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Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-582



*Signal Data Processor with Sierra Chip
(SDP-S)*



*Planar Array Antenna Assembly
(PAAA)*

Cooperative Engagement Capability (CEC)

As of FY 2020 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Sensitivity Originator

No originator information is available at this time.

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name

Cooperative Engagement Capability (CEC)

DoD Component

Navy

Joint Participants

FMS; United States Marine Corps

Responsible Office

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References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated April 3, 2002

Approved APB

Component Acquisition Executive (CAE) Approved Acquisition Program Baseline (APB) dated January 19, 2019

Mission and Description

The Cooperative Engagement Capability (CEC) increases overall Naval Air Defense capabilities by integrating sensors and weapon assets into a single, integrated, real-time network which expands the battlespace; enhances situational awareness; increases depth of fire and enables longer intercept ranges; and improves decision and reaction times.

CEC is a real-time sensor netting system that enables high quality situational awareness and Integrated Fire Control (IFC) capability, which revolutionizes Naval Air Defense by providing improved accuracy, continuity, and identification consistency. This sensor netting system significantly improves Naval Carrier and Expeditionary Strike Group's Area Air Defense capabilities by extracting and distributing sensor-derived information such that the superset of this data is available to all participating CEC Cooperating Units (CUs). CEC fuses the distributed data from shipboard, airborne, Composite Tracking Network (CTN) ground mobile units, and select coalition partners into a single fire control quality air track picture. Radar measurement data from individual CUs within a CEC equipped force are transmitted to other CUs using the Line-Of-Sight Data Distribution System. A variety of automated network configurations are possible since CEC terminals provide highly directional, point-to-point data exchanges.

The CEC system distributes data between sensor and weapon assets to create a single, distributed, integrated air picture that supports and enables IFC. Individual sensors on all platforms in a CEC network are used in a cooperative manner as a distributed system to obtain track information to form a single, real-time composite track. This real-time composite tracking enables CEC to support Theater Air and Missile Defense allowing coordination of Naval and Joint sensor system assets among CEC equipped ships, aircraft, and land platforms and joint operational access to engage cruise missiles that threaten joint forces in a denied access environment.

CEC consists of the following variants:

AN/USG-2: Shipboard designation of CEC deployed aboard the Aegis Guided Missile Cruisers (CG), Aegis Guided Missile Destroyers (DDG), Aircraft Carriers (CVN) and Amphibious Transport Dock (LPD)/Amphibious Assault (LHD) ships

AN/USG-3: Airborne designation of CEC deployed in E-2C and E-2D aircraft

AN/USG-4: United States Marine Corps (USMC) CTN platform

AN/USG-6/7/8/10: FMS

AN/USG-9: CEC with USMC Common Aviation Command and Control System

The Digital Warfare Office Tactical Networking Implementation began in FY 2019. CEC will lead a cross functional team with participation from key naval tactical network organizations and fleet representation to conduct initial systems engineering and experimentation for improving tactical data dissemination to support further development of IFC concepts. This includes investigation of Communications-As-A-Service implementation across multiple radios, waveforms, and network architectures; and early Software-in-the-Loop and Land Based Test Site experimentation to formulate the solution toward the development of Fleet Tactical Grid and Distributed Maritime Operations.

System engineering for FIRECAPE, ELECTRA, and CEC Hypersonic Tracks will begin FY 2020.

Executive Summary

Program Highlights Since Last Report

The CEC program has been in FRP for the AN/USG-2 (shipboard variant) since CY 2002 and for the AN/USG-3B (E-2D airborne variant) since CY 2014. Development efforts continue in order to keep pace with the security threats and ensure producibility. The program remains focused on ensuring compatibility and interoperability.

The Navy developed a phased approach to resolve interoperability issues.

- Phase 1 (Complete) - Near Term – Break Identification Racetrack. Installed/Completed FY 2012.
- Phase 2 (Complete) - Accelerated Mid-Term Interoperability Improvement Project (AMIIP) (FY 2011 - FY 2017), which further improves interoperability, and is certified within Aegis, Ship Self Defense System, and E-2C Hawkeye 2000 combat systems. Original AMIIP Project completed and fielded. AMIIP design extended to E-2D, USMC Common Aviation Command and Control System (CAC2S), and recommended for inclusion in DDG 1000.
 - E-2D AMIIP Development is complete. Testing is in progress for delivery beginning 1Q FY 2020. The delivery of AMIIP software is tied to delivery of E- 2D System Software Configuration (DSSC-3).
 - CAC2S Phase 2 implemented AMIIP capabilities during the design phase and has fielded the AMIIP improvements to all CAC2S systems.
 - DDG 1000 does not currently include the AMIIP features in their design. Initial discussions are in progress between CEC and DDG 1000 programs for inclusion of AMIIP, but no firm timeline or development plan has been established.
- Phase 3 (In Development) – Far Term Interoperability Improvement Project (Identification Friend of Foe (IFF) Mode 5/S and Automated Dependent Surveillance- Broadcast (ADS-B). CEC is currently on track to field mode 5 updates to all CEC equipped platforms by CY 2020. IFF Mode S/ADS-B capability development commenced in FY 2019 with Fleet fielding approximately FY 2023.

Compatibility issues continue to be addressed through Software Maintenance builds that are planned for annual fielding and commenced in FY 2018. Known priority software issues are being addressed.

CEC continues to follow an evolutionary acquisition process, delivering capability in increments of hardware and/or software upgrades. This evolutionary approach acknowledges the need for future capability improvements to pace evolving threats.

System engineering for FIRECAPE, ELECTRA, and CEC Hypersonic Tracks will begin FY 2020.

A sole source extension was awarded to Design Agent/Engineering Services (DA/ES) in September 2018. The contract was extended to September 29, 2019 with a FY 2020 option for three months. The DA/ES competitive follow-on is scheduled to award in 4Q FY 2019.

The Common Array Block (CAB) Pre-Production Unit (PPU) repricing proposal was negotiated with Raytheon. The PPU CLINs were executed in November 2018 and reflected a substantial price increase over previous proposals and SEA 05C cost estimates. Three CAB-Expeditionary and two CAB-Shipboard PPUs are being procured for development use and an option was added for an additional CAB-S PPU that will be adapted for ship use.

Quantities changed from 300 to 361 due to the addition of 24 CAB-Shipboard Other Procurement, Navy and 38 Shipbuilding and Conversion, Navy (SCN) that includes DDGs, CVNs, LPD Flight II, Frigates and the removal of one SCN from LPD Flight II, previously known as LX(R) Program.

There are no significant software-related issues with this program at this time.

| History of Significant Developments Since Program Initiation | |
|--|---|
| History of Significant Developments Since Program Initiation | |
| Date | Significant Development Description |
| May 1995 | CEC Acquisition Decision Milestone CEC Milestone (MS) I/II Navy Program Decision - Approved to proceed into EMD |
| July 1996 | Preliminary Design Review CEC Shipboard |
| December 1996 | Critical Design Review (CDR) CEC Shipboard |
| May 1997 | CDR CEC Airborne Transceiver |
| December 1997 | Initial Operation Testing and Evaluation (IOT&E) of AN/USG-2 equipment |
| February 1998 | AN/USG-2 equipment LRIP award |
| April 1998 | Initial production of AN/USG-2 equipment was awarded |
| April 2002 | CEC MS III ADM - Approved for the AN/USG-2 Surface-based CEC system for MS III for FRP |
| April 2002 | CEC MS III ADM - Approved the FY 2002 and FY 2003 AN/USG-3 Airborne-based CEC System LRIP quantity (5 units each year) |
| April 2002 | CEC MS III ADM - Approved the updated APB |
| May 2005 | CEC achieves FOC |
| January 2009 | CEC Acquisition Decision Milestone Program Decision Memorandum - Approved an increase in the total LRIP quantity for CEC program of an additional 14 AN/USG-3A systems |
| February 2009 | CEC Acquisition Decision Milestone Program Decision Memorandum - Approved the second LRIP of up to six (6) complete AN/USG-3B systems |
| February 2010 | CEC Acquisition Decision Milestone Program Decision Memorandum - Approved the procurement of up to two (2) additional SDP-S components, to support the E-2D Advanced Hawkeye LRIP |
| August 2010 | CEC Acquisition Decision Milestone Program Decision Memorandum - Authorized the Navy to procure one additional CEC AN/USG-3B system as part of the second LRIP Lot, increasing the total CEC LRIP Lot 2 quantity authorized to 7 |
| December 2011 | CEC Acquisition Decision Milestone Program Decision Memorandum - Authorized the Navy to procure one additional CEC AN/USG-3B unit as part of the FY 2011 LRIP Lot 2, approved via ADM on February 12, 2010. This decision now authorizes procurement of up to eight complete AN/UGS-3B units as CEC LRIP Lot 2. Also authorize an increase in the total CEC AN/USG-3A/B LRIP quantity to not more than 16 units |
| May 2012 | CEC Acquisition Decision Milestone Program Decision Memorandum - Approved the LRIP Lot 3 for up to five (5) complete AN/USG-3B systems. Designate the CEC program as an ACAT 1C program with the Navy as the lead Component |
| May 2012 | The USD(AT&L) memorandum of May 25, 2012 - Re-designated CEC from an ACAT 1D to an ACAT 1C program with the Navy as lead component and authorized the Navy to procure the third increment of LRIPs for the CEC Airborne variant |
| April 2014 | CEC Acquisition Decision Memorandum - Authorized entrance into FRP for the CEC AN/USG-3B (E-2D Airborne Variant) System in support of E-2D Advance Hawkeye FRP |

Threshold Breaches

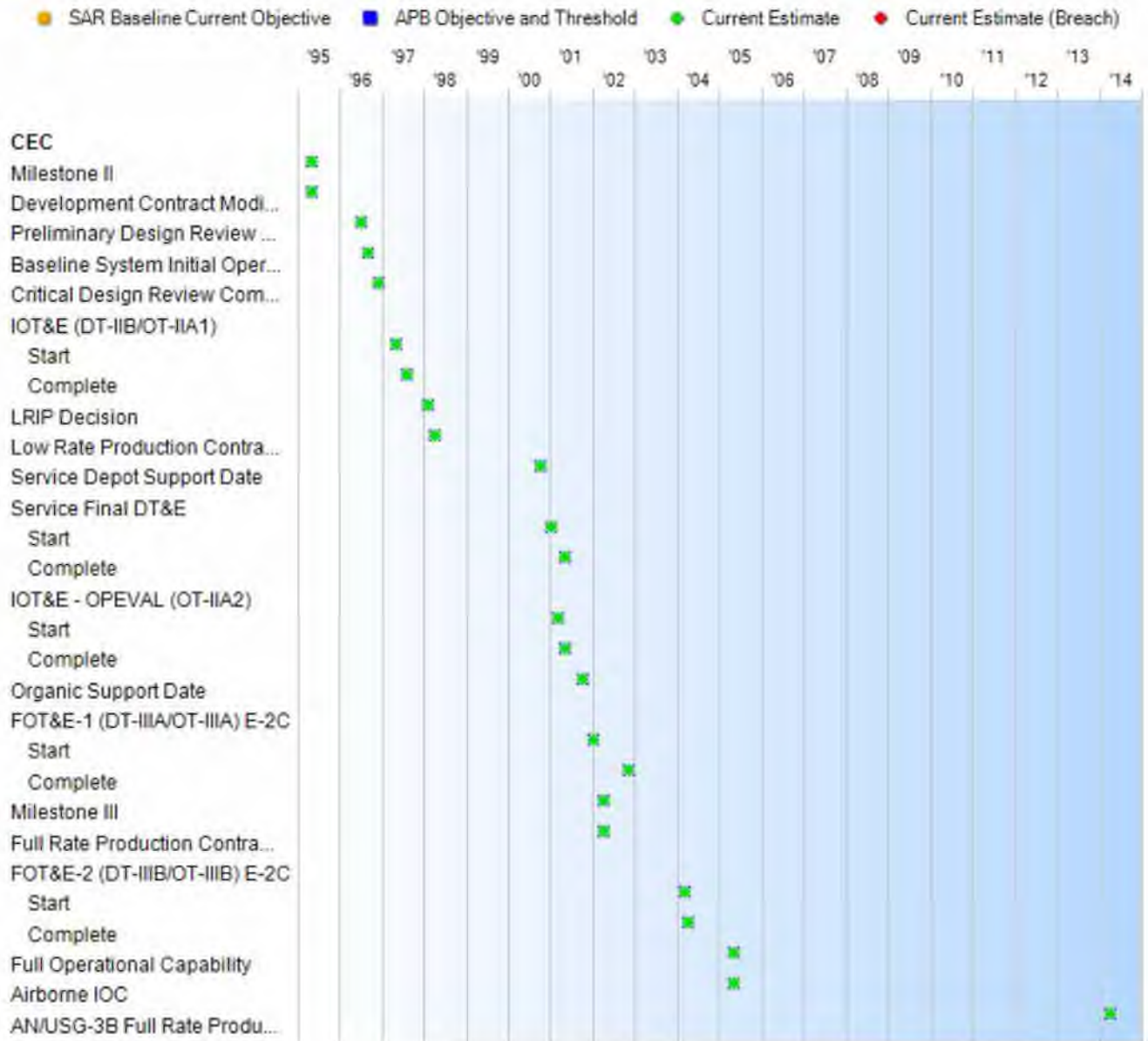
APB Breaches

- Schedule
- Performance
- Cost
 - RDT&E
 - Procurement
 - MILCON
 - Acq O&M
- O&S Cost
- Unit Cost
 - PAUC
 - APUC

Nunn-McCurdy Breaches

- Current UCR Baseline
 - PAUC None
 - APUC None
- Original UCR Baseline
 - PAUC None
 - APUC None

Schedule



| Schedule Events | | | | |
|--|----------------------------------|--|----------|------------------|
| Events | SAR Baseline Production Estimate | Current APB Production Objective/Threshold | | Current Estimate |
| Milestone II | May 1995 | May 1995 | May 1995 | May 1995 |
| Development Contract Modification | May 1995 | May 1995 | May 1995 | May 1995 |
| Preliminary Design Review Complete | Feb 1996 | Jul 1996 | Jul 1996 | Jul 1996 |
| Baseline System Initial Operational Capability | Sep 1996 | Sep 1996 | Sep 1996 | Sep 1996 |
| Critical Design Review Complete | Aug 1996 | Dec 1996 | Dec 1996 | Dec 1996 |
| IOT&E (DT-IIIB/OT-IIA1) | | | | |
| Start | May 1997 | May 1997 | May 1997 | May 1997 |
| Complete | Aug 1997 | Aug 1997 | Aug 1997 | Aug 1997 |
| LRIP Decision | Dec 1997 | Feb 1998 | Feb 1998 | Feb 1998 |
| Low Rate Production Contract Award | Apr 1998 | Apr 1998 | Apr 1998 | Apr 1998 |
| Service Depot Support Date | Oct 2000 | Oct 2000 | Oct 2000 | Oct 2000 |
| Service Final DT&E | | | | |
| Start | Jul 2000 | Jan 2001 | Jan 2001 | Jan 2001 |
| Complete | Nov 2000 | May 2001 | May 2001 | May 2001 |
| IOT&E - OPEVAL (OT-IIA2) | | | | |
| Start | Sep 2000 | Mar 2001 | Mar 2001 | Mar 2001 |
| Complete | Nov 2000 | May 2001 | May 2001 | May 2001 |
| Organic Support Date | Oct 2001 | Oct 2001 | Oct 2001 | Oct 2001 |
| FOT&E-1 (DT-IIIA/OT-IIIA) E-2C | | | | |
| Start | Jan 2002 | Jan 2002 | Jan 2002 | Jan 2002 |
| Complete | Aug 2002 | Nov 2002 | Nov 2002 | Nov 2002 |
| Milestone III | Apr 2002 | Apr 2002 | Apr 2002 | Apr 2002 |
| Full Rate Production Contract Award | May 2002 | Apr 2002 | Apr 2002 | Apr 2002 |
| FOT&E-2 (DT-IIIB/OT-IIIB) E-2C | | | | |
| Start | Mar 2003 | Mar 2004 | Mar 2004 | Mar 2004 |
| Complete | Jul 2003 | Apr 2004 | Apr 2004 | Apr 2004 |
| Full Operational Capability | Dec 2003 | May 2005 | May 2005 | May 2005 |
| Airborne IOC | Dec 2003 | May 2005 | May 2005 | May 2005 |
| AN/USG-3B Full Rate Production Decision for E-2D | N/A | Apr 2014 | Apr 2014 | Apr 2014 |

| |
|----------------------------|
| Change Explanations |
|----------------------------|

None

Notes

AN/USG-2 FRP and AN/USG-3 LRIP occurred at Milestone III in April 2002.

AN/USG-2 FRP Contract Award occurred April 2002.

AN/USG-2 FOC occurred May 2005.

AIR IOC and FOC events scheduled at the same time.

Performance

| Performance Characteristics | | | | |
|---|---|---|---|---|
| SAR Baseline Production Estimate | Current APB Production Objective/Threshold | Demonstrated Performance | Current Estimate | |
| Operational Availability | | | | |
| >=.95 | N/A | N/A | N/A | N/A |
| Interoperability | | | | |
| Information Exchange Requirements (IER) | | | | |
| 100% of top-level IERs | 100% of top-level IERs. | 100% of top-level IERs designated critical | 100% of top-level IERs designated critical | 100% of top-level IERs designated critical |
| Track File Consistency | | | | |
| Integration will improve track file consistency in each host system | CEC integration will improve track file consistency as measured in each host system | CEC integration must not degrade track file consistency (0% degradation)as measured in each host system | CEC integration will improve track file consistency as measured in each host system | CEC integration will improve track file consistency in each host system |

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

CEC Increment 1 CPD as validated by JROC memorandum dated August 12, 2016 which replaces the 2011 Change 1 CEC ORD, which was rescinded.

Change Explanations

None

Notes

CEC Security Classification change in December 2017 classified the Operational Availability (Ao) Objective and Threshold.

Track to Budget

RDT&E

| Appn | BA | PE | | |
|------|----------------|----|--|-----------------|
| Navy | 1319 | 07 | 0206313M | |
| | Project | | Name | |
| | 2273 | | Air Ops Cmd & Control (C2) Sys | (Shared) |
| | | | Notes: Shared with Composite Tracking Network | |
| Navy | 1319 | 04 | 0603658N | |
| | Project | | Name | |
| | 2039 | | Cooperative Engagement Capability (CEC) | (Sunk) |
| | | | Notes: Reported Sunk as of FY 2017 PB. | |
| | 2616 | | Cooperative Engagement Capability (CEC) | (Sunk) |
| Navy | 1319 | 05 | 0604234N | |
| | Project | | Name | |
| | 3051 | | Advanced Hawkeye | (Shared) (Sunk) |
| | | | Notes: Shared with Advanced Hawkeye Program | |
| | 5EJ | | Advanced Hawkeye | (Shared) (Sunk) |
| | | | Notes: Shared with Advanced Hawkeye Program | |
| Navy | 1319 | 07 | 0607658N | |
| | Project | | Name | |
| | 2039 | | COOP Engagement | |
| | 9999 | | Congressional Adds | (Sunk) |
| | | | Notes: Reported sunk as of FY 2020 PB. | |
| Army | 2040 | 07 | 0102419A | |
| | Project | | Name | |
| | 55 | | Army Patriot JLENS | (Shared) (Sunk) |
| | | | Notes: Shared with Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System | |

Procurement

| Appn | BA | PE | | |
|------|------------------|----|--|-----------------|
| Navy | 1109 | 01 | 0206313M | |
| | Line Item | | Name | |
| | 4640 | | Air Operations C2 Systems | (Shared) |
| | | | Notes: Shared with Composite Tracking Network | |
| Navy | 1109 | 04 | 0206313M | |
| | Line Item | | Name | |
| | 4644 | | Common Aviation Command | (Shared) (Sunk) |

& Control System (CAC2S)

| | | | |
|------|------------------|---|--------------------------------------|
| Navy | 1506 | 01 | 0204152N |
| | Line Item | | Name |
| | 0195 | | E-2D AHE (Shared) |
| | Notes: | Shared with E-2C Hawkeye | |
| Navy | 1611 | 02 | 0204112N |
| | Line Item | | Name |
| | 2001 | | Carrier Replacement Program (Shared) |
| | Notes: | Shared with CVN Replacement Program | |
| | 2086 | | CVN Refueling Overhauls (Shared) |
| | Notes: | Shared with Refueling Complex Overhaul | |
| Navy | 1611 | 02 | 0204222N |
| | Line Item | | Name |
| | 2119 | | DDG 1000 (Shared) (Sunk) |
| | Notes: | Shared with DDG 1000 Program | |
| Navy | 1611 | 05 | 0204228N |
| | Line Item | | Name |
| | 2119 | | DDG 1000 (Shared) (Sunk) |
| | Notes: | Shared with DDG 1000 Program | |
| Navy | 1611 | 02 | 0204222N |
| | Line Item | | Name |
| | 2122 | | DDG-51 (Shared) |
| | Notes: | Shared with DDG-51 Program | |
| Navy | 1611 | 02 | 0204420N |
| | Line Item | | Name |
| | 2128 | | FFG-Frigate (Shared) |
| Navy | 1611 | 03 | 0204410N |
| | Line Item | | Name |
| | 3010 | | LPD Flight II (Shared) |
| Navy | 1611 | 03 | 0204411N |
| | Line Item | | Name |
| | 3035 | | LHD-1 (Shared) (Sunk) |
| | Notes: | Shared with Amphibious Assault Ships | |
| | 3036 | | LPD-17 (Shared) |
| | Notes: | Shared with Amphibious Assault Ships | |
| | 3041 | | LHA Replacement (Shared) |
| | Notes: | Shared with Amphibious Assault Ships | |
| Navy | 1810 | 01 | 0204228N |
| | Line Item | | Name |
| | 0900 | | DDG Modernization (Shared) (Sunk) |
| | Notes: | Shared with DDG Modernization Program - Reported as sunk as of 2017 PB. | |
| Navy | 1810 | 01 | 0204162N |

| Line Item | Name |
|-----------|------|
|-----------|------|

0960 CG Modernization (Shared)

Notes: Shared with Cruiser Modernization Program.

Navy 1810 02 0204228N

| Line Item | Name |
|-----------|------|
|-----------|------|

2606 Cooperative Engagement
Capability (CEC)

Navy 1810 02 0204221N

| Line Item | Name |
|-----------|------|
|-----------|------|

2606 Cooperative Engagement (Shared) (Sunk)
Capability (CEC)

Notes: Shared in PB19

Cost and Funding

Cost Summary

| Total Acquisition Cost | | | | | | | |
|------------------------|----------------------------------|--|--------|------------------|----------------------------------|----------------------------------|------------------|
| Appropriation | BY 2002 \$M | | | BY 2002 \$M | TY \$M | | |
| | SAR Baseline Production Estimate | Current APB Production Objective/Threshold | | Current Estimate | SAR Baseline Production Estimate | Current APB Production Objective | Current Estimate |
| RDT&E | 2028.1 | 3326.9 | 3662.3 | 3289.5 | 1946.5 | 3666.6 | 3625.6 |
| Procurement | 2095.2 | 2104.2 | 2314.6 | 2104.6 | 2364.2 | 2749.5 | 2784.6 |
| Flyaway | -- | -- | -- | 1786.0 | -- | -- | 2328.8 |
| Recurring | -- | -- | -- | 1786.0 | -- | -- | 2328.8 |
| Non Recurring | -- | -- | -- | 0.0 | -- | -- | 0.0 |
| Support | -- | -- | -- | 318.6 | -- | -- | 455.8 |
| Other Support | -- | -- | -- | 318.6 | -- | -- | 455.8 |
| Initial Spares | -- | -- | -- | 0.0 | -- | -- | 0.0 |
| MILCON | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Acq O&M | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 4123.3 | 5431.1 | N/A | 5394.1 | 4310.7 | 6416.1 | 6410.2 |

Current APB Cost Estimate Reference

Naval Sea Systems Command - Cost Engineering and Industrial Analysis Group (NAVSEA 05C) changes to CEC APB Change 2 (Production) of November 27, 2017 that are identified in NAVSEA letter 7000 Ser 05C/037 dated December 13, 2018

Cost Notes

There were no risks identified in the NAVSEA letter 7000 Ser 05C/037 dated December 13, 2018.

| Total Quantity | | | |
|----------------|----------------------------------|------------------------|------------------|
| Quantity | SAR Baseline Production Estimate | Current APB Production | Current Estimate |
| RDT&E | 16 | 30 | 30 |
| Procurement | 256 | 328 | 331 |
| Total | 272 | 358 | 361 |

Quantity Notes

The quantity change from Current APB Production 358 to Current Estimate 361 is due to the addition of 3 SCN ship board units.

Cost and Funding

Funding Summary

| Appropriation Summary | | | | | | | | | |
|---|--------|---------|---------|---------|---------|---------|---------|-------------|--------|
| FY 2020 President's Budget / December 2018 SAR (TY\$ M) | | | | | | | | | |
| Appropriation | Prior | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| RDT&E | 2873.7 | 130.1 | 110.3 | 125.6 | 139.1 | 118.4 | 127.2 | 1.2 | 3625.6 |
| Procurement | 1760.4 | 87.2 | 91.2 | 82.2 | 93.4 | 98.4 | 122.5 | 449.3 | 2784.6 |
| MILCON | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Acq O&M | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| PB 2020 Total | 4634.1 | 217.3 | 201.5 | 207.8 | 232.5 | 216.8 | 249.7 | 450.5 | 6410.2 |
| PB 2019 Total | 4627.9 | 223.6 | 206.3 | 222.9 | 192.3 | 187.2 | 59.0 | 0.0 | 5719.2 |
| Delta | 6.2 | -6.3 | -4.8 | -15.1 | 40.2 | 29.6 | 190.7 | 450.5 | 691.0 |

| Quantity Summary | | | | | | | | | | |
|---|---------------|-------|---------|---------|---------|---------|---------|---------|-------------|-------|
| FY 2020 President's Budget / December 2018 SAR (TY\$ M) | | | | | | | | | | |
| Quantity | Undistributed | Prior | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| Development | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| Production | 0 | 207 | 11 | 11 | 10 | 12 | 13 | 15 | 52 | 331 |
| PB 2020 Total | 30 | 207 | 11 | 11 | 10 | 12 | 13 | 15 | 52 | 361 |
| PB 2019 Total | 30 | 206 | 14 | 11 | 13 | 13 | 7 | 6 | 0 | 300 |
| Delta | 0 | 1 | -3 | 0 | -3 | -1 | 6 | 9 | 52 | 61 |

Cost and Funding

Annual Funding By Appropriation

| Annual Funding | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|
| 1319 RDT&E Research, Development, Test, and Evaluation, Navy | | | | | | | |
| Fiscal Year | Quantity | TY \$M | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program |
| 1994 | -- | -- | -- | -- | -- | -- | 203.2 |
| 1995 | -- | -- | -- | -- | -- | -- | 154.1 |
| 1996 | -- | -- | -- | -- | -- | -- | 256.4 |
| 1997 | -- | -- | -- | -- | -- | -- | 224.7 |
| 1998 | -- | -- | -- | -- | -- | -- | 200.8 |
| 1999 | -- | -- | -- | -- | -- | -- | 189.8 |
| 2000 | -- | -- | -- | -- | -- | -- | 179.8 |
| 2001 | -- | -- | -- | -- | -- | -- | 173.4 |
| 2002 | -- | -- | -- | -- | -- | -- | 106.7 |
| 2003 | -- | -- | -- | -- | -- | -- | 107.1 |
| 2004 | -- | -- | -- | -- | -- | -- | 91.1 |
| 2005 | -- | -- | -- | -- | -- | -- | 114.0 |
| 2006 | -- | -- | -- | -- | -- | -- | 99.8 |
| 2007 | -- | -- | -- | -- | -- | -- | 55.0 |
| 2008 | -- | -- | -- | -- | -- | -- | 53.4 |
| 2009 | -- | -- | -- | -- | -- | -- | 44.2 |
| 2010 | -- | -- | -- | -- | -- | -- | 65.8 |
| 2011 | -- | -- | -- | -- | -- | -- | 59.6 |
| 2012 | -- | -- | -- | -- | -- | -- | 60.0 |
| 2013 | -- | -- | -- | -- | -- | -- | 52.5 |
| 2014 | -- | -- | -- | -- | -- | -- | 60.0 |
| 2015 | -- | -- | -- | -- | -- | -- | 42.6 |
| 2016 | -- | -- | -- | -- | -- | -- | 73.8 |
| 2017 | -- | -- | -- | -- | -- | -- | 78.7 |
| 2018 | -- | -- | -- | -- | -- | -- | 90.2 |
| 2019 | -- | -- | -- | -- | -- | -- | 130.1 |
| 2020 | -- | -- | -- | -- | -- | -- | 110.3 |
| 2021 | -- | -- | -- | -- | -- | -- | 125.6 |
| 2022 | -- | -- | -- | -- | -- | -- | 139.1 |
| 2023 | -- | -- | -- | -- | -- | -- | 118.4 |
| 2024 | -- | -- | -- | -- | -- | -- | 127.2 |
| 2025 | -- | -- | -- | -- | -- | -- | 1.2 |
| Subtotal | 22 | -- | -- | -- | -- | -- | 3588.6 |

| Annual Funding | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|
| 1319 RDT&E Research, Development, Test, and Evaluation, Navy | | | | | | | |
| Fiscal Year | Quantity | BY 2002 \$M | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program |
| 1994 | -- | -- | -- | -- | -- | -- | 224.2 |
| 1995 | -- | -- | -- | -- | -- | -- | 166.8 |
| 1996 | -- | -- | -- | -- | -- | -- | 272.9 |
| 1997 | -- | -- | -- | -- | -- | -- | 236.3 |
| 1998 | -- | -- | -- | -- | -- | -- | 209.4 |
| 1999 | -- | -- | -- | -- | -- | -- | 195.7 |
| 2000 | -- | -- | -- | -- | -- | -- | 182.7 |
| 2001 | -- | -- | -- | -- | -- | -- | 173.8 |
| 2002 | -- | -- | -- | -- | -- | -- | 105.9 |
| 2003 | -- | -- | -- | -- | -- | -- | 104.7 |
| 2004 | -- | -- | -- | -- | -- | -- | 86.7 |
| 2005 | -- | -- | -- | -- | -- | -- | 105.7 |
| 2006 | -- | -- | -- | -- | -- | -- | 89.7 |
| 2007 | -- | -- | -- | -- | -- | -- | 48.3 |
| 2008 | -- | -- | -- | -- | -- | -- | 46.0 |
| 2009 | -- | -- | -- | -- | -- | -- | 37.6 |
| 2010 | -- | -- | -- | -- | -- | -- | 55.2 |
| 2011 | -- | -- | -- | -- | -- | -- | 48.8 |
| 2012 | -- | -- | -- | -- | -- | -- | 48.3 |
| 2013 | -- | -- | -- | -- | -- | -- | 41.8 |
| 2014 | -- | -- | -- | -- | -- | -- | 47.1 |
| 2015 | -- | -- | -- | -- | -- | -- | 33.1 |
| 2016 | -- | -- | -- | -- | -- | -- | 56.3 |
| 2017 | -- | -- | -- | -- | -- | -- | 58.9 |
| 2018 | -- | -- | -- | -- | -- | -- | 66.2 |
| 2019 | -- | -- | -- | -- | -- | -- | 93.6 |
| 2020 | -- | -- | -- | -- | -- | -- | 77.8 |
| 2021 | -- | -- | -- | -- | -- | -- | 86.8 |
| 2022 | -- | -- | -- | -- | -- | -- | 94.3 |
| 2023 | -- | -- | -- | -- | -- | -- | 78.7 |
| 2024 | -- | -- | -- | -- | -- | -- | 82.9 |
| 2025 | -- | -- | -- | -- | -- | -- | 0.8 |
| Subtotal | 22 | -- | -- | -- | -- | -- | 3257.0 |

| Annual Funding 2040 RDT&E Research, Development, Test, and Evaluation, Army | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|
| Fiscal Year | Quantity | TY \$M | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program |
| 1999 | -- | -- | -- | -- | -- | -- | 9.7 |
| 2000 | -- | -- | -- | -- | -- | -- | -- |
| 2001 | -- | -- | -- | -- | -- | -- | -- |
| 2002 | -- | -- | -- | -- | -- | -- | -- |
| 2003 | -- | -- | -- | -- | -- | -- | -- |
| 2004 | -- | -- | -- | -- | -- | -- | -- |
| 2005 | -- | -- | -- | -- | -- | -- | -- |
| 2006 | -- | -- | -- | -- | -- | -- | -- |
| 2007 | -- | -- | -- | -- | -- | -- | -- |
| 2008 | -- | -- | -- | -- | -- | -- | -- |
| 2009 | -- | -- | -- | -- | -- | -- | 8.6 |
| 2010 | -- | -- | -- | -- | -- | -- | 5.2 |
| 2011 | -- | -- | -- | -- | -- | -- | 5.0 |
| 2012 | -- | -- | -- | -- | -- | -- | 5.6 |
| 2013 | -- | -- | -- | -- | -- | -- | 2.4 |
| 2014 | -- | -- | -- | -- | -- | -- | 0.5 |
| Subtotal | 8 | -- | -- | -- | -- | -- | 37.0 |

| Annual Funding 2040 RDT&E Research, Development, Test, and Evaluation, Army | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|
| Fiscal Year | Quantity | BY 2002 \$M | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program |
| 1999 | -- | -- | -- | -- | -- | -- | 10.0 |
| 2000 | -- | -- | -- | -- | -- | -- | -- |
| 2001 | -- | -- | -- | -- | -- | -- | -- |
| 2002 | -- | -- | -- | -- | -- | -- | -- |
| 2003 | -- | -- | -- | -- | -- | -- | -- |
| 2004 | -- | -- | -- | -- | -- | -- | -- |
| 2005 | -- | -- | -- | -- | -- | -- | -- |
| 2006 | -- | -- | -- | -- | -- | -- | -- |
| 2007 | -- | -- | -- | -- | -- | -- | -- |
| 2008 | -- | -- | -- | -- | -- | -- | -- |
| 2009 | -- | -- | -- | -- | -- | -- | 7.3 |
| 2010 | -- | -- | -- | -- | -- | -- | 4.3 |
| 2011 | -- | -- | -- | -- | -- | -- | 4.1 |
| 2012 | -- | -- | -- | -- | -- | -- | 4.5 |
| 2013 | -- | -- | -- | -- | -- | -- | 1.9 |
| 2014 | -- | -- | -- | -- | -- | -- | 0.4 |
| Subtotal | 8 | -- | -- | -- | -- | -- | 32.5 |

| Annual Funding 1109 Procurement Procurement, Marine Corps | | | | | | | |
|--|----------|----------------------------------|---|-----------------------------|------------------|------------------|------------------|
| Fiscal Year | Quantity | TY \$M | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program |
| 2008 | -- | -- | 3.0 | -- | 3.0 | -- | 3.0 |
| 2009 | 10 | 16.0 | -- | -- | 16.0 | -- | 16.0 |
| 2010 | -- | -- | -- | -- | -- | -- | -- |
| 2011 | -- | -- | 11.3 | -- | 11.3 | -- | 11.3 |
| 2012 | -- | -- | 3.8 | -- | 3.8 | -- | 3.8 |
| 2013 | -- | -- | -- | -- | -- | -- | -- |
| 2014 | -- | -- | -- | -- | -- | -- | -- |
| 2015 | -- | -- | 1.9 | -- | 1.9 | -- | 1.9 |
| 2016 | -- | -- | 0.7 | -- | 0.7 | -- | 0.7 |
| 2017 | -- | -- | 1.2 | -- | 1.2 | -- | 1.2 |
| 2018 | -- | -- | 8.4 | -- | 8.4 | -- | 8.4 |
| 2019 | -- | -- | 8.1 | -- | 8.1 | -- | 8.1 |
| 2020 | -- | -- | 3.6 | -- | 3.6 | -- | 3.6 |
| Subtotal | 10 | 16.0 | 42.0 | -- | 58.0 | -- | 58.0 |

| Annual Funding | | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|--|
| 1109 Procurement Procurement, Marine Corps | | | | | | | | |
| Fiscal Year | Quantity | BY 2002 \$M | | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program | |
| 2008 | -- | -- | 2.6 | -- | 2.6 | -- | 2.6 | |
| 2009 | 10 | 13.5 | -- | -- | 13.5 | -- | 13.5 | |
| 2010 | -- | -- | -- | -- | -- | -- | -- | |
| 2011 | -- | -- | 9.2 | -- | 9.2 | -- | 9.2 | |
| 2012 | -- | -- | 3.0 | -- | 3.0 | -- | 3.0 | |
| 2013 | -- | -- | -- | -- | -- | -- | -- | |
| 2014 | -- | -- | -- | -- | -- | -- | -- | |
| 2015 | -- | -- | 1.5 | -- | 1.5 | -- | 1.5 | |
| 2016 | -- | -- | 0.5 | -- | 0.5 | -- | 0.5 | |
| 2017 | -- | -- | 0.9 | -- | 0.9 | -- | 0.9 | |
| 2018 | -- | -- | 6.1 | -- | 6.1 | -- | 6.1 | |
| 2019 | -- | -- | 5.8 | -- | 5.8 | -- | 5.8 | |
| 2020 | -- | -- | 2.5 | -- | 2.5 | -- | 2.5 | |
| Subtotal | 10 | 13.5 | 32.1 | -- | 45.6 | -- | 45.6 | |

| Annual Funding | | | | | | | | |
|---|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|--|
| 1506 Procurement Aircraft Procurement, Navy | | | | | | | | |
| Fiscal Year | Quantity | TY \$M | | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program | |
| 2000 | 6 | 35.0 | -- | -- | 35.0 | -- | 35.0 | |
| 2001 | 1 | 14.7 | -- | -- | 14.7 | -- | 14.7 | |
| 2002 | 5 | 27.6 | -- | -- | 27.6 | -- | 27.6 | |
| 2003 | 6 | 33.3 | -- | -- | 33.3 | -- | 33.3 | |
| 2004 | 6 | 27.9 | -- | -- | 27.9 | -- | 27.9 | |
| 2005 | -- | -- | -- | -- | -- | -- | -- | |
| 2006 | -- | -- | -- | -- | -- | -- | -- | |
| 2007 | -- | -- | -- | -- | -- | -- | -- | |
| 2008 | -- | -- | -- | -- | -- | -- | -- | |
| 2009 | 2 | 7.7 | -- | -- | 7.7 | -- | 7.7 | |
| 2010 | 3 | 12.6 | -- | -- | 12.6 | -- | 12.6 | |
| 2011 | 5 | 16.3 | -- | -- | 16.3 | -- | 16.3 | |
| 2012 | 5 | 15.6 | -- | -- | 15.6 | -- | 15.6 | |
| 2013 | 5 | 14.9 | -- | -- | 14.9 | -- | 14.9 | |
| 2014 | 5 | 13.1 | -- | -- | 13.1 | -- | 13.1 | |
| 2015 | 5 | 16.0 | -- | -- | 16.0 | -- | 16.0 | |
| 2016 | 5 | 16.3 | -- | -- | 16.3 | -- | 16.3 | |
| 2017 | 6 | 19.9 | -- | -- | 19.9 | -- | 19.9 | |
| 2018 | 5 | 16.9 | -- | -- | 16.9 | -- | 16.9 | |
| 2019 | 4 | 13.8 | -- | -- | 13.8 | -- | 13.8 | |
| 2020 | 4 | 14.1 | -- | -- | 14.1 | -- | 14.1 | |
| 2021 | 4 | 14.3 | -- | -- | 14.3 | -- | 14.3 | |
| 2022 | 4 | 14.6 | -- | -- | 14.6 | -- | 14.6 | |
| 2023 | 4 | 14.9 | -- | -- | 14.9 | -- | 14.9 | |
| 2024 | 4 | 15.2 | -- | -- | 15.2 | -- | 15.2 | |
| Subtotal | 94 | 374.7 | -- | -- | 374.7 | -- | 374.7 | |

| Annual Funding | | | | | | | | |
|---|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|--|
| 1506 Procurement Aircraft Procurement, Navy | | | | | | | | |
| Fiscal Year | Quantity | BY 2002 \$M | | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program | |
| 2000 | 6 | 35.1 | -- | -- | 35.1 | -- | 35.1 | |
| 2001 | 1 | 14.6 | -- | -- | 14.6 | -- | 14.6 | |
| 2002 | 5 | 27.0 | -- | -- | 27.0 | -- | 27.0 | |
| 2003 | 6 | 32.0 | -- | -- | 32.0 | -- | 32.0 | |
| 2004 | 6 | 26.1 | -- | -- | 26.1 | -- | 26.1 | |
| 2005 | -- | -- | -- | -- | -- | -- | -- | |
| 2006 | -- | -- | -- | -- | -- | -- | -- | |
| 2007 | -- | -- | -- | -- | -- | -- | -- | |
| 2008 | -- | -- | -- | -- | -- | -- | -- | |
| 2009 | 2 | 6.5 | -- | -- | 6.5 | -- | 6.5 | |
| 2010 | 3 | 10.4 | -- | -- | 10.4 | -- | 10.4 | |
| 2011 | 5 | 13.2 | -- | -- | 13.2 | -- | 13.2 | |
| 2012 | 5 | 12.4 | -- | -- | 12.4 | -- | 12.4 | |
| 2013 | 5 | 11.7 | -- | -- | 11.7 | -- | 11.7 | |
| 2014 | 5 | 10.2 | -- | -- | 10.2 | -- | 10.2 | |
| 2015 | 5 | 12.3 | -- | -- | 12.3 | -- | 12.3 | |
| 2016 | 5 | 12.2 | -- | -- | 12.2 | -- | 12.2 | |
| 2017 | 6 | 14.6 | -- | -- | 14.6 | -- | 14.6 | |
| 2018 | 5 | 12.2 | -- | -- | 12.2 | -- | 12.2 | |
| 2019 | 4 | 9.8 | -- | -- | 9.8 | -- | 9.8 | |
| 2020 | 4 | 9.8 | -- | -- | 9.8 | -- | 9.8 | |
| 2021 | 4 | 9.7 | -- | -- | 9.7 | -- | 9.7 | |
| 2022 | 4 | 9.7 | -- | -- | 9.7 | -- | 9.7 | |
| 2023 | 4 | 9.7 | -- | -- | 9.7 | -- | 9.7 | |
| 2024 | 4 | 9.7 | -- | -- | 9.7 | -- | 9.7 | |
| Subtotal | 94 | 308.9 | -- | -- | 308.9 | -- | 308.9 | |

| Annual Funding | | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|--|
| 1611 Procurement Shipbuilding and Conversion, Navy | | | | | | | | |
| Fiscal Year | Quantity | TY \$M | | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program | |
| 1995 | 1 | 13.9 | -- | -- | 13.9 | 1.6 | 15.5 | |
| 1996 | 1 | 11.3 | -- | -- | 11.3 | 0.1 | 11.4 | |
| 1997 | -- | -- | -- | -- | -- | -- | -- | |
| 1998 | 3 | 31.8 | -- | -- | 31.8 | 3.2 | 35.0 | |
| 1999 | 1 | 9.0 | -- | -- | 9.0 | 0.9 | 9.9 | |
| 2000 | 2 | 14.3 | -- | -- | 14.3 | 1.7 | 16.0 | |
| 2001 | 2 | 12.3 | -- | -- | 12.3 | 1.1 | 13.4 | |
| 2002 | 2 | 15.4 | -- | -- | 15.4 | 1.7 | 17.1 | |
| 2003 | 1 | 5.8 | -- | -- | 5.8 | 0.8 | 6.6 | |
| 2004 | 1 | 6.3 | -- | -- | 6.3 | 0.6 | 6.9 | |
| 2005 | 1 | 7.6 | -- | -- | 7.6 | 0.6 | 8.2 | |
| 2006 | 2 | 12.6 | -- | -- | 12.6 | 1.3 | 13.9 | |
| 2007 | 3 | 16.8 | -- | -- | 16.8 | 5.9 | 22.7 | |
| 2008 | 2 | 12.8 | -- | -- | 12.8 | 3.3 | 16.1 | |
| 2009 | 3 | 13.8 | -- | -- | 13.8 | 6.4 | 20.2 | |
| 2010 | 1 | 6.9 | -- | -- | 6.9 | 0.7 | 7.6 | |
| 2011 | 3 | 12.1 | -- | -- | 12.1 | 4.9 | 17.0 | |
| 2012 | 2 | 8.6 | -- | -- | 8.6 | 3.3 | 11.9 | |
| 2013 | 5 | 24.1 | -- | -- | 24.1 | 6.2 | 30.3 | |
| 2014 | 1 | 5.0 | -- | -- | 5.0 | 1.4 | 6.4 | |
| 2015 | 2 | 8.8 | -- | -- | 8.8 | 2.4 | 11.2 | |
| 2016 | 5 | 31.2 | -- | -- | 31.2 | 6.2 | 37.4 | |
| 2017 | 4 | 23.5 | -- | -- | 23.5 | 6.5 | 30.0 | |
| 2018 | 4 | 22.5 | -- | -- | 22.5 | 5.6 | 28.1 | |
| 2019 | 4 | 18.5 | -- | -- | 18.5 | 4.6 | 23.1 | |
| 2020 | 5 | 28.3 | -- | -- | 28.3 | 7.2 | 35.5 | |
| 2021 | 4 | 26.5 | -- | -- | 26.5 | 6.6 | 33.1 | |
| 2022 | 5 | 34.2 | -- | -- | 34.2 | 8.5 | 42.7 | |
| 2023 | 6 | 39.5 | -- | -- | 39.5 | 10.1 | 49.6 | |
| 2024 | 8 | 57.9 | -- | -- | 57.9 | 14.7 | 72.6 | |
| 2025 | 5 | 35.3 | -- | -- | 35.3 | 8.8 | 44.1 | |
| 2026 | 3 | 25.2 | -- | -- | 25.2 | 6.3 | 31.5 | |
| 2027 | 3 | 25.5 | -- | -- | 25.5 | 6.4 | 31.9 | |
| 2028 | 3 | 25.6 | -- | -- | 25.6 | 6.4 | 32.0 | |
| 2029 | 3 | 26.1 | -- | -- | 26.1 | 6.5 | 32.6 | |
| 2030 | 3 | 26.0 | -- | -- | 26.0 | 6.5 | 32.5 | |
| 2031 | 1 | 11.2 | -- | -- | 11.2 | 2.8 | 14.0 | |
| 2032 | 1 | 11.4 | -- | -- | 11.4 | 2.9 | 14.3 | |
| Subtotal | 106 | 717.6 | -- | -- | 717.6 | 164.7 | 882.3 | |

| Annual Funding | | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|--|
| 1611 Procurement Shipbuilding and Conversion, Navy | | | | | | | | |
| Fiscal Year | Quantity | BY 2002 \$M | | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program | |
| 1995 | 1 | 14.7 | -- | -- | 14.7 | 1.7 | 16.4 | |
| 1996 | 1 | 11.8 | -- | -- | 11.8 | 0.1 | 11.9 | |
| 1997 | -- | -- | -- | -- | -- | -- | -- | |
| 1998 | 3 | 32.0 | -- | -- | 32.0 | 3.2 | 35.2 | |
| 1999 | 1 | 8.9 | -- | -- | 8.9 | 0.9 | 9.8 | |
| 2000 | 2 | 13.8 | -- | -- | 13.8 | 1.7 | 15.5 | |
| 2001 | 2 | 11.5 | -- | -- | 11.5 | 1.0 | 12.5 | |
| 2002 | 2 | 14.3 | -- | -- | 14.3 | 1.6 | 15.9 | |
| 2003 | 1 | 5.1 | -- | -- | 5.1 | 0.7 | 5.8 | |
| 2004 | 1 | 5.3 | -- | -- | 5.3 | 0.5 | 5.8 | |
| 2005 | 1 | 6.2 | -- | -- | 6.2 | 0.5 | 6.7 | |
| 2006 | 2 | 9.9 | -- | -- | 9.9 | 1.0 | 10.9 | |
| 2007 | 3 | 12.6 | -- | -- | 12.6 | 4.4 | 17.0 | |
| 2008 | 2 | 9.3 | -- | -- | 9.3 | 2.4 | 11.7 | |
| 2009 | 3 | 9.7 | -- | -- | 9.7 | 4.5 | 14.2 | |
| 2010 | 1 | 4.7 | -- | -- | 4.7 | 0.5 | 5.2 | |
| 2011 | 3 | 8.0 | -- | -- | 8.0 | 3.2 | 11.2 | |
| 2012 | 2 | 5.5 | -- | -- | 5.5 | 2.2 | 7.7 | |
| 2013 | 5 | 15.2 | -- | -- | 15.2 | 3.9 | 19.1 | |
| 2014 | 1 | 3.1 | -- | -- | 3.1 | 0.9 | 4.0 | |
| 2015 | 2 | 5.3 | -- | -- | 5.3 | 1.5 | 6.8 | |
| 2016 | 5 | 18.5 | -- | -- | 18.5 | 3.7 | 22.2 | |
| 2017 | 4 | 13.7 | -- | -- | 13.7 | 3.8 | 17.5 | |
| 2018 | 4 | 12.8 | -- | -- | 12.8 | 3.2 | 16.0 | |
| 2019 | 4 | 10.3 | -- | -- | 10.3 | 2.6 | 12.9 | |
| 2020 | 5 | 15.5 | -- | -- | 15.5 | 4.0 | 19.5 | |
| 2021 | 4 | 14.2 | -- | -- | 14.2 | 3.6 | 17.8 | |
| 2022 | 5 | 18.0 | -- | -- | 18.0 | 4.5 | 22.5 | |
| 2023 | 6 | 20.4 | -- | -- | 20.4 | 5.2 | 25.6 | |
| 2024 | 8 | 29.3 | -- | -- | 29.3 | 7.5 | 36.8 | |
| 2025 | 5 | 17.5 | -- | -- | 17.5 | 4.4 | 21.9 | |
| 2026 | 3 | 12.3 | -- | -- | 12.3 | 3.0 | 15.3 | |
| 2027 | 3 | 12.2 | -- | -- | 12.2 | 3.0 | 15.2 | |
| 2028 | 3 | 12.0 | -- | -- | 12.0 | 3.0 | 15.0 | |
| 2029 | 3 | 12.0 | -- | -- | 12.0 | 3.0 | 15.0 | |
| 2030 | 3 | 11.7 | -- | -- | 11.7 | 2.9 | 14.6 | |
| 2031 | 1 | 4.9 | -- | -- | 4.9 | 1.3 | 6.2 | |
| 2032 | 1 | 4.9 | -- | -- | 4.9 | 1.3 | 6.2 | |
| Subtotal | 106 | 447.1 | -- | -- | 447.1 | 96.4 | 543.5 | |

| Annual Funding | | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|--|
| 1810 Procurement Other Procurement, Navy | | | | | | | | |
| Fiscal Year | Quantity | TY \$M | | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program | |
| 1998 | 5 | 55.2 | -- | -- | 55.2 | 12.1 | 67.3 | |
| 1999 | 5 | 79.7 | -- | -- | 79.7 | 1.7 | 81.4 | |
| 2000 | 3 | 53.2 | -- | -- | 53.2 | 6.0 | 59.2 | |
| 2001 | 6 | 36.4 | -- | -- | 36.4 | -- | 36.4 | |
| 2002 | 4 | 77.6 | -- | -- | 77.6 | 6.4 | 84.0 | |
| 2003 | 6 | 64.9 | -- | -- | 64.9 | 6.1 | 71.0 | |
| 2004 | 4 | 60.4 | -- | -- | 60.4 | 5.8 | 66.2 | |
| 2005 | 3 | 60.9 | -- | -- | 60.9 | 6.2 | 67.1 | |
| 2006 | 3 | 21.2 | -- | -- | 21.2 | 3.8 | 25.0 | |
| 2007 | 5 | 34.4 | -- | -- | 34.4 | 3.6 | 38.0 | |
| 2008 | 4 | 33.1 | -- | -- | 33.1 | 5.8 | 38.9 | |
| 2009 | 4 | 29.3 | -- | -- | 29.3 | 4.9 | 34.2 | |
| 2010 | 5 | 42.1 | -- | -- | 42.1 | 7.9 | 50.0 | |
| 2011 | 5 | 47.7 | -- | -- | 47.7 | 13.7 | 61.4 | |
| 2012 | -- | -- | 40.2 | -- | 40.2 | -- | 40.2 | |
| 2013 | 2 | 20.2 | -- | -- | 20.2 | 11.2 | 31.4 | |
| 2014 | 2 | 19.9 | -- | -- | 19.9 | 15.7 | 35.6 | |
| 2015 | 4 | 24.3 | -- | -- | 24.3 | 36.5 | 60.8 | |
| 2016 | 1 | 11.2 | -- | -- | 11.2 | 16.9 | 28.1 | |
| 2017 | 2 | 18.0 | -- | -- | 18.0 | 9.0 | 27.0 | |
| 2018 | 2 | 18.2 | -- | -- | 18.2 | 12.1 | 30.3 | |
| 2019 | 3 | 23.0 | -- | -- | 23.0 | 19.2 | 42.2 | |
| 2020 | 2 | 30.4 | -- | -- | 30.4 | 7.6 | 38.0 | |
| 2021 | 2 | 27.8 | -- | -- | 27.8 | 7.0 | 34.8 | |
| 2022 | 3 | 28.9 | -- | -- | 28.9 | 7.2 | 36.1 | |
| 2023 | 3 | 27.1 | -- | -- | 27.1 | 6.8 | 33.9 | |
| 2024 | 3 | 27.8 | -- | -- | 27.8 | 6.9 | 34.7 | |
| 2025 | 5 | 28.2 | -- | -- | 28.2 | 7.0 | 35.2 | |
| 2026 | 5 | 25.3 | -- | -- | 25.3 | 6.3 | 31.6 | |
| 2027 | 5 | 27.2 | -- | -- | 27.2 | 6.8 | 34.0 | |
| 2028 | 5 | 27.7 | -- | -- | 27.7 | 6.9 | 34.6 | |
| 2029 | 5 | 28.2 | -- | -- | 28.2 | 7.1 | 35.3 | |
| 2030 | 5 | 28.8 | -- | -- | 28.8 | 7.2 | 36.0 | |
| 2031 | -- | -- | -- | -- | -- | 4.8 | 4.8 | |
| 2032 | -- | -- | -- | -- | -- | 4.9 | 4.9 | |
| Subtotal | 121 | 1138.3 | 40.2 | -- | 1178.5 | 291.1 | 1469.6 | |

| Annual Funding | | | | | | | | |
|--|----------|----------------------------|--------------------------------|-----------------------|---------------|---------------|---------------|--|
| 1810 Procurement Other Procurement, Navy | | | | | | | | |
| Fiscal Year | Quantity | BY 2002 \$M | | | | | | |
| | | End Item Recurring Flyaway | Non End Item Recurring Flyaway | Non Recurring Flyaway | Total Flyaway | Total Support | Total Program | |
| 1998 | 5 | 57.3 | -- | -- | 57.3 | 12.5 | 69.8 | |
| 1999 | 5 | 81.6 | -- | -- | 81.6 | 1.8 | 83.4 | |
| 2000 | 3 | 53.7 | -- | -- | 53.7 | 6.1 | 59.8 | |
| 2001 | 6 | 36.3 | -- | -- | 36.3 | -- | 36.3 | |
| 2002 | 4 | 76.3 | -- | -- | 76.3 | 6.3 | 82.6 | |
| 2003 | 6 | 62.6 | -- | -- | 62.6 | 5.9 | 68.5 | |
| 2004 | 4 | 56.9 | -- | -- | 56.9 | 5.4 | 62.3 | |
| 2005 | 3 | 55.8 | -- | -- | 55.8 | 5.6 | 61.4 | |
| 2006 | 3 | 18.8 | -- | -- | 18.8 | 3.4 | 22.2 | |
| 2007 | 5 | 29.8 | -- | -- | 29.8 | 3.2 | 33.0 | |
| 2008 | 4 | 28.3 | -- | -- | 28.3 | 4.9 | 33.2 | |
| 2009 | 4 | 24.7 | -- | -- | 24.7 | 4.1 | 28.8 | |
| 2010 | 5 | 34.8 | -- | -- | 34.8 | 6.5 | 41.3 | |
| 2011 | 5 | 38.9 | -- | -- | 38.9 | 11.1 | 50.0 | |
| 2012 | -- | -- | 32.2 | -- | 32.2 | -- | 32.2 | |
| 2013 | 2 | 16.0 | -- | -- | 16.0 | 8.8 | 24.8 | |
| 2014 | 2 | 15.5 | -- | -- | 15.5 | 12.3 | 27.8 | |
| 2015 | 4 | 18.7 | -- | -- | 18.7 | 28.1 | 46.8 | |
| 2016 | 1 | 8.5 | -- | -- | 8.5 | 12.8 | 21.3 | |
| 2017 | 2 | 13.3 | -- | -- | 13.3 | 6.7 | 20.0 | |
| 2018 | 2 | 13.2 | -- | -- | 13.2 | 8.8 | 22.0 | |
| 2019 | 3 | 16.4 | -- | -- | 16.4 | 13.7 | 30.1 | |
| 2020 | 2 | 21.2 | -- | -- | 21.2 | 5.3 | 26.5 | |
| 2021 | 2 | 19.0 | -- | -- | 19.0 | 4.8 | 23.8 | |
| 2022 | 3 | 19.4 | -- | -- | 19.4 | 4.8 | 24.2 | |
| 2023 | 3 | 17.8 | -- | -- | 17.8 | 4.5 | 22.3 | |
| 2024 | 3 | 17.9 | -- | -- | 17.9 | 4.5 | 22.4 | |
| 2025 | 5 | 17.8 | -- | -- | 17.8 | 4.5 | 22.3 | |
| 2026 | 5 | 15.7 | -- | -- | 15.7 | 3.9 | 19.6 | |
| 2027 | 5 | 16.5 | -- | -- | 16.5 | 4.2 | 20.7 | |
| 2028 | 5 | 16.5 | -- | -- | 16.5 | 4.1 | 20.6 | |
| 2029 | 5 | 16.5 | -- | -- | 16.5 | 4.1 | 20.6 | |
| 2030 | 5 | 16.5 | -- | -- | 16.5 | 4.1 | 20.6 | |
| 2031 | -- | -- | -- | -- | -- | 2.7 | 2.7 | |
| 2032 | -- | -- | -- | -- | -- | 2.7 | 2.7 | |
| Subtotal | 121 | 952.2 | 32.2 | -- | 984.4 | 222.2 | 1206.6 | |

Low Rate Initial Production

| Item | Initial LRIP Decision | Current Total LRIP |
|--------------------------|-----------------------|--------------------|
| Approval Date | 3/2/1998 | 10/31/2013 |
| Approved Quantity | 7 | 84 |
| Reference | LRIP 1 ADM | LRIP 14 ADM |
| Start Year | 1998 | 1998 |
| End Year | 1998 | 2013 |

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the requirements to meet ship installation schedules, outfit Land Based Test Sites in preparation for completion of Operational Testing (OT), and to maintain the Minimum Sustaining Rate for production of CEC systems pending completion of OT and entry into FRP.

Foreign Military Sales

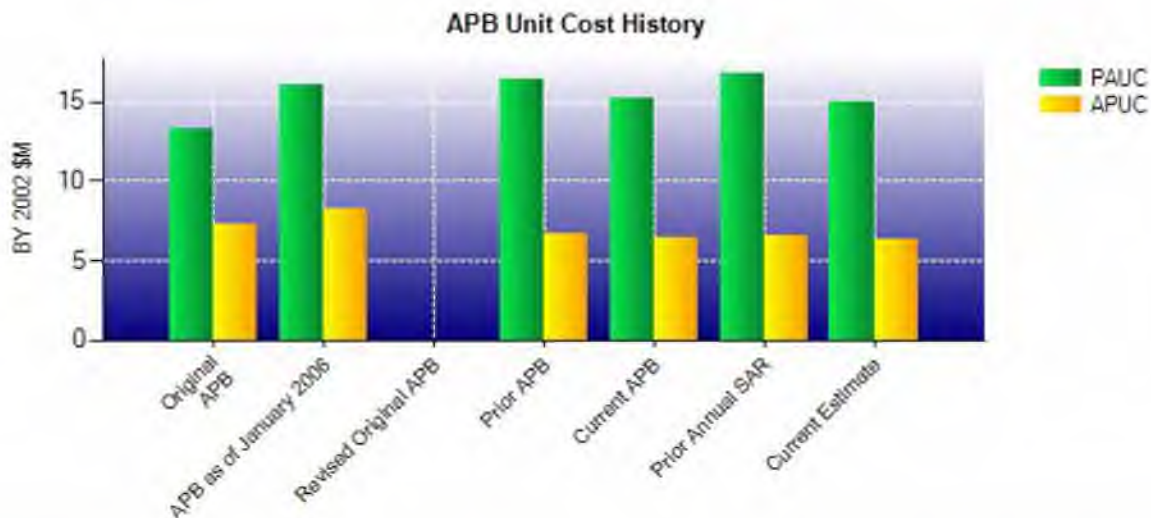
Classified FMS information is provided in the classified annex to this submission.

Nuclear Costs

None

Unit Cost

| Current UCR Baseline and Current Estimate (Base-Year Dollars) | | | |
|--|--------------------------------------|---------------------------------|----------|
| Item | BY 2002 \$M | BY 2002 \$M | % Change |
| | Current UCR Baseline (Jan 2019 APB) | Current Estimate (Dec 2018 SAR) | |
| Program Acquisition Unit Cost | | | |
| Cost | 5431.1 | 5394.1 | |
| Quantity | 358 | 361 | |
| Unit Cost | 15.171 | 14.942 | -1.51 |
| Average Procurement Unit Cost | | | |
| Cost | 2104.2 | 2104.6 | |
| Quantity | 328 | 331 | |
| Unit Cost | 6.415 | 6.358 | -0.89 |
| Original UCR Baseline and Current Estimate (Base-Year Dollars) | | | |
| Item | BY 2002 \$M | BY 2002 \$M | % Change |
| | Original UCR Baseline (Jul 1995 APB) | Current Estimate (Dec 2018 SAR) | |
| Program Acquisition Unit Cost | | | |
| Cost | 2443.4 | 5394.1 | |
| Quantity | 183 | 361 | |
| Unit Cost | 13.352 | 14.942 | +11.91 |
| Average Procurement Unit Cost | | | |
| Cost | 1262.8 | 2104.6 | |
| Quantity | 174 | 331 | |
| Unit Cost | 7.257 | 6.358 | -12.39 |



| APB Unit Cost History | | | | | |
|------------------------|----------|-------------|-------|--------|-------|
| Item | Date | BY 2002 \$M | | TY \$M | |
| | | PAUC | APUC | PAUC | APUC |
| Original APB | Jul 1995 | 13.326 | 7.257 | 14.061 | 8.222 |
| APB as of January 2006 | Jun 2004 | 16.010 | 8.184 | 16.814 | 9.235 |
| Revised Original APB | N/A | N/A | N/A | N/A | N/A |
| Prior APB | Nov 2017 | 16.431 | 6.660 | 18.560 | 8.111 |
| Current APB | Jan 2019 | 15.171 | 6.415 | 17.922 | 8.383 |
| Prior Annual SAR | Dec 2017 | 16.764 | 6.604 | 19.064 | 8.041 |
| Current Estimate | Dec 2018 | 14.942 | 6.358 | 17.757 | 8.413 |

SAR Unit Cost History

| Initial SAR Baseline to Current SAR Baseline (TY \$M) | | | | | | | | | |
|---|---------|--------|-------|-------|-------|-------|--------|-------|--------------------------|
| Initial PAUC Development Estimate | Changes | | | | | | | | PAUC Production Estimate |
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 14.060 | -0.656 | -2.840 | 0.590 | 0.420 | 5.010 | 0.000 | -0.736 | 1.788 | 15.848 |

| Current SAR Baseline to Current Estimate (TY \$M) | | | | | | | | | |
|---|---------|--------|-------|-------|-------|-------|-------|-------|-----------------------|
| PAUC Production Estimate | Changes | | | | | | | | PAUC Current Estimate |
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 15.848 | 0.216 | -2.294 | 2.547 | 0.687 | 0.265 | 0.000 | 0.488 | 1.909 | 17.757 |

| Initial SAR Baseline to Current SAR Baseline (TY \$M) | | | | | | | | | |
|---|---------|--------|-------|--------|-------|-------|-------|-------|--------------------------|
| Initial APUC Development Estimate | Changes | | | | | | | | APUC Production Estimate |
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 8.220 | -0.532 | -0.797 | 0.291 | -0.439 | 1.761 | 0.000 | 0.731 | 1.015 | 9.235 |

| Current SAR Baseline to Current Estimate (TY \$M) | | | | | | | | | |
|---|---------|--------|-------|--------|--------|-------|-------|--------|-----------------------|
| APUC Production Estimate | Changes | | | | | | | | APUC Current Estimate |
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 9.235 | 0.148 | -0.490 | 0.821 | -1.018 | -0.805 | 0.000 | 0.522 | -0.822 | 8.413 |

| SAR Baseline History | | | | |
|----------------------|-----------------------|--------------------------|-------------------------|------------------|
| Item | SAR Planning Estimate | SAR Development Estimate | SAR Production Estimate | Current Estimate |
| Milestone I | | N/A | N/A | N/A |
| Milestone II | | N/A | May 1995 | May 1995 |
| Milestone III | | N/A | Oct 1998 | Apr 2002 |
| IOC | | N/A | Sep 1996 | Sep 1996 |
| Total Cost (TY \$M) | | N/A | 2573.1 | 4310.7 |
| Total Quantity | | N/A | 183 | 272 |
| PAUC | | N/A | 14.061 | 15.848 |

IOC identified above refers to the CEC Shipboard configuration, AN/USG-2. FOC occurred in conjunction with Airborne IOC in May 2005.

Cost Variance

| Summary TY \$M | | | | |
|------------------------------------|----------------|---------------|-----------|----------------|
| Item | RDT&E | Procurement | MILCON | Total |
| SAR Baseline (Production Estimate) | 1946.5 | 2364.2 | -- | 4310.7 |
| Previous Changes | | | | |
| Economic | +22.8 | +42.3 | -- | +65.1 |
| Quantity | +51.6 | -64.8 | -- | -13.2 |
| Schedule | +647.9 | +189.0 | -- | +836.9 |
| Engineering | +584.9 | -199.4 | -- | +385.5 |
| Estimating | +290.7 | -164.3 | -- | +126.4 |
| Other | -- | -- | -- | -- |
| Support | +3.6 | +4.2 | -- | +7.8 |
| Subtotal | +1601.5 | -193.0 | -- | +1408.5 |
| Current Changes | | | | |
| Economic | +6.3 | +6.7 | -- | +13.0 |
| Quantity | -- | +595.1 | -- | +595.1 |
| Schedule | -- | +82.7 | -- | +82.7 |
| Engineering | -- | -137.4 | -- | -137.4 |
| Estimating | +71.3 | -102.2 | -- | -30.9 |
| Other | -- | -- | -- | -- |
| Support | -- | +168.5 | -- | +168.5 |
| Subtotal | +77.6 | +613.4 | -- | +691.0 |
| Total Changes | +1679.1 | +420.4 | -- | +2099.5 |
| CE - Cost Variance | 3625.6 | 2784.6 | -- | 6410.2 |
| CE - Cost & Funding | 3625.6 | 2784.6 | -- | 6410.2 |

| Summary BY 2002 \$M | | | | |
|------------------------------------|---------|-------------|--------|---------|
| Item | RDT&E | Procurement | MILCON | Total |
| SAR Baseline (Production Estimate) | 2028.1 | 2095.2 | -- | 4123.3 |
| Previous Changes | | | | |
| Economic | -- | -- | -- | -- |
| Quantity | +47.8 | -109.8 | -- | -62.0 |
| Schedule | +450.6 | +65.7 | -- | +516.3 |
| Engineering | +494.5 | -143.8 | -- | +350.7 |
| Estimating | +222.2 | -12.6 | -- | +209.6 |
| Other | -- | -- | -- | -- |
| Support | +2.8 | -111.6 | -- | -108.8 |
| Subtotal | +1217.9 | -312.1 | -- | +905.8 |
| Current Changes | | | | |
| Economic | -- | -- | -- | -- |
| Quantity | -- | +309.7 | -- | +309.7 |
| Schedule | -- | +42.0 | -- | +42.0 |
| Engineering | -- | -70.9 | -- | -70.9 |
| Estimating | +43.5 | -54.1 | -- | -10.6 |
| Other | -- | -- | -- | -- |
| Support | -- | +94.8 | -- | +94.8 |
| Subtotal | +43.5 | +321.5 | -- | +365.0 |
| Total Changes | +1261.4 | +9.4 | -- | +1270.8 |
| CE - Cost Variance | 3289.5 | 2104.6 | -- | 5394.1 |
| CE - Cost & Funding | 3289.5 | 2104.6 | -- | 5394.1 |

Previous Estimate: December 2017

| RDT&E | \$M | |
|---|--------------|--------------|
| Current Change Explanations | Base Year | Then Year |
| Revised escalation indices. (Economic) | N/A | +6.3 |
| Adjustment for current and prior escalation. (Estimating) | -1.4 | -1.9 |
| Revised estimate for FIRECAPE and ELEKTRA transition and CEC Hypersonic Tracks (Estimating) | +44.9 | +73.2 |
| RDT&E Subtotal | +43.5 | +77.6 |

| Procurement | \$M | |
|--|-----------|-----------|
| Current Change Explanations | Base Year | Then Year |
| Revised escalation indices. (Economic) | N/A | +6.7 |
| Total Quantity variance resulting from an increase of 37 shipboard units from 69 to 106 (Shipbuilding and Conversion, Navy (SCN)). (Subtotal) | +123.0 | +252.2 |
| Quantity variance resulting from an increase of 37 SCN from 69 to 106 (SCN). (Quantity) | (+174.5) | (+358.1) |
| Allocation to Schedule resulting from Quantity change. (Schedule) (QR) | (+25.6) | (+52.5) |
| Allocation to Engineering resulting from Quantity change. (Engineering) (QR) | (-42.7) | (-87.8) |
| Allocation to Estimating resulting from Quantity change. (Estimating) (QR) | (-34.4) | (-70.6) |
| Additional Quantity Change for actual unit cost of LPD Flight II and FFGs ships (SCN). (Quantity) | +24.2 | +50.6 |
| Total Quantity variance resulting from an increase of 24 Common Array Block (CAB) shipboard units from 97 to 121 (Other Procurement, Navy (OPN)). (Subtotal) | +77.8 | +130.7 |
| Quantity variance resulting from an increase of 24 CAB shipboard units from 97 to 121 (OPN). (Quantity) | (+111.0) | (+186.4) |
| Allocation to Schedule resulting from Quantity change. (Schedule) (QR) | (+16.4) | (+27.5) |
| Allocation to Engineering resulting from Quantity change. (Engineering) (QR) | (-27.4) | (-46.1) |
| Allocation to Estimating resulting from Quantity change. (Estimating) (QR) | (-22.2) | (-37.1) |
| Acceleration of DDG51 procurement buy profile from FY 2020 to FY 2025 (SCN). (Schedule) | 0.0 | -2.2 |
| Stretch-out of procurement buy profile from FY 2020 to FY 2032 (SCN). (Schedule) | 0.0 | +4.9 |
| Engineering change as scope moved from non-end item to end item related cost (OPN). (Engineering) | -0.8 | -3.5 |
| Adjustment for current and prior escalation. (Estimating) | -1.7 | -1.9 |
| Revised CVN73, DDG-51, and LPD 30 units cost estimate (SCN). (Estimating) | +3.9 | +6.6 |
| Refined estimate for prior and current (Aircraft Procurement, Navy) systems. (Estimating) | -0.5 | -0.8 |
| Refined estimate due to a change in estimating assumptions because of a change to the CAB buy profile (OPN). (Estimating) | +0.8 | +1.6 |
| Adjustment for current and prior escalation. (Support) | -0.3 | -1.0 |
| Increase in Other Support due to a stretch-out of the CAB procurement buy profile to FY 2032 (OPN). (Support) | +54.1 | +86.5 |
| Increase in Other Support (SCN). (Subtotal) | +41.0 | +83.0 |
| Increase in Other Support due to stretch-out of the procurement buy profile to FY 2032 (Support). (Support) | (-71.2) | (-143.3) |
| Increase in Other Support due to addition of 37 SCN shipboard units. (Support) (QR) | (+112.2) | (+226.3) |

CEC

December 2018 SAR

Procurement Subtotal

+321.5 +613.4

(QR) Quantity Related

Contracts

| Contract Identification | |
|-----------------------------|---|
| Appropriation: | RDT&E |
| Contract Name: | Design Agent/Engineering Services (DA/ES) (FY 2014 - FY 2018) |
| Contractor: | Raytheon - Network Centric Systems |
| Contractor Location: | 8333 Bryan Dairy Road Largo, FL 33777-1444 |
| Contract Number: | N00024-13-C-5212/0 |
| Contract Type: | Cost Plus Fixed Fee (CPFF) |
| Award Date: | September 27, 2013 |
| Definitization Date: | September 27, 2013 |

| Contract Price | | | | | | | |
|------------------------------|---------|-----|------------------------------|---------|-----|-------------------------------------|-----------------|
| Initial Contract Price (\$M) | | | Current Contract Price (\$M) | | | Estimated Price At Completion (\$M) | |
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 32.8 | N/A | 0 | 416.2 | N/A | 0 | 327.8 | 327.8 |

| Target Price Change Explanation |
|---|
| The difference between the Initial Contract Price Target and the Current Contract Price Target is due to exercising options for FY 2014, FY 2015, FY 2016, FY 2017, FY 2018, and FY 2019 Design Agent/Engineering Services (DA/ES) efforts. |

| Contract Variance | | |
|--|---------------|-------------------|
| Item | Cost Variance | Schedule Variance |
| Cumulative Variances To Date (2/25/2019) | -0.3 | +0.2 |
| Previous Cumulative Variances | 0.0 | 0.0 |
| Net Change | -0.3 | +0.2 |

| Cost and Schedule Variance Explanations |
|--|
| The unfavorable cumulative cost variance is due to an increase in the Security Support task to close action items from the Cyber Command Readiness Inspection (CCRI) and the execution of sanitizing procedures. |

The favorable cumulative schedule variance is due to the early purchase of the RTI software license.

Notes

The FY 2014 - FY 2018 DA/ES contract is a follow-on contract to the FY 2008 - FY 2013 DA/ES contract and includes labor, facilities, engineering, and technical support services required for CEC System DA Services, support equipment, and computer program installations as well as Engineering and Technical services in support of existing CEC assets, Common Equipment Sets, auxiliary equipment, and stand-alone equipment.

A sole source extension was awarded to DA/ES contract on September 21, 2018. The contract was extended to September 29, 2019 with a FY2020 option for three months..

After award of the new option year, the contractor has 120 days to submit the EVM report. The first report for the FY 2019 Design Agent effort was received in December 2018.

This contract is more than 90% complete; therefore, this is the final report for this contract.

Contract Identification

Appropriation: Procurement
Contract Name: CEC Production (FY 2015- FY2021)
Contractor: DRS Laurel Technologies
Contractor Location: 246 Airport Rd
 Johnstown, PA 15904-7224
Contract Number: N00024-15-C-5228/0
Contract Type: Firm Fixed Price (FFP)
Award Date: February 25, 2015
Definitization Date: February 25, 2015

Contract Price

| Initial Contract Price (\$M) | | | Current Contract Price (\$M) | | | Estimated Price At Completion (\$M) | |
|------------------------------|---------|-----|------------------------------|---------|-----|-------------------------------------|-----------------|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 2.0 | N/A | 2 | 70.9 | N/A | 41 | 227.0 | 227.0 |

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to increase of 39 CEC systems procured since initial contract.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

The FFP portion of this contract includes production and testing for AN/USG-2B (Shipboard), AN/USG-3B (Airborne), AN/USG-4B (USMC) CEC systems and back fit kits to convert AN/USG -2/2A to AN/USG-2B. The Cost Plus Fixed Fee portion of the contract includes Engineering Services in support of the manufacture, assembly, and testing of the CEC production systems under the contract.

The Contract Current Contract Quantity changed from 35 to 41 to reflect current quantity on contract.

Contract Identification

Appropriation: RDT&E
Contract Name: Common Array Block (CAB) Antenna Development and Production
Contractor: Raytheon
Contractor Location: 8333 Bryan Dairy Road
 Largo, FL 33777-1444
Contract Number: N00024-13-C-5230/0
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: September 27, 2013
Definitization Date: September 27, 2013

Contract Price

| Initial Contract Price (\$M) | | | Current Contract Price (\$M) | | | Estimated Price At Completion (\$M) | |
|------------------------------|---------|-----|------------------------------|---------|-----|-------------------------------------|-----------------|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 7.3 | N/A | 6 | 62.5 | N/A | 6 | 77.9 | 77.9 |

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to exercising Engineering Development Model options and Pre-Production Unit options.

Contract Variance

| Item | Cost Variance | Schedule Variance |
|--|---------------|-------------------|
| Cumulative Variances To Date (2/26/2019) | -17.5 | -0.1 |
| Previous Cumulative Variances | -8.5 | -1.5 |
| Net Change | -9.0 | +1.4 |

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to continued under performance with Engineering Development Model design, fabrication, and test of the Common Array Block antenna.

The favorable net change in the schedule variance is due to the contractor completing tasks associated with the Critical Design Review and receipt of vendor material.

Notes

This contract includes labor, facilities, engineering and technical support services required for the design, engineering development, documentation, fabrication and test and production for the development and production of the next generation of the CAB antennas for the CEC System.

Contract Identification

Appropriation: Procurement
Contract Name: CEC Signal Data Processor (SDP) Production (FY2017 - FY 2022)
Contractor: DRS Laurel Technologies
Contractor Location: 246 Airport Road
 Johnstown, PA 15904
Contract Number: N00024-17-C-5201/0
Contract Type: Firm Fixed Price (FFP)
Award Date: August 24, 2017
Definitization Date: August 24, 2017

| Contract Price | | | | | | | |
|------------------------------|---------|-----|------------------------------|---------|-----|-------------------------------------|-----------------|
| Initial Contract Price (\$M) | | | Current Contract Price (\$M) | | | Estimated Price At Completion (\$M) | |
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 0.5 | N/A | 3 | 10.1 | N/A | 51 | 82.0 | 82.0 |

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to 48 additional principle items in accordance with the latest authorized contract modification.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

This CEC SDP Production (FY 2017 - FY 2022) contract is a follow-on to the CEC SDP-S Production (FY 2011 - FY 2016) contract and includes the manufacture, assembly, test, and repair, of a SDP assembly for the Cooperative Engagement Transmission Processing Set.

Deliveries and Expenditures

| Deliveries | | | | |
|----------------------------------|-----------------|----------------|----------------|-------------------|
| Delivered to Date | Planned to Date | Actual to Date | Total Quantity | Percent Delivered |
| Development | 30 | 30 | 30 | 100.00% |
| Production | 329 | 183 | 331 | 55.29% |
| Total Program Quantity Delivered | 359 | 213 | 361 | 59.00% |

| Expended and Appropriated (TY \$M) | | | |
|------------------------------------|--------|----------------------------|--------|
| Total Acquisition Cost | 6410.2 | Years Appropriated | 26 |
| Expended to Date | 4503.3 | Percent Years Appropriated | 66.67% |
| Percent Expended | 70.25% | Appropriated to Date | 4851.4 |
| Total Funding Years | 39 | Percent Appropriated | 75.68% |

The above data is current as of March 11, 2019.

Operating and Support Cost

Cost Estimate Details

| | |
|---------------------------------|---|
| Date of Estimate: | January 31, 2019 |
| Source of Estimate: | Update to NAVSEA letter 7000 Ser 05C/037 dated December 13, 2018. |
| Quantity to Sustain: | 361 |
| Unit of Measure: | System |
| Service Life per Unit: | 20.00 Years |
| Fiscal Years in Service: | FY 1994 - FY 2052 |

The total quantity changed from 300 to 361. The total quantity to sustain changed from 280 to 317 since 44 systems are ship board back fits and do not require sustainment. There are shipboard AN/USG-2/2A/2B Shipboard or airborne AN/USG-3/3B variants. The unit of measure is any one of these variants.

The sustainment strategy costs includes: prime contractor and government in-service engineering support, continuing engineering support for Navy in-house facilities and software maintenance, depot repairs of CEC equipment, modification kit procurements and installations, and fleet recurring training.

Sustainment Strategy

AN/USG-2/2A/2B shipboard variant maintenance concept consists of two levels of maintenance: Organizational Level (O-Level), and Depot Level (D-Level). Trained Navy personnel on-board ship and at shore sites perform O-Level maintenance on the AN/USG-2/2A/2B variant. D-Level Maintenance is provided by the CEC system Original Equipment Manufacturer (OEM). The Designated Source of Repair (DSOR) is managed by Naval Supply System Command-Mechanicsburg for AN/USG-2/2A/2B unique and common items. The DSOR also provides Government Furnished Equipment (GFE) repair for Land Based Test Sites (LBTS).

AN/USG-3/3B Airborne System: O-level Preventative Maintenance consists of scheduled inspections, special inspections, phase inspections, corrosion prevention, and preservation of all equipment IAW current directives. O-level maintenance is the day-to-day tasks that an operating unit performs in support of its own operations. The same depot capability established as described for shipboard systems will be implemented for AN/USG-3/3B for common CCAs and other LRUs that exist between the shipboard, airborne, and ground-mobile hardware. The Designated Source of Repair will be managed by Naval Supply Systems Command-Philadelphia (NAVSUP-P) for AN/USG-3 unique items.

Antecedent Information

No Antecedent

| Annual O&S Costs BY2002 \$M | | | |
|--------------------------------|--------------------------------|--|-----------------------------------|
| Cost Element | CEC | | No Antecedent (Antecedent) N/A |
| | Average Annual Cost Per System | | |
| Unit-Level Manpower | 0.000 | | 0.000 |
| Unit Operations | 0.007 | | 0.000 |
| Maintenance | 0.109 | | 0.000 |
| Sustaining Support | 0.057 | | 0.000 |
| Continuing System Improvements | 0.147 | | 0.000 |
| Indirect Support | 0.000 | | 0.000 |
| Other | 0.000 | | 0.000 |
| Total | 0.320 | | -- |

CEC Unit-Level Manpower and associated Indirect Support costs are covered by the host platforms.

| Item | Total O&S Cost \$M | | | |
|------------------|---|------------------|-------------------------------|-----|
| | CEC | | No Antecedent (Antecedent) | |
| | Current Production APB Objective/Threshold | Current Estimate | | |
| Base Year | 1757.6 | 1933.4 | 1753.0 | N/A |
| Then Year | 3049.0 | N/A | 3048.5 | N/A |

Equation to Translate Annual Cost to Total Cost

An equation would not accurately depict the total cost since platform (Airborne/Shipboard) service is not always 20 years. The service life per platform (Airborne/Shipboard) varies anywhere from five years to 20 years dependent on the service life of the host ship.

| O&S Cost Variance | | |
|---|----------------|--|
| Category | BY 2002 \$M | Change Explanations |
| Prior SAR Total O&S Estimates - Dec 2017 SAR | 1927.4 | |
| Programmatic/Planning Factors | 134.1 | Increase of additional units. |
| Cost Estimating Methodology | -175.2 | Changes in model escalation. |
| Cost Data Update | 0.0 | |
| Labor Rate | 0.0 | |
| Energy Rate | 0.0 | |
| Technical Input | -133.3 | Decrease of Increment II software maintenance. |
| Other | 0.0 | |
| Total Changes | -174.4 | |
| Current Estimate | 1753.0 | |

Disposal Estimate Details

Date of Estimate: January 31, 2019

Source of Estimate: Update to NAVSEA letter 7000 Ser 05C/037 dated December 13, 2018
Disposal/Demilitarization Total Cost (BY 2002 \$M): 48.4

Disposal/Demilitarization Total Cost changed from \$34.5M to \$48.4M due to increased quantity of ships requiring disposal.