

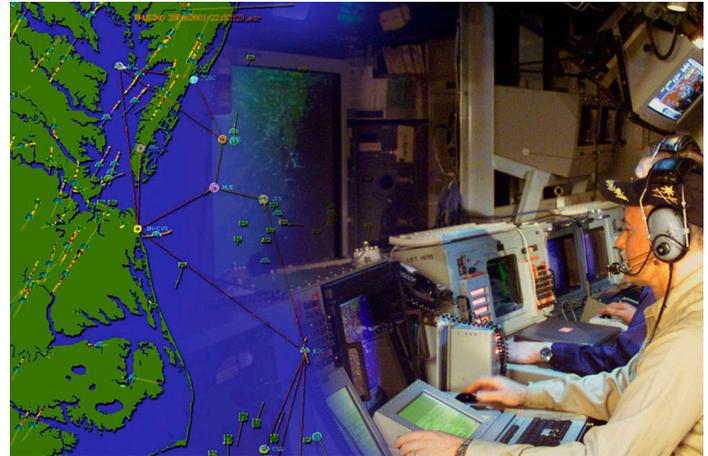
Cooperative Engagement Capability (CEC)

Executive Summary

- In July 2015, DOT&E submitted a classified Early Fielding Report on the Aegis Baseline 9A Combat System with the Cooperative Engagement Capability (CEC) USG-2B. In the report, DOT&E stated that test results to date showed the CEC USG-2B, as integrated in the Aegis Baseline 9A Combat System, is likely to perform comparably to previous CEC USG-2 and USG-2A variants.
- DOT&E will conduct a full assessment of the CEC USG-2B's operational effectiveness and suitability on Aegis platforms upon completion of the CEC USG-2B FOT&E.

System

- CEC is a real-time, sensor-netting system that enables high quality situational awareness and integrated fire control capability.
- There are four major U.S. Navy variants of CEC:
 - The USG-2/2A is used in selected Aegis cruisers and destroyers, LPD 17/LHD amphibious ships, and CVN 68 class aircraft carriers.
 - The USG-2B, an improved version of the USG-2/2A, is used in selected Aegis cruisers/destroyers as well as selected amphibious assault ships. The USG-2B is planned for use in the CVN 78 and DDG 1000 ship classes.
 - The USG-3 is used in the E-2C Hawkeye 2000 aircraft.
 - The USG-3B is used in the E-2D Advanced Hawkeye aircraft.
- The two major hardware pieces are the Cooperative Engagement Processor, which collects and fuses sensor data, and the Data Distribution System, which exchanges data between participating CEC units.
- The CEC increases Naval Air Defense capabilities by integrating sensors and weapon assets into a single, integrated, real-time network that:
 - Expands the battlespace
 - Enhances situational awareness



- Increases depth-of-fire
- Enables longer intercept ranges
- Improves decision and reaction times

Mission

- Naval forces use CEC to improve battle force air and missile defense capabilities by combining data from multiple battle force air search sensors on CEC-equipped units into a single, real-time, composite track picture.
- Naval surface forces also use CEC to provide accurate air and surface threat tracking data to ships equipped with the Ship Self-Defense System.

Major Contractor

Raytheon Systems Co., Command, Control and Communications, Data Systems – St. Petersburg, Florida

Activity

- The Navy's Commander, Operational Test and Evaluation Force conducted FOT&E of the CEC USG-2B with the Aegis Baseline 9A Combat System in February 2015 in accordance with a DOT&E-approved test plan. Problems with test range and aerial target availability delayed completing the FOT&E until January 2016.
- DOT&E submitted a classified Early Fielding Report to Congress on the Aegis Baseline 9A Combat System with the USG-2B Cooperative Engagement Capability in July 2015.

Assessment

- Test results to date indicate that a number of effectiveness measures are below established performance goals. These measures included anti-jamming resistance, two data distribution measures, track continuity, identification accuracy, and interoperability.
- In the classified July 2015 Early Fielding Report on the Aegis Baseline 9A Combat System, DOT&E stated that test results to date showed that the CEC USG-2B, as integrated in the Aegis Baseline 9A Combat System, is likely to perform

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comparably to previous CEC USG-2 variants. DOT&E will conduct a full assessment of the CEC USG-2B's operational effectiveness and suitability upon completion of the CEC USG-2B FOT&E.

- The CEC USG-2B cybersecurity testing conducted to date has not revealed any major deficiencies.

Recommendations

- Status of Previous Recommendations. The Navy has not satisfied the following previous recommendations to:
 1. Demonstrate corrections to the problem that degrades the USG-3B CEC's Track File Concurrence in a phase of FOT&E.
 2. Implement changes to the USG-3B CEC interface with the E-2D mission computer that would allow data from the E-2D's APY-9 radar to be used by the USG-3B CEC without first requiring the creation of an E-2D Mission Computer track.
 3. Reassess the USG-3B CEC reliability requirement and whether the logistic supply system can support the demonstrated USG-3B CEC reliability.
 4. Correct the cause of the electromagnetic interference between the USG-3B CEC and the E-2D radar altimeter and demonstrate the corrections in a phase of FOT&E.
- 5. Take action on the recommendations contained in DOT&E's classified report to Congress on the CEC USG-3B FOT&E.
- 6. Update the CEC Test and Evaluation Master Plan to include details of:
 - The second phase of the USG-3B FOT&E with the supersonic sea-skimming target scenario
 - FOT&E of corrections made to the CEC USG-3B
 - FOT&E of the CEC USG-2B with the Aegis Baseline 9 Combat System
 - FOT&E of the CEC USG-2B with the DDG 1000 *Zumwalt* Combat System
 - FOT&E of the CEC USG-2B with the CVN 78 Combat System
 - FOT&E of USG-3B CEC to demonstrate the system's ability to support the E-2D's Theater Air and Missile Defense and Battle Force Command and Control missions
 - The test program supporting the Acceleration of Mid-term Interoperability Improvements Project
- FY15 Recommendation.
 1. The Navy should complete the FOT&E of the CEC USG-2B with the Aegis Baseline 9 Combat System.