Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy											Date: February 2015	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603658N *I Cooperative Engagement*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	433.767	52.539	37.310	76.247	-	76.247	81.475	81.489	85.265	81.253	Continuing	Continuing
2039: *COOP Engagement*	433.767	52.539	37.310	76.247	-	76.247	81.475	81.489	85.265	81.253	Continuing	Continuing
Program 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, USA Aerostat, 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.

Each military Service funds CEC development for their combat systems. The CEC Program Office oversees CEC development for all services.

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, directive system providing a precision gridlocking and high throughput of data. The CEP is a high capacity distributed processor that processes force levels of data in near real-time. The data is passed to the ship's combat system as high quality data for which the ship can cue its onboard sensors or use the data to engage targets without actually tracking them.

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 with lower life cycle costs (procurement, installation, and maintenance) and reduced weight (on mast and below deck). 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-2, RDT&E Budget Item Justification: PB 2016 Navy	Date: February 2015
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603658N *I Cooperative Engagement*

In support of Interoperability, CEC will continue to work collaboratively with other Combat Systems programs (AWS, E-2C, E-2D, SSDS, CDLMS, C2P, and SGS/AC) to develop the software and implement design corrections and system changes. CEC will analyze the interactions of interoperability issues and impacts and provide collaboration for development of CEC and other system changes, develop the long term solutions, including the engineering process to validate small parts of developmental software ideas, and utilize M&S to validate design approaches in the systems engineering realm.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	53.572	43.578	73.429	-	73.429
Current President's Budget	52.539	37.310	76.247	-	76.247
Total Adjustments	-1.033	-6.268	2.818	-	2.818
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-6.268			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.033	-			
• Program Adjustments	-	-	3.420	-	3.420
• Rate/Misc Adjustments	-	-	-0.602	-	-0.602

Change Summary Explanation

FY 2014 reduction reflect SBIR reductions.

FY 2015 reduction reflect $6.268 million for Common Array Block Antenna (CAB) and Program Execution adjustments.

FY 2016 funding request was reduced by $6.380 million to account for the availability of prior year execution balances.

FY 2016 increases of $9.800 million reflect additions for CEC/E-2D Dual Tracks Interoperability and CEC-AEGIS ACB 16/SM-6 BLK IA Integration (Naval Integrated Fire Control-Counter Air (NIFC-CA).

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy									Date: February 2015			
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603658N / *Cooperative Engagement*				Project (Number/Name) 2039 / *COOP Engagement*			
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
2039: *COOP Engagement*	433.767	52.539	37.310	76.247	-	76.247	81.475	81.489	85.265	81.253	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: E-2D	3.000	-	4.500	-	4.500
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Completed debug and develop corrections to software issues found during OT-IIIF. Completed Track File concurrence and Dual Tracks.					
FY 2015 Plans: N/A					
FY 2016 Base Plans: Commence corrections of E-2D/CEC dual track issues created as a result of the E-2D radar integration with the Mission Computer to allow coordinated defense against raid attacks. Resolving the dual tracks issue will enhance Aegis and E-2D air defense over the horizon engagement capability.					
FY 2016 OCO Plans: N/A					
Title: B/L 2.1 INTEGRATION AND FOT&E TESTING	4.700	7.300	6.186	-	6.186
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Completed Developmental Testing (DT-D1A) of AN/USG-2B with Aegis Baseline 9 Cruisers. Completed testing and certification of midterm interoperability enterprise upgrade (AMIIP) on Aegis, SSDS, and E-2C Hawkeye 2000 platforms. Commence Developmental Testing (DT-D1C) of AN/USG-2B with Aegis Baseline 9 Destroyers.					
FY 2015 Plans: Support developmental testing of NIFC-CA. Complete Operational Testing (OT-D1A) of AN/USG-2B with Aegis Baseline 9 Cruisers. Complete Developmental Testing (DT-D1C) of AN/USG-2B with Aegis Baseline 9 Destroyers. Commence Developmental Testing (DT-D2) of AN/USG-2B with CVN78. Commence Developmental Testing (DT-D3) of AN/USG-2B with DDG 1000.					
FY 2016 Base Plans: Complete Operational testing (OT-D1C) of AN/USG-2B with Aegis Baseline 9. Continue Developmental Testing (DT-D2) of AN/USG-2B with CVN 78. Continue Developmental Testing (DT-D3) of AN/USG-2B with DDG 1000. Continue support of developmental testing of NIFC-CA. Commence testing of mid-term interoperability enterprise upgrade Accelerated Midterm Interoperability Improvement Project (AMIIP) on E-2D.					
FY 2016 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
Title: SYSTEM IMPROVEMENTS	12.646	9.280	20.079	-	20.079
Articles:	-	-	-	-	-

FY 2014 Accomplishments:
Supported Joint Track Management Capability (JTMC) development planning. Continued CEC system improvements at Land Based Test Sites (LBTS) to accurately reflect CEC equipment in the fleet, monitor IA posture and develop Engineering Change Proposal (ECP) to significantly enhance Information Assurance (IA) posture and program protection.

FY 2015 Plans:
Continue system improvements at Land Based Test Sites (LBTS) to accurately reflect CEC equipment in the fleet. Support development of a CEC Adaptive Layer for Advanced Combat Baseline 16 (ACB-16) to include supporting Technical Interchange Meetings (TIM), Modeling and Simulation updates, and inital Wrap Around Simulation Program Development. Conduct CEC ACB-16 System Requirement Review (SRR) and System Functional Review (SFR). Continue to monitor IA posture and program protection and begin software development of IA specific ECPs.

FY 2016 Base Plans:
Significantly ramp up efforts to meet the rigor of the ACB-16 Preliminary Design Review (PDR); deliver CEC to CSEDS with a CEC system supporting the ACB-16 combat system prototype. Coincident with that, integrate with ACB-16's updated sensors, find and resolve trouble reports and conduct associated analysis. Ramp up integration efforts for CEC with the CVN 78 combat system and also ramp up integration efforts with the DDG 1000 combat system. Conduct multiple integration events with the CVN 78 Combat system, including SSDS and Dual Band Radar (DBR) at the Wallops Island Land Based Test Sites and multiple integration events with the DDG 1000 combat system, including the TSCE combat system, and Multi-Function Radar, also at the Wallops Island Land Based Test Sites. The integration with DBR and Multi-Function Radar (MFR) are first of their kind and require significant integration work with a radar system that is different from any previously used by CEC. Conduct certification of Information Assurance (IA) Engineering Change Proposals (ECP) to the entire CEC baseline and begin fielding. Commence development efforts for Fire Control Loop Improvement Project (FCLIP) Phase 2. Coordinate FCLIP improvements with host combat system and other combat system elements. Integrate the updated FCLIP software with other elements of the combat system. Prepare for testing of FCLIP improvements in FY17 and commence fielding of FCLIP improvements in FY18. Update CEC element certification on all platforms whenever a new feature is put into the CEC baseline. This involves testing to garner evidence, analyzing the results and then obtaining permission from the CEC Element certification panel and then

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
from the Combat System certification panel(s) to field the update. This is done for seven versions of Aegis, (6.1, 6.3, 7.1.3, 7.1R, 8.1, 9) five versions of SSDS (MK 2, Mods 1-4 and 6). ***FY 2016 OCO Plans:*** N/A					
Title: FIELD ACTIVITIES	8.229	6.324	8.409	-	8.409
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continued field activity support of CEC development and fielding efforts (i.e. SE/IA, Technical Direction Agent, In-Service Engineering, Integrated Logistics Support planning) and program management support. ***FY 2015 Plans:*** Continue field activity support of CEC development and fielding efforts (i.e. SE/IA, Technical Direction Agent, In-Service Engineering, Integrated Logistics Support planning) and program management support. ***FY 2016 Base Plans:*** Continue field activity support of CEC development and fielding efforts (i.e. SE/IA, Technical Direction Agent, In-Service Engineering, Integrated Logistics Support planning) and program management support. Commence development of CEC Increment II. This encompasses increased funding to the Technical Direction Agent (TDA) for the following work breakdown structure: threat analysis, system analysis and concept development required for a Capabilities Development Document (CDD). The TDA will conduct the critical systems of system analysis supporting capability development; warfighting functionality integration against emerging threats; operational need for larger networks; and improved network performance. ***FY 2016 OCO Plans:*** N/A					
Title: NETWORK ENABLED ELECTRONIC DEFENSE SYSTEM (NEEDS)	11.137	7.331	8.900	-	8.900
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Completed formal System Requirement Review (SRR). Developed NEEDS requirements, algorithyms, and M&S capabilities to respond to emergent operational needs to provide improved surveillance, tracking, ID and engagement capabilities. Commenced analysis, definition and development of NEEDS capability, system architecture and design, external interface requirements, development of prototype implementation, evaluation					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
of real time processing load, development of WASP capabilities, and development of recorded data playback capability, and support for TIMs, Interface Control Working Groups (ICWG) and In-Process Reviews (IPR). ***FY 2015 Plans:*** Continue analysis, definition and development of NEEDS capability, system architecture and design, external interface requirements, development of prototype implementation, evaluation of real time processing load, development of WASP capabilities, and development of recorded data playback capability, and support for TIMs, Interface Control Working Groups (ICWG) and In-Process Reviews (IPR). Conduct Preliminary Design Review (PDR). Refine NEEDS algorithyms, and Modeling & Simulation (M&S) capabilities. Develop Technical Performance Measures (TPM) and update the CEC Critical Test Integration (CTI) Notebook. Conduct robust data collect and continue analysis, definition and development of NEEDS capability, system architecture and design, and evaluation of prototype implementations and real-time processing load in Software Integration Laboratory (SIL) environments using recorded real world system data. ***FY 2016 Base Plans:*** Continue analysis, definition and development of NEEDS capability, system architecture and design, external interface requirements, development of prototype implementation, evaluation of real time processing load, development of WASP capabilities, and development of recorded data playback capability, and support for TIMs, Interface Control Working Groups (ICWG) and In-Process Reviews (IPR). Conduct Critical Design Review (CDR). Begin iterative Code Unit and Test (CUT) software development process. Continue to collect real world data and in Software Integration Laboratory (SIL) facilities replay real world data to refine initial NEEDS Software Module and update M&S capabilities. Continue to refine Technical Performance Measures (TPM) and CEC Critical Test Integration (CTI) Notebook. ***FY 2016 OCO Plans:*** N/A					
Title: LINK 16/INTEROPERABILITY	2.800	0.800	5.200	-	5.200
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continued to field AMIIP upgrade on Aegis ships. Test, debug, certify and field the AMIIP enterprise upgrade for SSDS ships and E-2C aircraft. Commence development of far term interoperability enterprise upgrade. ***FY 2015 Plans:*** Continue development of far term interoperability enterprise upgrade. ***FY 2016 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Commence robust collaborative design efforts with Shipboard Gridlock System with Automated Correlation (SGS/AC) and Link-16 along with coordination with Aegis, SSDS, E-2C, E-2D, and CAC2S combat systems. Allocate requirements, develop the design, refine our system of systems modeling and simulation capability, conduct analysis and begin developmental testing at Land Based Test Site facilities with deliveries of engineering loads, analysis and field developmental testing in close coordination with SPAWAR networks, NAVAIR aircraft, USMC combat systems, USN carriers, Amphibious ships, Aegis Cruisers and Aegis Destroyers. ***FY 2016 OCO Plans:*** N/A					
Title: COMMON ARRAY BLOCK (CAB) ANTENNA	7.277	6.275	7.466	-	7.466
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Conducted System Functional Review (SFR) and System Requirement Review (SRR). Continued to refine critical Gallium Nitride (GaN) based Monolithic Microwave Integrated Circuit (MMIC) Design. Refined USMC CAB-Expeditionary antenna maintainability requirements to enhance warfighter ability to maintain the system at the USMC Squadron level. ***FY 2015 Plans:*** Conduct Preliminary Design Review (PDR) and develop and begin test of Engineering Design Model (EDM) CAB-Ship and CAB-Expeditionary antenna systems to inform system trades, refine system models, optimize thermal capacities, and refine path for final design. ***FY 2016 Base Plans:*** Conduct Critical Design Review (CDR) and complete testing and evaluation of Engineering Design Models (EDM) of the CAB-Ship and CAB-Expeditionary antennas. Conduct Production Readiness Review (PRR) and Test Readiness Review (TRR). Begin system qualification functional and environmental testing. Begin initial fabrication of Pre-Production Antenna systems. ***FY 2016 OCO Plans:*** N/A					
Title: NIFC-CA	-	-	2.457	-	2.457
Articles:	-	-	-	-	-
FY 2014 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A ***FY 2015 Plans:*** N/A ***FY 2016 Base Plans:*** Support Increment I refinement against increasingly challenging test cases at White Sands Missile Range (WSMR) and At-Sea with test support, model updates, post-test analysis, and software updates. Also begin development of NIFC-CA Increment 2 capability with Interface Design Description (IDD) refinement, model updates and development of initial software loads for test at WSMR. ***FY 2016 OCO Plans:*** N/A					
Title: AIR AND MISSILE DEFENSE RADAR (AMDR)	2.750	-	13.050	-	13.050
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continued development of CEC/AMDR Interface Requirements Specification (IRS) and began development of AMDR/CEP Interface Design Description (IDD), design of CEC Adaptive Layer code, initial development of CEC Wrap Around Simulator Program (WASP) requirements, support Technical Interchange Meetings (TIM), CEC/ AMDR IPRs, Combat System Interface Support Equipment (CSISE) System Requirement Review (SRR) and AMDR System Preliminary Design Review (PDR). ***FY 2015 Plans:*** N/A ***FY 2016 Base Plans:*** Continue support for Technical Interchange Meetings (TIM) and CEC/AMDR IPRs. Continue development of AMDR model and Adaptation Layer code for CEP WASP. Continue WASP Accreditation process. Conduct CEC Test Readiness Review (TRR) for AMDR Integration. Continue development of AMDR Interface Design Description (IDD). Develop Cooperative Engagement Processor(CEP) Kernel changes and software updates. Assist in development of DT & OT test plans for AMDR Milestone C. Provide Information Assurance assessment of new CEP interfaces. Support Combat System Interface Support Equipment (CSISE) Critical Design Review CDR. Develop and Deliver initial CEC Sensor Adaptive Layer with SA-CEP and WASP capability to Pacific Missile Radar Facility (PMRF). Support Combat System Interface Support Equipment					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
testing (CSISE)and conduct analysis. Provide support to pre ISE Testing CIT-1 & 2 Grooming and Product Acceptance Test, ISE DT Phase 1, and ISE DT Phase 2. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	52.539	37.310	76.247	-	76.247

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• SCN: *Navy, SCN*	6.400	11.400	11.600	-	11.600	18.500	18.200	12.200	12.400	44.457	431.588
• APN/0204152N: *Navy, APN*	13.062	13.314	13.578	-	13.578	16.619	14.126	11.527	11.758	-	298.905
• OPN/2606: *CEC*	29.592	33.939	25.695	-	25.695	29.336	29.983	30.704	31.349	-	939.416
• RDT&E/0206313M: *USMC*	7.484	1.506	0.686	-	0.686	0.571	0.299	0.678	0.689	-	27.733
• RDT&E,A/0102419A: *JLENS*	0.475	-	-	-	-	-	-	-	-	-	42.317
• O&M,N/0206626M: *USMC*	3.595	2.475	0.994	-	0.994	1.263	1.230	1.272	1.293	-	14.074
• PMC/0206313M: *USMC*	-	0.380	-	-	-	-	-	-	-	-	1.160
• OPN/0960: *CG/MOD*	-	9.000	-	-	-	5.900	6.000	-	-	-	52.537
• OPN/0900: *DDG/MOD*	4.700	0.030	0.040	-	0.040	-	-	-	-	-	56.581

Remarks

D. Acquisition Strategy

CEC Acquisition Strategy (AS) approved by OSD (AT&L) on 19 January 2010. CEC Acquistion 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 - New contract will be competitively awarded in 2Qtr FY2015.
CEC DA/ES contract will be competitively awarded 1Qtr FY2019.

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.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*

- 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 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603658N / *Cooperative Engagement*	Project (Number/Name) 2039 / *COOP Engagement*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 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	98.585	11.464	Nov 2013	6.663	Feb 2015	12.863	Nov 2015	-		12.863	Continuing	Continuing	Continuing
TDA	C/CPFF	JHU/APL : Laurel, MD	58.185	6.692	Nov 2013	6.574	Feb 2015	12.503	Nov 2015	-		12.503	Continuing	Continuing	Continuing
SI/DA	C/CPAF	General Dynamics : Fairfax, VA	23.979	-		-		-		-		-	-	23.979	-
SI/DA	C/CPAF	Award Fees : Not Specified	2.903	-		-		-		-		-	-	2.903	-
DDG 1000	C/CPAF	Raytheon : Massachusetts	10.983	-		-		-		-		-	-	10.983	-
DDG 1000	C/CPAF	Award Fees : Not Specified	0.447	-		-		-		-		-	-	0.447	-
NIFC-CA Integration	TBD	Various : Not Specified	39.342	-		-		2.457	Dec 2015	-		2.457	Continuing	Continuing	Continuing
In-Service Engineering Activity	WR	NSWC : Port Hueneme, CA	2.506	1.284	Nov 2013	0.848	Nov 2014	1.925	Nov 2015	-		1.925	Continuing	Continuing	Continuing
Software Support Activity/ SEIA	WR	NSWC : Dahlgren, VA	14.285	2.257	Nov 2013	1.119	Nov 2014	2.357	Nov 2015	-		2.357	Continuing	Continuing	Continuing
Production Engineering Activity	WR	NSWC : Crane, IN	5.694	-		-		-		-		-	-	5.694	-
JTRS	TBD	Various : Not Specified	8.500	-		-		-		-		-	-	8.500	-
Various	TBD	Miscellaneous : Not Specified	29.133	-		-		2.840	Nov 2015	-		2.840	Continuing	Continuing	Continuing
NAVSSI	WR	SPAWAR : San Diego, CA	0.368	-		-		-		-		-	-	0.368	-
Certification	MIPR	NSA : Fort Meade, MD	1.200	-		-		-		-		-	Continuing	Continuing	Continuing
Certification	WR	SPAWAR : Charleston, SC	0.930	-		-		-		-		-	-	0.930	-
Joint Exercises	WR	Various : Not Specified	3.744	-		-		-		-		-	-	3.744	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
LBTS Testing	WR	CDSA Damneck : Virginia Beach, VA	6.070	0.425	Nov 2013	0.500	Nov 2014	0.500	Nov 2015	-		0.500	Continuing	Continuing	Continuing
LBTS Testing	WR	SCSC : Wallops Island, VA	5.330	0.553	Nov 2013	0.700	Jan 2015	0.700	Nov 2015	-		0.700	Continuing	Continuing	Continuing
E-2D Integration	TBD	Various : Not Specified	41.258	3.000	Nov 2013	-		4.500	Nov 2015	-		4.500	Continuing	Continuing	Continuing
MSI/NCCT	MIPR	Wright Patterson AFB : Dayton, OH	1.228	-		-		-		-		-	-	1.228	-
Common Array Block Development	C/CPFF	Various : Not Specified	11.900	7.277	Jan 2014	6.275	Jan 2015	7.466	Dec 2015	-		7.466	Continuing	Continuing	Continuing
NEEDS	C/CPFF	Various : Not Specified	6.160	11.137	Dec 2013	7.331	Feb 2015	8.900	Dec 2015	-		8.900	Continuing	Continuing	Continuing
AMDR	C/CPFF	Various : Not Specified	0.500	2.750	Dec 2013	-		13.050	Dec 2015	-		13.050	Continuing	Continuing	Continuing
JTMC	C/CPFF	Raytheon : St. Petersburg	0.000	1.000	Dec 2013	-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	373.230	47.839		30.010		70.061		-		70.061	-	-	-

Remarks

Explanations for the use of "WR and Reqn" in the Contract method & type" column are as follows:
- When using "WR", these documents are sent to Navy activities who obligate funding on their vehicles to accomplish tasking for CEC. These activities are the only ones who can accomplish these tasks for the program.
- E-2D Integration/NIFC-CA "Various/TBDs" are for classified programs and several document types.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test/ACB Support	C/CPFF	Raytheon : St. Petersburg, FL	3.197	0.271	Nov 2013	0.630	Feb 2015	0.530	Nov 2015	-		0.530	Continuing	Continuing	Continuing
Test/ACB Support	C/CPFF	JHU/APL : Laurel, MD	0.759	0.271	Nov 2013	0.630	Feb 2015	0.530	Nov 2015	-		0.530	Continuing	Continuing	Continuing
Test Support	WR	NRL : Washington, DC	0.313	-		-		-		-		-	-	0.313	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test/ACB Support	WR	NSWC : Port Hueneme, CA	18.880	1.661	Nov 2013	2.050	Feb 2015	1.795	Nov 2015	-		1.795	Continuing	Continuing	Continuing
Air Operations Test Support	WR	NAVAIR (PMA207) : Patuxent River, MD	8.411	0.226	Nov 2013	0.525	Feb 2015	0.425	Nov 2015	-		0.425	Continuing	Continuing	Continuing
Test Data Reduction Analysis	WR	NWAS : Corona, CA	12.805	1.524	Nov 2013	1.732	Feb 2015	1.477	Nov 2015	-		1.477	Continuing	Continuing	Continuing
Test Support	WR	COMOPTEVFOR : Norfolk, VA	9.446	0.605	Nov 2013	1.405	Feb 2015	1.151	Nov 2015	-		1.151	Continuing	Continuing	Continuing
Test/ACB Support	WR	NSWC : Dahlgren, VA	1.296	0.142	Nov 2013	0.328	Feb 2015	0.278	Nov 2015	-		0.278	Continuing	Continuing	Continuing
		Subtotal	55.107	4.700		7.300		6.186		-		6.186	-	-	-

Remarks

Explanation for the use of "WR" in the "Contract method & type" column are as follows:

When using "WR", these documents are sent to Navy activities who obligate funding on their vehicles to accomplish tasking for CEC. These activities are the only ones who can accomplish these tasks for the program.

Test support also includes the following funding for ACB integration support:
FY14 - $3.0M

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/FFP	Booz Allen & Hamilton : Washington, DC	5.070	-		-		-		-		-	-	5.070	-
Program Management Support	C/FFP	Tech Marine Business : Washington, DC	0.360	-		-		-		-		-	-	0.360	-
		Subtotal	5.430	-		-		-		-		-	-	5.430	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
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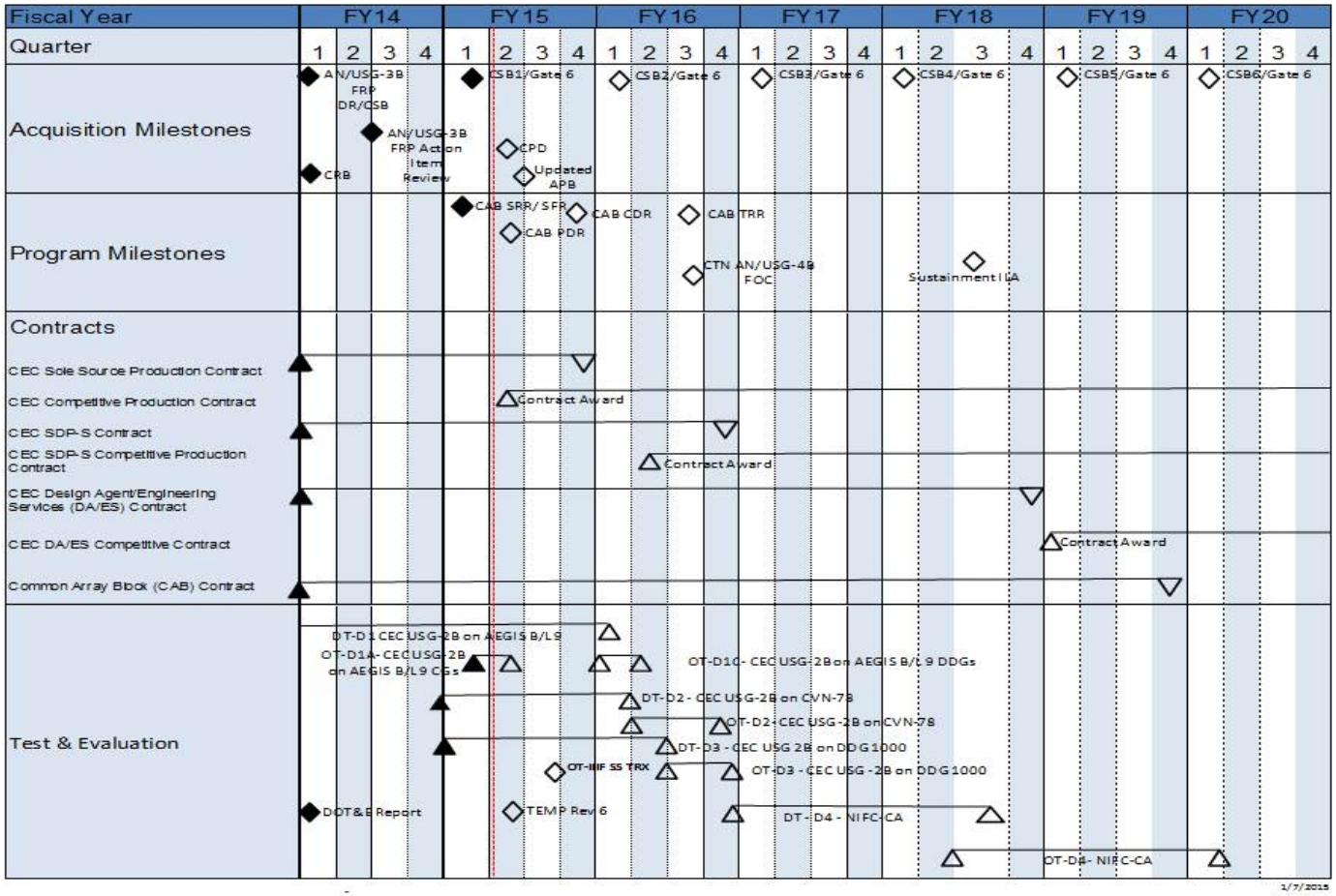
	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	433.767	52.539		37.310		76.247		-		76.247	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*



Acronym List

APB: Acquisition Program Baseline
AN/USG-2: CEC shipboard designation
AN/USG-3: CEC airborne designation
CAB: Common Array Block
CDR: Critical Design Review
CEC: Cooperative Engagement Capability
CPD: Capabilities Production Document
CRB: Cost Review Board
CSB: Configuration Steering Board
DOT&E: Director of Operational Test and Evaluation
DR: Decision Review
DT/OT: Development Test/Operational Test
FOC: Full Operational Capability
FRP: Full Rate Production
ILA: Independent Logistics Assessment
IOC: Initial Operational Capabilities
NIFC-CA: Naval Integrated Fire Control - Counter Air
PDR: Preliminary Design Review
PRR: Production Readiness Review
R3B: Resources Requirements Review Board
SS TRX: Supersonic Tracking Exercise
TEMP: Test & Evaluation Master Plan

Actual Milestone Completion
Planned Milestone Completion
Actual Event Start/Completion
Planned Event Start/Completion

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603658N / *Cooperative Engagement*	**Project (Number/Name)** 2039 / *COOP Engagement*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2039				
AN/USG-3B FRP DR/CSB	1	2014	1	2014
CRB	1	2014	1	2014
AN/USG-3B FRP Action Item Review	2	2014	2	2014
CSB1 - Gate 6	1	2015	1	2015
CSB2 - Gate 6	1	2016	1	2016
CSB3 - Gate 6	1	2017	1	2017
CSB4 - Gate 6	1	2018	1	2018
CSB5 - Gate 6	1	2019	1	2019
CSB6 - Gate 6	1	2020	1	2020
CPD	2	2015	2	2015
Updated APB	2	2015	2	2015
CAB SRR/SFR	1	2015	1	2015
CAB PDR	2	2015	2	2015
CAB CDR	4	2015	4	2015
CAB TRR	3	2016	3	2016
CTN AN/USG-4B FOC	3	2016	3	2016
Sustainment ILA	3	2018	3	2018
CEC Sole Source Production Contract	1	2014	4	2015
CEC Competitive Production Contract	2	2015	4	2020
CEC SDP-S Contract	1	2014	4	2016
CEC SDP-S Competitive Production Contract	2	2016	4	2020
CEC DA/ES Contract	1	2014	4	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CEC DA/ES Competitive Contract	1	2019	4	2020
Common Array Block (CAB) Contract	1	2014	4	2019
DT-D1 CEC USG-2B on AEGIS B/L 9	1	2014	1	2016
OT-D1A CEC USG-2B on AEGIS B/L 9 CGs	1	2015	2	2015
OT-D1C CEC USG-2B on AEGIS B/L 9 DDGs	1	2016	2	2016
DT-D2 CEC USG-2B on CVN-78	4	2014	1	2016
OT-D2 CEC USG-2B on CVN-78	1	2016	4	2016
DT-D3 CEC USG 2B on DDG 1000	4	2014	2	2016
OT-IIIF SS TRX	3	2015	3	2015
OT-D3 CEC USG-2B on DDG-1000	2	2016	4	2016
DOT&E Report	1	2014	1	2014
TEMP Rev 6	2	2015	2	2015
DT-D4-NIFC-CA	4	2016	3	2018
OT-D4-NIFC-CA	2	2018	1	2020