2024	1	2024
PSWG FY 24	3	2024	3	2024
SSWG FY 25	1	2025	1	2025
PSWG FY 25	3	2025	3	2025

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>
--	--	---

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CEC Cyber SBR 19.1	2	2019	2	2019
CEC Cyber SBR 19.2	4	2019	4	2019
CEC Cyber SBR 20.2	4	2020	4	2020
CEC Cyber SBR 20.3	1	2021	1	2021
CEC Cyber SBR 21.1	2	2021	2	2021
CEC Cyber SBR 21.2	4	2021	4	2021
CEC Cyber SBR 22.1	2	2022	2	2022
CEC Cyber SBR 22.2	4	2022	4	2022
CEC Cyber SBR 22.3	1	2023	1	2023
CEC Cyber SBR 23.1	2	2023	2	2023
CEC Cyber SBR 23.2	4	2023	4	2023
CEC Cyber SBR 23.3	1	2024	1	2024
CEC Cyber SBR 24.1	2	2024	2	2024
CEC Cyber SBR 24.2	4	2024	4	2024
CEC Cyber SBR 24.3	1	2025	1	2025
CEC Cyber SBR 25.1	2	2025	2	2025
CEC Cyber SBR 25.2	4	2025	4	2025
CEC FTIIP SRR	4	2019	4	2019
CEC Sole Source Production	1	2019	3	2019
CEC Competitive Production (Current)	2	2019	4	2023
CEC Production Sole Source Extension	4	2021	4	2023
RFP Release-CEC Future Competitive Production	4	2021	4	2021
CEC Future Competitive Production	1	2023	4	2025
CEC SDP-S Competitive Production (Current)	1	2019	2	2020
CEC SDP-S Competitive Production	1	2019	1	2023

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>
--	--	---

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CEC SDP-S Sole Source Extension	1	2022	4	2023
CEC SDP-S First SDP-S Delivery	1	2020	1	2020
CEC Sole Source DA/ES	1	2019	4	2019
CEC DA/ES Follow-On Competitive	3	2019	4	2024
CAB Antenna Competitive	1	2019	1	2021
CAB Antenna - Production Option Year (OY) 1	3	2020	1	2022
CAB Antenna - Production Option OY2	3	2021	1	2023
CAB Antenna - Production Option OY3	3	2022	4	2023
CAB RFP Release	4	2020	4	2020
CAB FoA Competitive Production	4	2021	4	2025
Plannar Antenna Arrary Assembly (PAAA) Production	3	2020	1	2025
NIFC-CA At Sea Event-6	2	2020	2	2020
NIFC-CA At Sea Event-7	3	2021	3	2021
NIFC-CA At Sea Event-8	1	2022	1	2022
NIFC-CA At Sea Event-9	3	2022	3	2022
NIFC-CA At Sea Event-10	4	2023	4	2023
NIFC-CA At Sea Event-11	1	2025	1	2025
NIFC-CA LFT-7 Event	3	2020	3	2020
NIFC-CA LFT-8 Event	1	2021	1	2021
NIFC-CA LFT-9 Event	4	2022	4	2022
NIFC-CA LFT-10 Event	3	2024	3	2024
NIFC-CA LFT-11 Event	3	2025	3	2025
OT-IIF Supersonic Trackex (SS TRX)	1	2020	1	2020
DT-D2 CEC USG-2B on CVN 78	1	2019	2	2021
DT-D5 CEC USG-3B on DSSC 3	1	2019	2	2019

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 2039 / <i>COOP Engagement</i>
--	--	---

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
OT-D5 CEC USG-3B on DSSC 3	2	2019	4	2019
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	2019	3	2020
OT-D3 USG-2B on DDG 1000	1	2021	3	2021
DT-Dx CEC USG-2B on Aegis ACB 20	4	2022	4	2024
DT-D4 Aegis 9.2	2	2020	4	2021
OT-D4 Aegis 9.2	4	2021	1	2022
DT CAB-S	4	2020	3	2024
DT-Dx CEC USG-2B on FFG (x)	1	2025	4	2025
CEC TEMP IPR #2	3	2019	3	2019
CEC Cyber SBR 21.3	1	2022	1	2022
CEC TEMP Rev 6 Change 1	2	2020	2	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>				Project (Number/Name) 3240 / <i>CEC Increment II</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
3240: <i>CEC Increment II</i>	0.000	0.000	18.428	41.265	-	41.265	50.619	42.188	39.023	35.953	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 582												

Note
FY 2020 funding of \$18.428 million for CEC Increment II efforts was realigned from Project 2039 to a new project code 3240. This is not a new start.

A. Mission Description and Budget Item Justification

CEC Capability Development Document (CDD) Increment II evolves Increment I capabilities by enhancing the current naval air defense and sensor network system capabilities through the expansion of network capacity as well as extension into other warfare mission domains. CEC CDD Increment II shall integrate new sensor types and track data sources into the network, such as surface search radars and passive detection sensors, as well as relevant data from other networks. CEC CDD Increment II shall accommodate more CUs and provide a more complete, robust, and resilient situational awareness picture, composite identification, and Integrated Fire Control (IFC), with assured communications for Integrated Air and Missile Defense (IAMD), surface warfare, and electronic mission warfare domains.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: CEC FAR-TERM INTEROPERABILITY IMPROVEMENT PROJECT (FTIIP)	0.000	6.600	6.700	0.000	6.700
Articles:	-	-	-	-	-
FY 2020 Plans: Complete fielding of Mode 5 IFF Improvements to Aegis 7.2, Aegis 9.2.0, SSDS Mk 2 Mod 1-4 CVN, LPD, LHD, and LHA Class Ships, and USMC CTN units. Continue integration coordination with Aegis, SSDS, E-2D, and USMC CTN programs. Complete Technology development of algorithms to support Mode S, ADS-B, and AIS integration into CEC. Continue Software development of CEC Software for Mode S, ADS-B and AIS integration. Commence Land Based Test Site testing of Mode S.					
FY 2021 Base Plans: Complete fielding of Mode 5 IFF Improvements to Aegis 7.2, Aegis 9.2.0, SSDS Mk 2 Mod 1-4 CVN, LPD, LHD, and LHA Class Ships, and USMC CTN units. Continue integration coordination with Aegis, SSDS, E-2D, and USMC CTN programs. Complete Technology development of algorithms to support Mode S and ADS-B integration into CEC. Continue Software development					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy				Date: February 2020	
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>		Project (Number/Name) 3240 / <i>CEC Increment II</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
of CEC Software for Mode S and ADS-B integration. Commence Land Based Test Site testing of Mode S and ADS-B integration into CEC.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to increased systems engineering required for transition to tactical systems.					
Title: NIFC HYPERSONIC					
Articles:					
	0.000	1.620	5.890	0.000	5.890
	-	-	-	-	-
FY 2020 Plans: Begin initial requirements development by conducting analysis against threats of interest to inform CEC and systems of systems design factors. Perform trade studies on candidate algorithm for inclusion in CEC composite tracking environment. Begin regression analysis to characterize required system hardware improvements to support existing capabilities plus NIFC Hypersonic improvements.					
FY 2021 Base Plans: Begin software development efforts to expand CEC speed, acceleration and altitude attributes for inclusion in the CEC Composite Tracking environment to address advanced stressing threats. Finalize regression analysis to characterize required system hardware improvements required to support existing capabilities plus NIFC Hypersonic improvements.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to transition from early development and risk reduction efforts to robust systems engineering efforts in FY 2021.					
Title: CRYPTO MODERNIZATION					
Articles:					
	0.000	5.748	7.437	0.000	7.437
	-	-	-	-	-
FY 2020 Plans: Complete a cryptographic obsolescence effort for the Signal Data Processor (SDP), specifically an Engineering Change Proposal (ECP), to mitigate a cryptographic chip quantity shortfall risk and maintain current CEC production requirements. Continue cryptographic modernization effort for Signal Data Processor (SDP) in					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020		
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 3240 / <i>CEC Increment II</i>			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
support of the significant increase in cryptographic performance that is required to enable MiND/CEN capability and protect the CEC network.					
FY 2021 Base Plans: Continue a cryptographic modernization effort for Signal Data Processor (SDP), to include development of a new Programmable Cryptographic Module (PCM), in support of the significant increase in cryptographic performance that is required to enable MiND/CEN capability and protect the CEC network. Conduct System Requirements Review (SRR) and conduct System Functional Review (SFR) for the new PCM.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to commencement of cryptographic modernization effort for SDP, to include development of a new Programmable Cryptographic Module (PCM).					
Title: NIFC Passive					
Articles:					
	0.000	4.460	14.438	0.000	14.438
	-	-	-	-	-
FY 2020 Plans: In Close Coordination with PEO IWS 2.0 and PMA-231, begin integration of Coordinated Radio Frequency [RF] Electronic Warfare [EW] (CRFEW) technology in CEC in support of developing an adaptive layer interface between CEC and the SLQ32(v)6. Begin robust systems engineering efforts for CEP and DDS software development to route EW data via the CEC DDS network, ingest EW data into the CEP track picture, and use EW data to enhance Composite ID recommendations to Combat Systems.					
FY 2021 Base Plans: In Close Coordination with PEO IWS 2.0 and PMA-231, continue integration of Coordinated Radio Frequency [RF] Electronic Warfare [EW] (CRFEW) technology in CEC in support of developing an adaptive layer interface between CEC and the SLQ32(v)6. Continue robust systems engineering efforts for CEP and DDS software development to route EW data via the CEC DDS network, ingest EW data into the CEP track picture, and use EW data to enhance Composite ID recommendations to Combat Systems.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020			
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 3240 / <i>CEC Increment II</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Increase is due to transition from early development and risk reduction efforts to robust systems engineering efforts in FY 2021.						
Title: FIRECAPE		0.000	0.000	1.800	0.000	1.800
Articles:		-	-	-	-	-
FY 2020 Plans: N/A						
FY 2021 Base Plans: Mature the engagement coordination S&T algorithms to include developing tactical code for programs of record, specifying PoR interfaces and testing via software and hardware in the loop.						
FY 2021 OCO Plans: N/A						
FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to start of development in FY 2021.						
Title: Communications-as-a-Service (CaaS)		0.000	0.000	5.000	0.000	5.000
Articles:		-	-	-	-	-
FY 2020 Plans: N/A						
FY 2021 Base Plans: Communications-as-a-Service (CaaS) transitions to the Program Office at the end of FY20. Conduct review of requirements and artifacts delivered by ONR with the design agent. Conduct preparations for System Requirements Review (SRR) and System Functional Review (SFR). Conduct robust systems engineering in conjunction with shipboard, airborne, and land-based combat systems, as well as Tactical Data Link (TDL) owners, to begin implementation of CaaS.						
FY 2021 OCO Plans: N/A						
FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to start of development in FY 2021.						
Accomplishments/Planned Programs Subtotals		0.000	18.428	41.265	0.000	41.265

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 3240 / <i>CEC Increment II</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy The CEC Increment II Acquisition Strategy (AS) is covered under the Cooperative Engagement Capability / COOP Engagement Project 2039 Acquisition Strategy (AS). Approval of the CEC Increment II Capability Development Document (CDD) is expected in FY19.		

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / Cooperative Engagement Capability	Project (Number/Name) 3240 / CEC Increment II
--	---	---

Fiscal Year	FY19				FY20				FY21				FY22				FY23				FY24				FY25					
	Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Acquisition Milestones			◆ CEC AC/FD Navy Gate 3/R3B				◆ CEC AC/FD Approva	◆ MS B												◆ MSC										
Program Milestones						◆ SRR		◆ SFR																						
CEC Far Term Interoperability Improvement Project (FTIIP)									◆ HW PDR	◆ HW CDR																				
Naval Integrated Fire Control Passive (NIFC P)										◆ SBR 20.3	◆ SBR 21.1	◆ SBR 21.2	◆ SBR 21.3	◆ SBR 22.1	◆ SBR 22.2	◆ SBR 22.3	◆ SBR 23.1	◆ SBR 23.2	◆ SBR 23.3	◆ SBR 24.1	◆ SBR 24.2	◆ SBR 24.3	◆ SBR 25.1							◆ FSBR
CEC Naval Integrated Fire Control (NIFC) Hypersonic (HS)										◆ SBR 20.3	◆ SBR 21.1	◆ SBR 21.2	◆ SBR 21.3	◆ SBR 22.1	◆ SBR 22.2	◆ SBR 22.3	◆ SBR 23.1	◆ SBR 23.2	◆ SBR 23.3	◆ SBR 24.1	◆ SBR 24.2	◆ SBR 24.3	◆ SBR 25.1							◆ FSBR
FIRECAPE													◆ SBR 21.3	◆ SBR 22.1	◆ SBR 22.2	◆ SBR 22.3	◆ SBR 23.1	◆ SBR 23.2	◆ SBR 23.3	◆ SBR 24.1	◆ SBR 24.2	◆ SBR 24.3	◆ SBR 25.1							◆ FSBR
CEC Comms and Interoperability for IF (CIIF) Comms as a Service NFC										◆ SBR 20.3	◆ SBR 21.1	◆ SBR 21.2	◆ SBR 21.3	◆ SBR 22.1	◆ SBR 22.2	◆ SBR 22.3	◆ SBR 23.1	◆ SBR 23.2	◆ SBR 23.3	◆ SBR 24.1	◆ SBR 24.2									

1/3/2020

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 3240 / <i>CEC Increment II</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3240				
CEC AC/FD Navy Gate 3 / R3B	3	2019	3	2019
CEC AC/FD Approval	2	2020	2	2020
MS B	3	2020	3	2020
MS C	4	2023	4	2023
CEC FTIIP SBR 20.3	1	2021	1	2021
CEC FTIIP SBR 21.1	2	2021	2	2021
CEC FTIIP SBR 21.2	4	2021	4	2021
CEC FTIIP SBR 21.3	1	2022	1	2022
CEC FTIIP SBR 22.1	2	2022	2	2022
CEC FTIIP SBR 22.2	4	2022	4	2022
CEC FTIIP SBR 22.3	1	2023	1	2023
CEC FTIIP FSBR	2	2023	2	2023
NIFC Passive SBR 20.3	1	2021	1	2021
NIFC Passive SBR 21.1	2	2021	2	2021
NIFC Passive SBR 21.2	4	2021	4	2021
NIFC Passive SBR 21.3	1	2022	1	2022
NIFC Passive SBR 22.1	2	2022	2	2022
NIFC Passive SBR 22.2	4	2022	4	2022
NIFC Passive SBR 22.3	1	2023	1	2023
NIFC Passive SBR 23.1	2	2023	2	2023
NIFC Passive SBR 23.2	4	2023	4	2023

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 3240 / <i>CEC Increment II</i>
--	--	--

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
NIFC Passive SBR 23.3	1	2024	1	2024
NIFC Passive SBR 24.1	2	2024	2	2024
NIFC Passive SBR 24.2	4	2024	4	2024
NIFC Passive SBR 24.3	1	2025	1	2025
NIFC Passive SBR 25.1	2	2025	2	2025
NIFC Passive FSBR	4	2025	4	2025
CEC NIFC Hypersonic SBR 20.3	1	2021	1	2022
CEC NIFC Hypersonic SBR 21.1	2	2021	2	2022
CEC NIFC Hypersonic SBR 21.2	4	2021	4	2022
CEC NIFC Hypersonic SBR 21.3	1	2022	1	2022
CEC NIFC Hypersonic SBR 22.1	2	2022	2	2022
CEC NIFC Hypersonic SBR 22.2	4	2022	4	2022
CEC NIFC Hypersonic SBR 22.3	1	2023	1	2023
CEC NIFC Hypersonic SBR 23.1	2	2023	2	2023
CEC NIFC Hypersonic SBR 23.2	4	2023	4	2023
CEC NIFC Hypersonic SBR 23.3	1	2024	4	2024
CEC NIFC Hypersonic SBR 24.1	2	2024	2	2024
CEC NIFC Hypersonic SBR 24.2	4	2024	4	2024
CEC NIFC Hypersonic SBR 24.3	1	2025	1	2025
CEC NIFC Hypersonic SBR 25.1	2	2025	2	2025
CEC NIFC Hypersonic FSBR	4	2025	4	2025
CEC FIRECAPE SBR 21.3	1	2022	1	2022
CEC FIRECAPE SBR 22.1	2	2022	2	2022
CEC FIRECAPE SBR 22.2	4	2022	4	2022
CEC FIRECAPE SBR 22.3	1	2023	1	2023

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / <i>Cooperative Engagement Capability</i>	Project (Number/Name) 3240 / <i>CEC Increment II</i>
--	--	--

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CEC FIRECAPE SBR 23.1	2	2023	2	2023
CEC FIRECAPE SBR 23.2	4	2023	4	2023
CEC FIRECAPE SBR 23.3	1	2024	1	2024
CEC FIRECAPE SBR 24.1	2	2024	2	2024
CEC FIRECAPE SBR 24.2	4	2024	4	2024
CEC FIRECAPE SBR 24.3	1	2025	1	2025
CEC FIRECAPE SBR 25.1	2	2025	2	2025
CEC FIRECAPE FSBP 25.2	4	2025	4	2025
CEC CIIF CaaS FNC SBR 20.3	1	2021	1	2021
CEC CIIF CaaS FNC SBR 21.1	2	2021	2	2021
CEC CIIF CaaS FNC SBR 21.2	4	2021	4	2021
CEC CIIF CaaS FNC SBR 21.3	1	2022	1	2022
CEC CIIF CaaS FNC SBR 22.1	2	2022	2	2022
CEC CIIF CaaS FNC SBR 22.2	4	2022	4	2022
CEC CIIF CaaS FNC SBR 22.3	1	2023	1	2023
CEC CIIF CaaS FNC SBR 23.1	2	2023	2	2023
CEC CIIF CaaS FNC SBR 23.2	4	2023	4	2023
CEC CIIF CaaS FNC SBR 23.3	1	2024	1	2024
CEC CIIF CaaS FNC SBR 24.1	2	2024	2	2024
CEC CIIF CaaS FNC SBR 24.2	4	2024	4	2024