

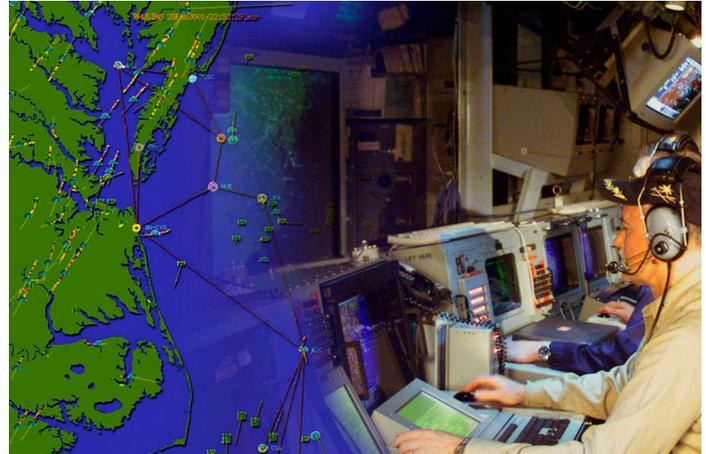
## Cooperative Engagement Capability (CEC)

### Executive Summary

- The Navy's Operational Test and Evaluation Force (OPTEVFOR) continued FOT&E of the Cooperative Engagement Capability (CEC) USG-2B with the Aegis Baseline 9.C1 Combat System in May 2017. Preliminary indications are that the CEC USG 2B, as integrated in the Aegis Baseline 9.C1 Combat Systems, remains operationally effective and suitable and continues to perform comparably to previous CEC USG-2 and USG-2A variants.
- DOT&E will provide assessments of the CEC USG-2B operational effectiveness and suitability in 2018.

### 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, *San Antonio* (LPD 17)-class and LHD amphibious ships, and *Nimitz* (CVN 68)-class aircraft carriers.
  - The USG-2B, an improved version of the USG-2/2A, is used in CVN 68 and *Gerald R. Ford* (CVN 78)-class aircraft carriers, *Zumwalt* (DDG 1000)-class destroyers, selected Aegis cruisers/destroyers, and selected amphibious assault ships.
  - 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 Commanders use units equipped with 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.
- Provide accurate air and surface threat tracking data to ships equipped with the Ship Self-Defense System.

### Major Contractor

Raytheon Integrated Defense Systems Co. – St. Petersburg, Florida

### Activity

OPTEVFOR continued FOT&E of the CEC USG-2B with the Aegis Baseline 9.C1 Combat System in May 2017 in accordance with DOT&E-approved test plans. The FOT&E is expected to complete in mid-2018.

### Assessment

- Preliminary CEC test results indicate that the CEC USG-2B, as integrated with the Aegis Baseline 9.C1 Combat System, remains operationally effective and suitable and continues to perform comparably to previous CEC USG-2 and CEC USG-2A variants. DOT&E will provide an assessment of the

CEC USG-2B's operational effectiveness and suitability in 2018.

### 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

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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. 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.
  4. Take action on the recommendations contained in DOT&E's classified report to Congress on the CEC USG-3B FOT&E.
  5. Update the CEC Test and Evaluation Master Plan to include details of:
    - FOT&E of corrections made to the CEC USG-3B
    - FOT&E of the CEC USG-2B with the Aegis Baseline 9.C Combat Systems
  - FOT&E of the CEC USG-2B with the DDG 1000 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
  6. Investigate and correct the integration problems with legacy Aegis baseline combat systems operating in a CEC network and demonstrate the correction in a phase of FOT&E.
- FY17 Recommendations. None.